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MARCH

1939

Vol. IV

No. 40

Monthly

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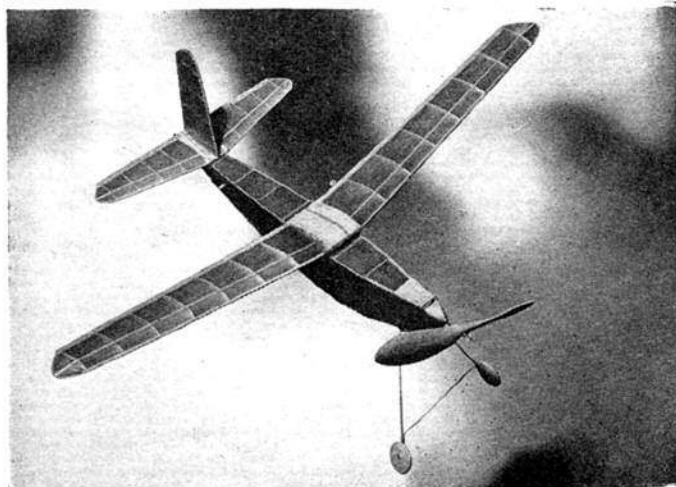
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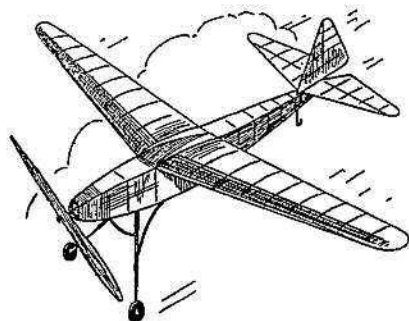


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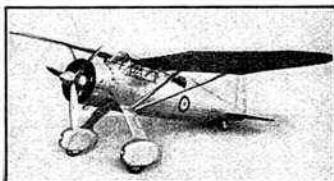
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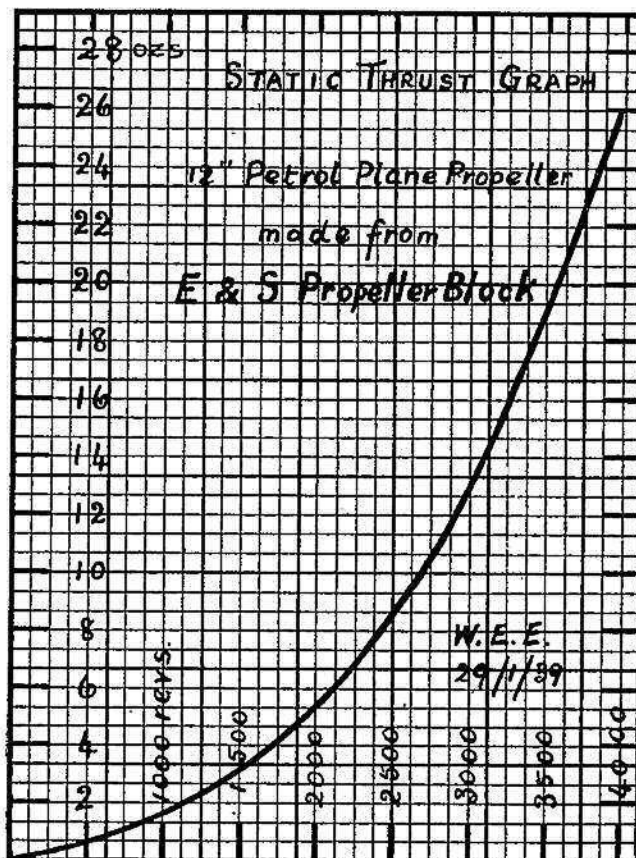
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VOL. IV. No. 40.

MARCH, 1939

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EDITORIAL.—All communications should be addressed to the Editor, THE AERO-MODELLER, Allen House, Newarke Street, Leicester, and contributions must be accompanied by a stamped addressed envelope for their return in the event of being unsuitable. Whilst every care will be taken of MSS. submitted for consideration, the Editor does not hold himself responsible for safe keeping or safe return of anything submitted for his consideration.

ARTICLES should (preferably) be typed or written on one side of the paper only, and should normally not exceed 1,200-1,400 words.

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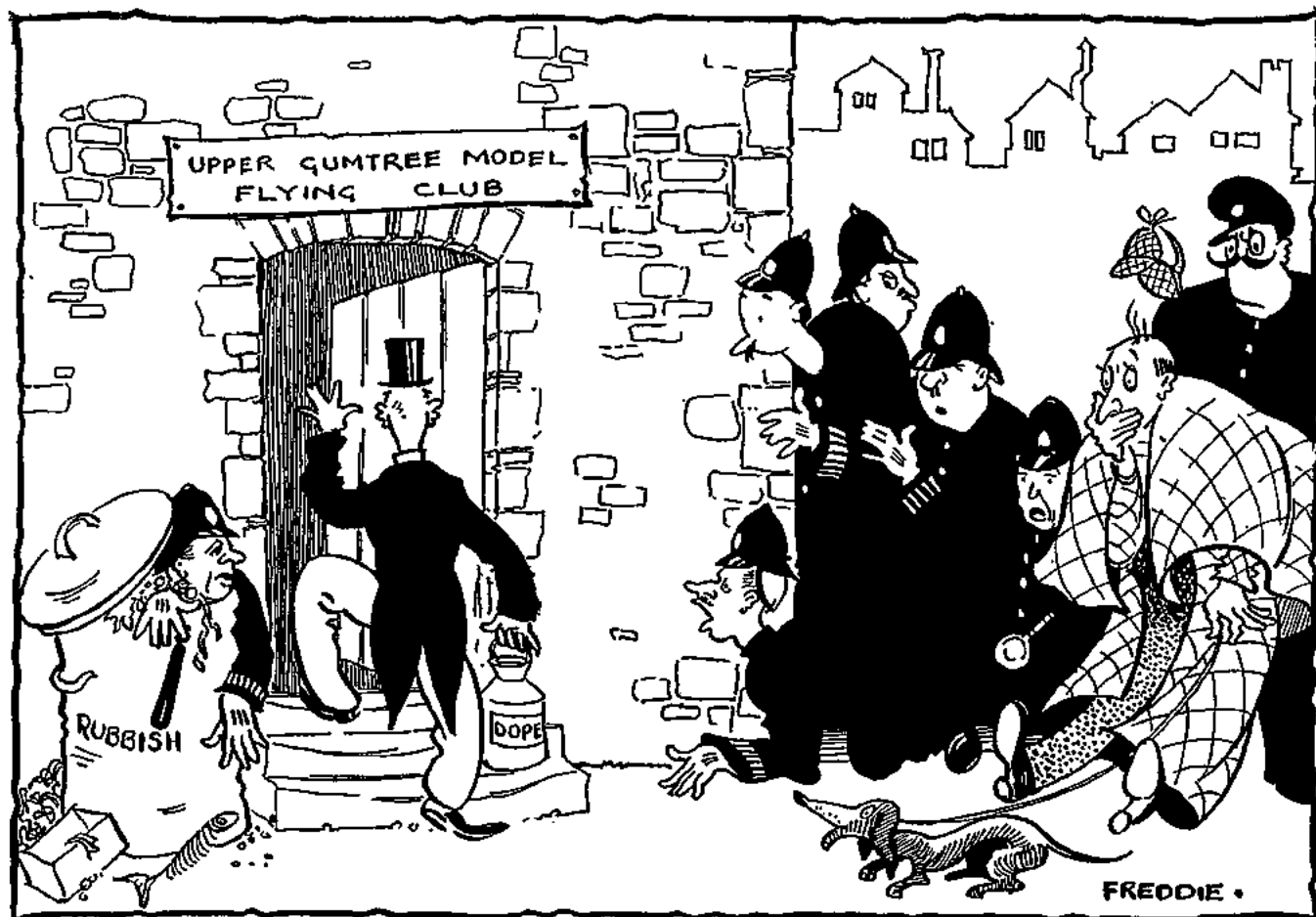
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SUBSCRIPTION RATES.—THE AERO-MODELLER will be mailed, post free, to any address in the world for an annual subscription of 8/6.

FREDDIE'S BEST YET?



THE NARCOTIC SQUAD FOLLOWS THE WRONG SCENT

The AERO MODELLER

MARCH - 1939

Vol. IV. - No. 40

Tel. Leicester 65322

INCORPORATING THE "MODEL AEROPLANE CONSTRUCTOR"

EDITORIAL



We are pleased to note an increasing interest in our correspondence pages, and this month we publish quite a number of letters, including another from "Enthusiast," who wrote the "Open Letter to the S.M.A.E. Council" which was published in our Christmas issue. We feel that we should clarify the position regarding so-called anonymous letters. An anonymous letter is one by an Unknown Author. In the past twenty months we have received two such letters. Both went straight into the W.P.B.

A letter sent in with the writer's name and address attached obviously cannot be called an anonymous letter; and it cannot be so called even if the writer asks that his name be withheld from publication. He may have one or more quite valid reasons for making this request. In the case of "Enthusiast," he is personally known to us, and before publishing his letter we satisfied ourselves that he had a fair reason for asking for his name to be withheld.

That he *was* personally known to us, and that he *had* satisfied us of his integrity, was clearly stated at the beginning of his letter, and we cannot therefore accept as justified the suggestion made by another correspondent that we have published an anonymous letter.

On an average, we receive about eighty to a hundred letters a week addressed to the Editor, the large majority being requests for information.

In quite a number of cases readers offer comments on THE AERO-MODELLER. Most of them are favourable, and often helpful, suggestions; or constructive criticisms are offered, too.

These latter are very welcome, and in a number of cases have been acted upon, resulting in improvements which in due course have been favourably commented on by other readers. We are at all times pleased to receive suggestions, *and* criticisms, provided, of course, that the latter are justified and offered in good part.

We mention this last proviso because of the type of correspondence we have lately received from one particular reader. And in this connection we would draw the attention of our readers to the "letter from the Editor," printed on page 221 of this issue.

The formation of the National Guild of Aero-modellists, with the object of providing third-party insurance for all its members, has met with universal approval. Noted as a "stop press" at the end of our last month's Editorial was the information that Major C. E. Bowden had shown his approval by consenting to become Honorary President of the Guild. A photo of Major Bowden's membership card—No. 1—and an illustration of the Guild badge, together with some notes of interest to members, appear on page 215 of this issue.

Major Bowden was just on the point of returning to Gibraltar when he notified us of his valuable support to the N.G.A. and sent us the following telegram: "Consider scheme will make it easy for all aero-modellists to effect most essential insurance to protect themselves and the movement."

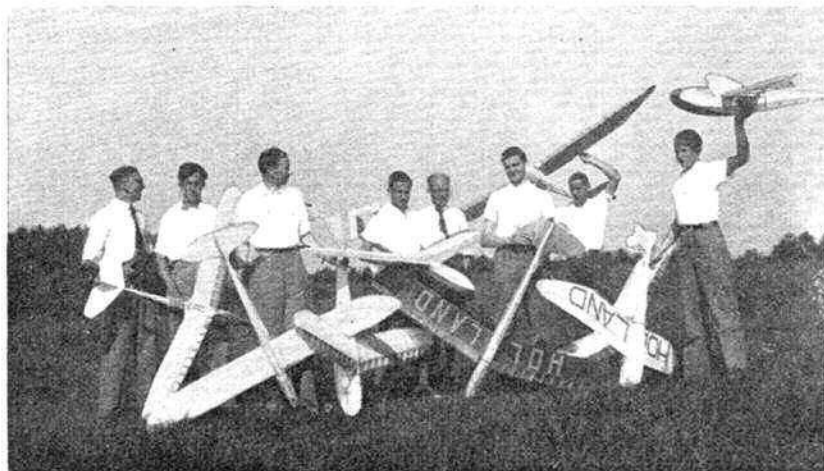
How great was the need for this scheme is shown by the fact, revealed in the S.M.A.E. Hon. Competition Secretary's report for 1938, that 147 petrol 'planes were registered with him—out of a number that *must* run into four figures for the whole country.

We are pleased to note that a considerable number of petrol 'plane owners *have* already become members (we are writing early in February, with the scheme only announced a few days ago), and that the total of members already enrolled has passed the thousand mark.

Shortly the new S.M.A.E. Area Scheme will come into force, and we trust that it will be well supported. As many readers know, this has been to a large extent developed by the initiative of The Provincial Aero-modellists' Debating Society, which we now understand is about to go out of existence, having fulfilled the purpose for which it was founded. On the face of things this seems rather a pity; so before it dies we feel that suitable acknowledgment should be made of the work done by the Society, and in particular to Messrs. Rushbrooke, Haigh, Smith and Ian Moore, to name only four of the many aero-modellists who enthusiastically supported its work.

Our next issue will be a "Wakefield Number," containing several articles especially written by experts on this type of model. In addition, we shall *again* be giving away a free inset—with two large plans of "Wakefield Designs."

THE EDITOR.



MODEL AVIATION IN HOLLAND

By J. VAN HATTUM,
A.F.R.Ae.S.

The Netherlands team which in 1938 won two cups for gliders in Belgium.



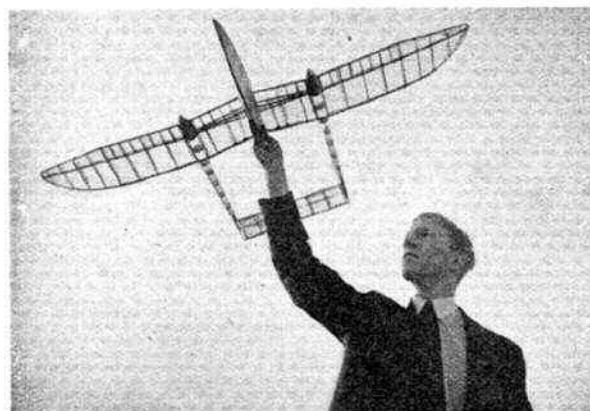
If one wants to get a clear picture of model aviation in a country, one must look further back than the present day. Ford may have said that history is bunk, but to many other worthy minds history has contained useful lessons. Especially to the aero-modeller is history important, as it is through experience, either his own or that of others, that he learns his trade. It is the same in organisation. Therefore, we may look at the beginnings first.

As in many other countries, model aviation in Holland started as a side-line in the old kite-clubs. (Remember the famous K.M.A.A. in England). Those who were of a more enterprising mind cut loose from the string that had held so many of their products and sent their models out on their own; to fly or not to fly, as the case might be. To the modern builder the distinctions between the models of those distant but glorious days are not great. I presume that the differences must have been considerable to the insiders. To me they seem not much more than either twin-pushers or single-screw jobs, tractor or pusher. There were more arrangements, but they escape my memory. Personally, I always very much disliked the twin-pusher. My first model was of that type, but I never flew it; I disliked and distrusted it so much. The next was a spar tractor, and it flew quite well, which was bad, for it made me think that I knew all about it. It took me six more models to realise I did not.

The war more or less stopped the building of models, as it was next to impossible to obtain the necessary materials, such as rubber and the proofed silk which was considered essential. So the sport languished, and had to be restarted in 1920. That was just about the time I started to take an interest in models, and with fear and trembling at my audacity to enter the small band of terribly clever people, I joined the Club of the Hague in 1923. It is the fashion to talk of the "good old days." (Those were the days you know, old boys! No floating about the sky on those ridiculous thermals you hear people talk about nowadays! Real he-man flying, with no fuselage but your own hand to take the impact of the braking motor!) But, looking at it from a distance of only 15 years, there seems to have been a lot of fun. Our secretary held a technical post with K.L.M. and took a great interest in aviation in general. The walls of his little room were covered with real photographs of aero-

planes. Sometimes there were discussions amongst the high and mighty; in which I dare not join, but listened with bated breath. I thought nothing of cycling for an hour, from where I lived in the country, to call on him just to ask a question that had cropped up during the construction of one of my models. Very often I did not even find him in.

But let us get back to our story. The Hague Club had also a few rivals, notably Rotterdam and Haarlem. Challenge cups were competed for. Records were broken. Then came disaster.



A G-1 type twin fuselage tow-line glider.

None of the three principal clubs had bothered to attract young boys, who could have been trained and taken the place of the older members. Consequently, when the latter took up different positions and moved to another town, or had no more time to spend on models, these clubs simply faded away. I happen to know, for I was one of the few who remained behind, not sufficiently experienced to continue on my own, yet too keen to take up another hobby. So I built and flew models, and sometimes looked up the former secretary, who could spare little time on them. (He is now, I am glad to say, a highly placed technical official with K.L.M.'s. I hear that he still builds models occasionally).

From 1924 to 1934 model aviation was neither dormant nor dying; it just wasn't at all. But as I spent part of that time in England, it did not greatly bother me. Soon after my return in 1934 I joined the drawing office staff of the well-known Koolhoven firm. (Mr.

Frederick Koolhoven built the FK-8 observation biplane for Armstrong Whitworth during the war. He also designed the famous BAT "Bantam" (single-seat fighter). For a time I more or less forgot about models. However, conditions were changing.

The Netherlander is very interested in aviation, although this interest does not take a very practical form. But he fully realises that it is an important factor in civilisation and defence. So when in December, 1934, one of the K.L.M. machines made a magnificent return trip, Amsterdam—Batavia, in less than a week with one of the old Fokkers which cruised at less than 150 m.p.h. this feat seemed to seize the imagination of the great public. Everybody became air-minded. And this applied particularly to the younger generation. Aviation clubs were formed in many towns.

Now, these clubs were the pioneers of the present movement. But, curiously, they did not get together with the idea to make models, or glide, or even fly aeroplanes. They would have liked to do so, but they did not have the money or the opportunity. They merely joined because they were all interested in aviation, and hoped to learn more by interchanging ideas, hearing lectures, visiting aeroplane factories and aerodromes, and so on. However interesting all these subjects are, they cannot fill the whole programme. And some of the clubs at last started to construct models.



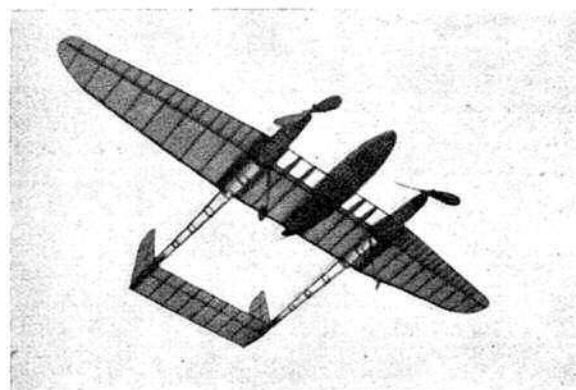
A typical example of a Dutch sailplane, span about 5 or 6 feet.

In 1935 a small aero show was organised in the big towns, and there I saw models exhibited and being made. Generally speaking, it was fairly poor quality. My own interest was not dead yet by any means, so eventually I offered my services to the Royal Aero Club of the Netherlands. And they put me in charge of the technical development of model aviation.

For the Royal Aero Club had realised that the younger generation was genuinely interested in aviation, and they had introduced a junior membership of the organisation. A special committee, the Central Junior Committee (popularly known as the C.J.C.), was set up to control the activities of the groups of local junior members, who formed a club. This was in the autumn of 1934, so when I decided to do my bit I could take advantage of the fact that the movement itself had been already organised. Even so, model aviation had barely reached school-going age.

Before I confine myself to the purely technical aspects of model aviation in Holland, I must give a few more details of the way the movement is organised.

About 40—50 clubs exist, all of which are affiliated to the Royal Aero Club. Maybe affiliation is not the right word. As a rule they are founded with the help and sanction of the Royal Aero Club, and there is permanent and strict supervision of their activities. The maximum age of the members is limited to 23 years. When a member reaches that age he can either become a full member of the Aero Club, or transfer to the Society of Model Aeronautical Engineers, an organisation founded over a year ago to cater for the older enthusiasts.

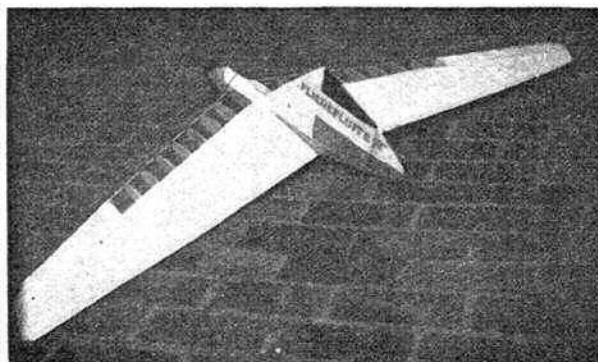


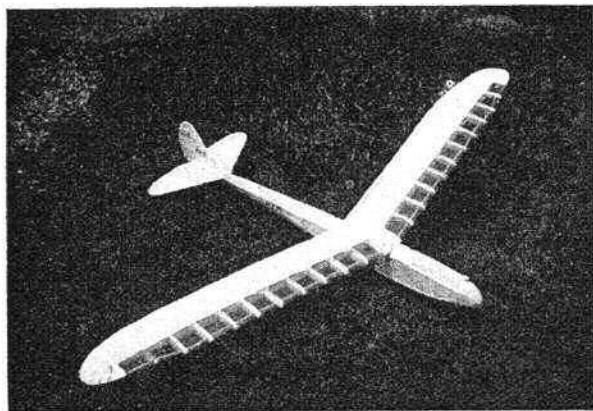
A G-1 type twin-motored model.

Therefore, the average age of junior members lies between 14 and 18. The clubs appoint their own chairman, secretary, treasurer, and council, and also a technical officer, who is responsible for the building and development of model aeroplanes. The members pay their subscription to their treasurer, who sends part of this sum to the C.J.C. for affiliation fees, and an aeronautical weekly, which is sent to all the members. The organisation being centralised, the clubs are relieved of a great deal of correspondence and travelling expenses, all of which is taken care of by the Secretary of the C.J.C., who, since the beginning, has worked untiringly for the movement.

The centralised character of the organisation is a natural result of the fact that the whole movement had to be started anew. Therefore, those who took charge of it could build soundly from the very groundwork. There are no unaffiliated clubs worth mentioning. A few have tried to attract members by high-sounding promises, but either they have left the field or the members have been absorbed in the organisation. For, not only does the system work efficiently, the fact that it is sponsored by

A record-holding tailless glider, 11 min. 3 sec., from tow-launch.





The "Don Quixote," described by Van Hattum as one of their best tow-line gliders.

the Aero Club ensures the support of all the big concerns, such as the K.L.M., Fokker and Koolhoven, the Flying Schools, the Royal Netherlands Army Air Force, the Naval Air Force, etc. On many aerodromes our members can either get in free or with a reduction by merely showing the slip proving that they have paid the current month's contribution.

The C.J.C., which I have already mentioned, is the committee set up by The Royal Aero Club, and is, therefore, the highest authority so far as the movement is concerned. It consists of ten members, five of whom are appointed by the Aero Club, and five chosen by the junior members at the annual general meeting. The chairman, secretary and treasurer of the C.J.C. are appointed by the Aero Club.

Therefore, when I offered to help the clubs with the building of model aeroplanes which, at that time, was not regarded as more than one of the many activities of the clubs, the whole organisation was ready. It took me some time to convince the powers that models would eventually form the greatest attraction for new members, while it would be the only means of occupying the boys without incurring great expense. Also, it would prepare them for taking up gliding later. Events have proved that this was quite true. Of our members 75 per cent have built at least one model. However, our object is not to exclude other matters of interest; in fact, during winter, much time is occupied by lectures and special meetings, where propaganda is made for the movement.

Now we will see how the technical development of model aviation has taken place.

In the beginning, there was a great lack of information, plans and the experience necessary to guide the organisation on to the right lines. The only textbooks and draw-availables were of German origin. It must be kept in mind that Dutch and German, although differing in a great many particulars, are very similar. Therefore, a boy who knows a little German, will get more out of a German book than he would, with only a superficial knowledge of the language, out of an English book. Hence the first models were of German type. They were gliders, designed to be launched by tow-line, as the ground is generally flat, and in most parts of Holland there are no hills to launch from. The Winkler Junior and the big Winkler were the first, soon followed by the Baby and Strolch (Wanderer). Fairly soon people began to produce their own designs, most of which were inspired on the models mentioned, but our own methods of construction and lay-out were being developed. At present

we have native types fit to serve for beginners, while for the more advanced there are also pure Dutch designs. The gliding models and the flying itself are very highly developed in Holland to-day, as we hope to show in England in the summer, when the King Peter Cup is competed for. The photographs in this article will give an idea of the types and construction used.

Rubber-driven models are still in the minority. This type of model is fairly difficult for the beginner, especially as it requires a fair amount of flying technique. Here, again, the lack of experienced instructors proved a great drawback. As the rubber-driven model was the only type at the time with which I was familiar, I began by training one club in making and flying them. Also I published a small book in which a simple model was described in detail. Materials were imported by the dealers, and from then on this type has attracted more and more attention. We have always followed English and American lines, but after Fillon's fine Wakefield victory in 1937 the Franco-American diamond fuselage has been very popular. A model on these lines established our rise of ground duration record of 5 min. 30 sec. The Wakefield Class is very popular amongst the more experienced, and this year will see a good many entrants for the elimination trials. We propose to run these during a series of standard contests, in order to avoid the element of luck as much as possible. From the photographs one can see that the models look business-like and well built up.

Our technical organisation is run along the following lines: The C.J.C. has set up a technical sub-committee, of which the writer is the chairman. This committee is composed of practical aero-modellists, and meets from time to time to draw up the rules for contests and records. All clubs possess a technical officer, who must send his monthly report to the committee, stating the number of models built and flown, the new designs brought out, contests organised and taken part in, the day the boys meet, etc. Building is either individual or in groups in the club's workshops. The T.O.s have now followed a special correspondence course, which is designed to train them for the job of instructing the beginners and more advanced members. All this work is, of course, done voluntarily.

Our contest programme will be enlarged this year, but the general scheme will remain the same. There are, first, club contests to select a representing team. The teams of the various districts then compete, and the winners enter the final. The victors are regarded as the year's champions. There are, therefore, two winning teams: with gliders and with rubber-driven models. In the various phases of this contest there are also individual prizes and challenge cups.

We have also introduced A, B and C licences, which are awarded for achieving a prescribed performance. The "C" is given for flights of 5 min. and 2 min. with the same model.

A development of this is the AB and BB licences. These are awarded for new designs which have qualified for the ordinary A and B licences. Detailed drawings must be included with the application. The AB may be regarded as a provisional or experimental C of A, while the BB releases the design for general use.

Sound work on large gliders, and development of rubber-driven models is our present programme. We are getting the public interested in our hobby, which is something!



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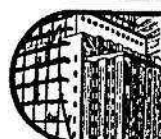
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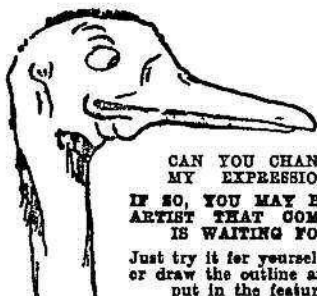
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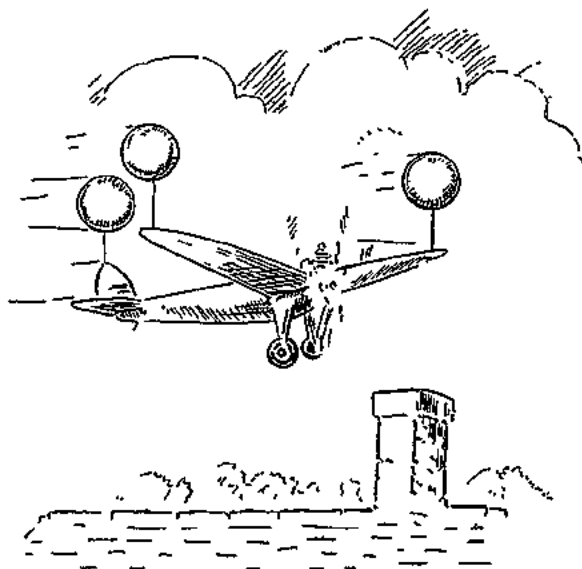
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SOME THOUGHTS ON

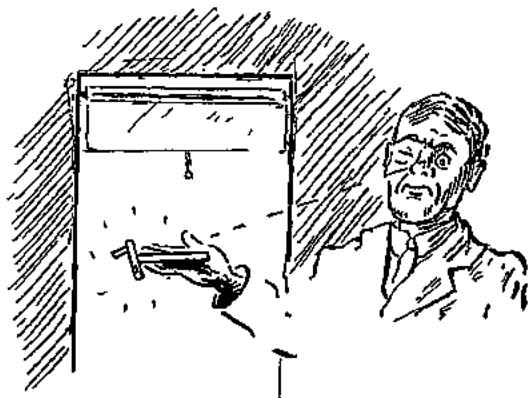
By LAWRENCE H. SPAREY



... Shall we aim at novelty of design?

AS a builder of model petrol-engined aeroplanes—and the engines which fly them—I have experienced, in common with most of our clan, a vague dissatisfaction with the necessary limitations which must be imposed upon this type of model aeroplane. We are like the possessor of an eighty-mile-an-hour motor-car, confined for ever in a thirty-mile speed limit; in other words, our machines are capable of a much better performance than we may ever allow them.

The rubber-driven model aeroplane is chained by no such fetters. Every effort of skill and design may be concentrated upon its production; the builder, meanwhile, being conscious that when the time comes to prove his theories in the field, he may "put on the turns, and let her rip." Should his model prove a good one, he will, with comparative equanimity, watch it wafting out of sight, his only thought being of the long chase he must now undertake to retrieve it. Imagine the owner of a



... our crankshafts, which are out of line.

petrol-driven machine in a similar plight! Only once have I seen such a one, and the remembrance is something I care not to dwell upon.

For all practical purposes, therefore, a gas model which will stay in the air for sixty seconds is as good as one which will fly for twenty minutes, for only on very

rare occasions may we set our time switches for a duration of over one minute.

It may seem to the casual reader that the writer has a dislike for petrol-engined model aeroplanes. Let me hasten my reassurances. They have been my children, my ambition, the masters of my spare time for more years than I care to remember. It is because I love them that I tell of the afflictions which weigh so heavily upon them.

For what, then, may we aim? Altitude? No! For the resultant glide may certainly land us beyond the zone of safety. The same considerations affect duration flights.

We may achieve, by careful adjustment, the perfect control of circular flight, yet, let once our model reach the thermals, or be caught in the wind, we may see it drift away in ever fainter spirals.

Speed? This also is taboo, firstly on account of smash-up—that grave risk with which all speed machines contend—unthinkable for expensive petrol engines. Secondly, and more convincing still, because the rubber-driven model is so much more capable of speed than the gas model. Within the fuselage of thirty-six-inch span rubber-driven speed machine, one horse power may be concealed. When a similar model aeroplane, driven by a one horsepower petrol engine, leaves the ground, may I be there to see it!

Shall we aim at novelty of design? New departures? Workmanship? Certainly these will do. Yet, we must remember, we are here concerned with petrol 'planes, and none of these virtues may be confined solely to them. May not a quarter of an ounce of ingenuity on a light duration 'plane be more meritorious than four ounces of ingenious engine-mounting?

This is a delightful occupation, this asking of one's own questions and supplying one's own answers, especially as one may know the answers first, and frame the questions to suit, but, seriously, I think we have, in the last paragraph, hit upon the reason for the petrol 'plane's enchantment. It lies more in the making than in the flying. There is a thrill in good design; apt materials; fine workmanship; a thrill in the knowledge that our machine could fly for as long as we fed it with petrol—though we must tether its proud wings with the chain of expediency.

There may be many among my readers who design and make their own engines. Those fortunate ones with the facilities for such undertakings have, indeed, found their own justification. Although, surely, they worship at the shrine of difficulty, yet difficulty overcome is, like virtue, its own reward. Proudly may we stand with our failures around us; our pistons which do not fit; our crankshafts which are out of line, our spoiled castings and our stripped threads—when we hear the first machine-gun burst from our engines running upon the bench.

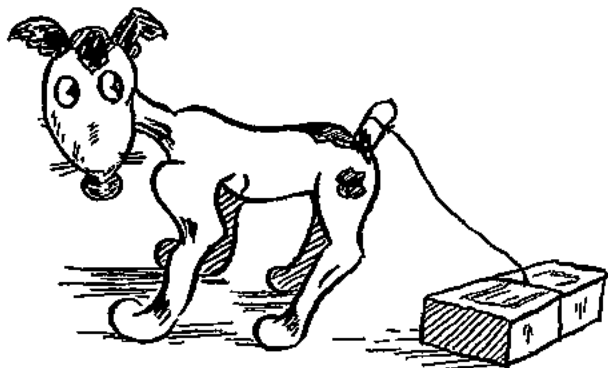
In common with our less fortunate colleagues—those who must buy their engines—the pleasure of designing and building our aeroplanes then awaits us. What opportunities for stark simplicity or ingenious complication! We are not hampered by the overmastering demands of lightness, as are our duration 'plane enthusiasts. An ounce extra and a good job may be our keynote—if a good job should call for that extra ounce.

MODEL PETROL PLANES

We may here, I think, touch upon what many consider to be the true and useful sphere of the model aero engine—the flying scale model.

In these days of advanced model aeronautics, when every interested periodical publishes good, stable designs, there is little merit in simply getting your petrol model into the air. The days when flying petrol planes were a novelty are gone with yesterday. We may not try for duration; we may not try for altitude; we may not try for speed. How, then, may we prove our worth as designers of petrol aeroplanes? The flying scale model is the answer.

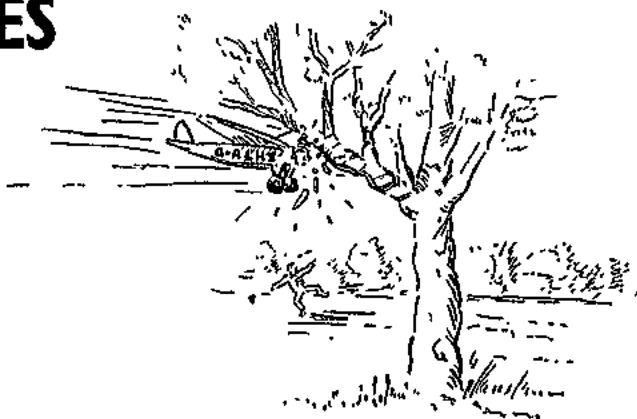
It is true that flying scale models form one of the most difficult branches of the pastime, yet this should be an incentive rather than a deterrent. Furthermore, small aero engines will aid us in several important ways. They will enable us to design machines with some attempt at a



... that scale bugbear, tail heaviness!

scale distribution of weight. The presence of a comparatively heavy engine in the nose of the machine will rid us of that scale bugbear—tail heaviness. Also, what possibilities for perfect trim does the placing of the ignition battery offer.

The constant power-output of the small petrol engine is perfect for the scale model aeroplane. Here we may use the thick, slow-flying wing sections, as we have no initial, mad burst of power from a rubber motor to throw our machines into the stall. Speed will be constant. Therefore we may arrange our "line-up" with the certain



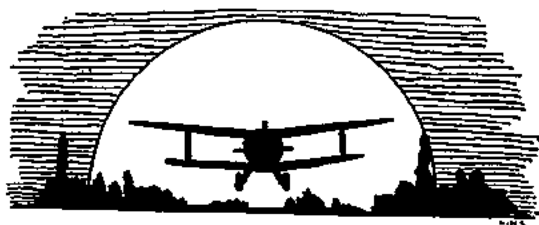
... the remembrance is something I care not to dwell upon!

knowledge that it will be suitable for every moment that the machine is in the air. Elevation may be adjusted for that slow, flat climb which is so spectacular in scale model flying, without our wondering what will happen when the power is too great or too little.

Finally, a robust machine may be constructed. A flimsy scale model is, at best, a very short-lived creature, rivalling its aerial colleague, the butterfly. The many small parts which a scale model must carry render it particularly open to mishap. Therefore, build strongly.

Had you stood, as I have done, in the calm of a summer evening, and watched the graceful evolutions of a well-trimmed scale model, petrol-driven biplane, you would desire—if you possess the heart of a true aeromodeller—to own just such a machine. The graceful rise, the steady flight, the long, slow glide, and, over all, the regular purr of a well-tuned engine, so real that at times one could imagine that the distant manoeuvres of a full-sized aeroplane were being witnessed.

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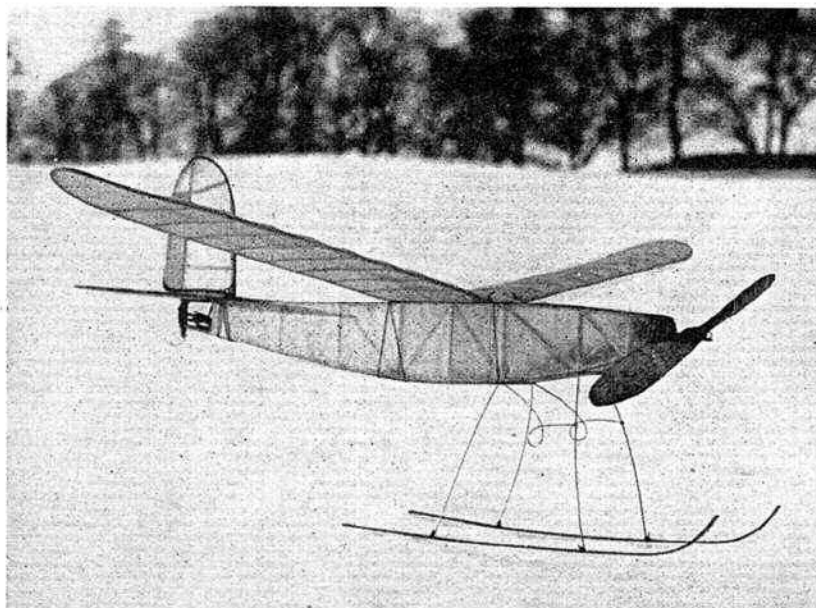
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A MINIATURE SKI-PLANE

By

A. HARCUS CUTT



I WONDER how many aero-modellers in this country have flown a 'plane fitted with skis? Not many, I should imagine. Of course, in countries like Canada, where snow lies for a good period each winter, there are many ski-planes, but surprisingly little is heard of them. For some time past I have been interested in the possibilities of such a plane, and the recent heavy snowfalls gave me an opportunity for some experiments.

I did not expect the snow to lie for long, so instead of building a plane specially for the purpose I merely adapted an old general purpose model. This model was once a Lincol, but it has been altered so very often that most folks would hardly believe that fact. The wing section is now under-cambered, the undercarriage is altered so as to give a better take-off in long grass, a built-up streamline stabiliser and rudder fitted with a trimming tab are now used, the fuselage is widened at the back, and so on. However, to revert to the main topic, I decided to fit this 'plane with skis, and they had to be suitable for fairly soft snow. This meant a fair amount of bearing surface would be required to keep the 'plane from sinking too much. Bamboo was decided upon for several reasons. Although comparatively heavy it is so strong and springy that a very thin strip can be used. Actually I used $\frac{1}{4}$ in. \times $\frac{1}{8}$ in., and this proved to be amply strong enough. Again, a hard ski offers far less friction than a soft one, as you will guess if you ever tried tobogganing. Bamboo is also fairly easy to bend, so as to give an upturned toe, and this is very necessary. I have no doubt that hard balsa would do quite well for very light 'planes, but I think that bamboo is much to be preferred.

The wheels are removed from the undercarriage, and this acted as the front support for the skis. To make them as easily interchangeable as possible they were fitted with short pieces of brass tube which fitted on to the wheel axles. These were bound to the bamboo by copper wire and then soldered. To avoid friction with the snow the wire was threaded through four holes drilled in the ski, and shallow grooves were cut on the under-side so that the wire lay flush. A thick coat of Durofix made

everything secure. At the rear ends the skis were supported by a piece of 22 S.W.G. piano wire formed into a U shape, and carried in the rear hooks of the undercarriage fixings. The ends were bent at right angles and secured to the skis in the same manner as the front supports, except that the tubes were dispensed with and the whole fixing made rigid. No tail skid was used, and the skis were made long enough (15 in.) to enable the plane to balance on them when stationary. The weight of the skis and rear fixing was a good deal under $\frac{1}{2}$ oz. The accompanying sketches should be quite clear.

I was rather scared that the friction of the skis on the snow would cause the 'plane to nose over. However, a few test glides reassured me, and I gave her about 150 turns. The result was a lovely long, slow take-off, a short flight at a height of about three feet and a graceful landing, with the 'plane coming to rest in an upright position. A smallish propeller was used, but even so a nice climb to about 80 feet and a perfect flight of 45 seconds was easily obtained on only 400 turns. In fact, the performance was well up to standard, and vastly more interesting.

With hard snow and a fair number of turns the take-off was very fast, and took only a little over a yard from a standing start, while on landing the plane would ski along for about 50 or 60 feet. Only on the very softest of snow was there any difficulty in taking off, and she would sometimes require a run of about 60 feet. I'm afraid we were much more interested in the "ski-ing" than the actual flights, and often the 'plane was purposely under-elevated just for the pleasure of seeing her swoop over the snow.

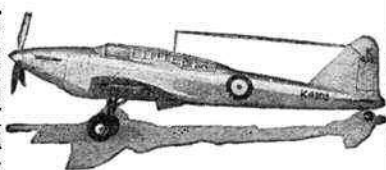
To test the strength of the skis the plane was adjusted for a stall, and even when the "gliding" angle approached the vertical no damage was done on landing. In fact, snow would seem to be ideal for testing a new 'plane. The skis, projecting in front, form ideal shock-absorbers and protect the propeller.

I now look forward with interest to the next fall of snow. Even a good freeze would be useful, for I do want to test that 'plane on the ice.

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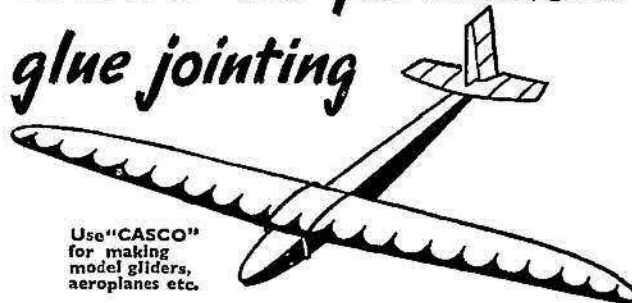
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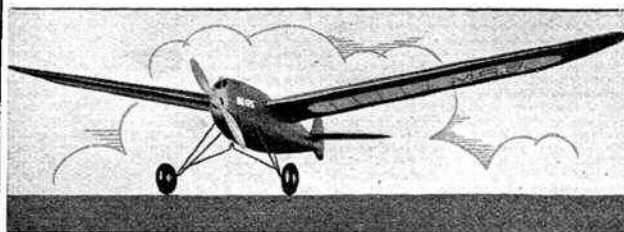
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THE NATIONAL GUILD OF AERO-MODELLISTS

SOME NOTES—

By DUDLEY SHIP, Hon. Sec.

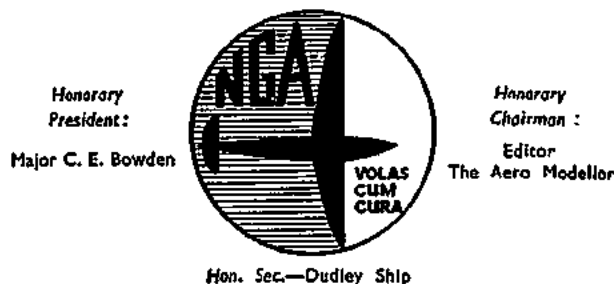
FIRST of all I must offer my apologies for the delay in despatching the first several hundred members' transfers and membership cards. It was difficult to estimate the rate at which applications would come in, and they *did* come in at a very fast rate. However, by the time these words are being read, all but the very latest applicants will have received both transfers and membership cards.

And now to answer a few queries. . . . Members who fly GLIDERS enjoy exactly the same insurance protection as those who fly PETROL PLANES or RUBBER-DRIVEN MODELS. . . . Two or more members of a family, say father and son, who share a copy of THE AERO-MODELLER each month, may still continue doing so and be covered, provided that EACH has filled in a membership form and has made a separate application. . . . Club secretaries may collect the forms from all their members and send in the batch with one payment to cover all the subscriptions. . . . Even if a member is already a regular reader of THE AERO-MODELLER he should still fill in and deliver to his local newsagent form No. 3. . . . And that reminds me—of the first 350 applications I received, 25 of them were



Here is a full-size reproduction of the transfers, in black and gold, of the Guild Badge, sets of which are given to all members for affixing to their models.

The National Guild of Aeromodellists



Honorary
President:

Major C. E. Bowden

Honorary
Chairman:

Editor
The Aero Modeller

Hon. Sec.—Dudley Ship

This is to certify that

MAJOR C. E. BOWDEN

has been elected a member of

The National Guild of Aeromodellists

and has agreed to abide by the under
noted two rules of the Guild—

1. To take every possible precaution, whilst flying Model Aircraft, to prevent any damage to persons or property.
2. To maintain and extend the spirit of Model Aircraft Flying in the high traditions created by the founders of this great Sport

M. No. I

Reg. No. N G A. I.

Signed.

Dudley Ship
Hon. Sec.

incomplete. . . . Form No. 2 had not been completed. Now do please help my staff by completing both forms so that we can keep our records properly. Thank you!

Several applications from readers who do not belong to a club have contained a subscription to the Wakefield Fund. This seems an excellent idea, and so I have opened a separate banking account with Barclays Bank Ltd., Bournemouth, in the name of the Guild, into which I will pay all subscriptions I receive in this way. When the fund is closed I will then send the amount in the bank, together with the bank pass book, to the S.M.A.E. hon. treasurer, who no doubt will acknowledge same in the appropriate monthly report of the society. So come along you "Lone Hands"—any amount is welcome, however small.

A considerable number of readers have written me very nice letters, which I much appreciate. One, from Mr. A. Chapman, hon. secretary of the Nottingham and District M.A.C., says, "at a meeting of our club last night it was decided that every member of the club should join the Guild." Well, that sounds about the simplest and sensiblest rule any club could make, and I trust that all other clubs will do likewise.

Then from Mr. Greenhalgh, of The Lancashire Model Aircraft Supplies, comes the following: "Thanks to the good offices of THE AERO-MODELLER we are offered an insurance at practically gift rate, and in my opinion the thanks of all aero-modellists are due to the Editor in bringing forward this cover. Also, I would say that the trade owes still greater thanks for the above. A large amount of capital is already invested in the model aircraft industry in this country, and any restrictions or bans imposed on the flying of models, due to flyers not being covered, would have serious repercussions to business, and so—thanks a million."

So there we are! Everybody thinks it's a jolly sound scheme, and all that now remains is for those readers who have not yet joined to complete the forms on the back inside cover of this issue, and post them off to me as soon as possible. The full terms of the policy were published in the February issue. The policy is on Lloyd's, and covers every member of the Guild whilst flying any type of model. Full details were given in the editorial of the February issue too. Always remember the Guild motto—"FLY WITH CARE." . . . Good flying.



THERE are, of course, a number of towns in which are shops and stores supplying model aircraft material, but which are not advertised in this journal, and therefore the presence of these firms in many cases will be unknown to our readers. At an early date we hope to publish a list of as many model aircraft supply shops as we can obtain. Will those readers, therefore, who do not purchase their supplies from any of the firms advertising in *THE AERO-MODELLER* kindly send us a postcard giving us the name and address of their local supplier. Thank you.

Messrs. Atlas Motors, of 14 Oswald Place, Dover, announce in this issue the introduction of a British-made coil, "The Atlas-C.D.C." Recently we had one of these coils for test, and found it gave very satisfactory results. The current consumption across a 4-volt battery was a trifle under 1.5 amps, which compares with the figure of between 2.5 and 3.5, which is usually obtained with coils of this type. The coil is contained in a robust Bakelite case, and is fitted with sensible terminals. One interesting test we did with this coil was to try it with an old battery which would only give about 2 volts, and with a current as low as .25 amp. an effective spark was obtained with a plug gap setting of .020. Full particulars as to weight, etc., and specification, are given in Atlas Motor's advertisement in this issue—in which it should be noted the coil is guaranteed for six months.

Ashton Model Aero Supplies, of 58 Oldham Road, Ashton-under-Lyne, Lancs, offer an interesting price-list free on receipt of a stamped addressed envelope, and draw attention to a super shrinking dope they are offering at 6d. per oz. We have tested some of this, and find it very satisfactory.

The Hobby Shop, 357 Finchley Road, Hampstead, London, have recently introduced the "Sky Rider" kit, for which, they inform us, they are receiving a considerable demand. This kit is supplied with a real blue print, balloon type celluloid wheels and a ready-made airscrew. This firm is going to specialise in medium-size scale models, and invite applications for copies of their catalogue.

A short while ago we received a very nicely put up pocket handbook from Messrs. Caton Ltd., of 1 Mermaid Court, Borough, London, entitled "The Heart of Your Model," this applying, in their opinion, to its rubber motor! Several pages are devoted to instructions for the care of rubber, including a "Table of Turns" and some interesting information and a chart showing hysteresis loss of rubber strip. A calendar is provided and about a dozen pages, already ruled out, entitled a "Flying Record," in which the owner can record the length and weight of any particular motor, the number of strands, the number of turns and duration of flight. Following a list of dates of the S.M.A.E. competitions for 1939 are pages for a short diary and notes; a summary of expenses; a price-list of Caton's Super Power Aero Strip, and some notes on balsa wood. The "Aero-modeller's Record Book and Diary," offered by Caton's at 1s. 9d. post free, should be a most handy book to many aero-modellists.

A recent catalogue to hand is that from the Model Aerodrome, which runs to over thirty pages, with getting on for a hundred illustrations, for the sum of 3d. Several pages are devoted to adjusting and trimming of model aircraft of all types, following full specifications of the wide range of model aircraft kits offered by this firm, every one of which is illustrated in built-up form. Two recent petrol 'planes are the "Club Conquest," a 5 ft. 6 in. span kit at £3 10s., and the "Club Scientific," span 5 ft., length 3 ft. 6 in., at £5 10s. (which is certainly the most efficiently streamlined-looking petrol 'plane we have as yet seen). The undercarriage, anchorage and all wing fixings are totally enclosed.

Following are full particulars of four duration models, ranging in price from 4s. 6d. to 16s. 6d., and a wide range of flying scale model kits of all sizes. Model Aerodrome, of course, carry a very large stock of all classes of material, and are constantly bringing out new lines. This catalogue should prove of interest to many of our readers.

The Bennett College is well known for the enterprise of its director, Mr. Bennett, who is constantly adding new courses to the large number already available. At the time of the Crisis last September these were extended to include classes which were offered free of charge to police, firemen, air raid wardens, decontamination squads, etc., in A.R.P. work. Some time back we were privileged to be conducted all over this large establishment by Mr. Bennett himself, and were considerably impressed by this large undertaking, and the individual attention given to every student's papers. It might safely be said that, no matter what the writer's interests were, a course was available from the Bennett College, Sheffield, and as full information and advice is available at all times free of charge, readers are advised to seek their advice.

GLIDERS, AND HOW!

By RALPH M. BULLOCK

MY own glider will be such as to conform to all well-known principles, that is, streamlined to the maximum, and with a wing section that can be expected to give high lift at low speed, such as R.A.F. 82 and kindred wing sections, thick with under camber, and its well-known principles I'm about to deal with. The aspect ratio should be fairly high, about 10-14. The wing construction quite normal.

The fuselage of the usual former longeron class, unless by any chance I feel extra specially energetic, when it should be carved from soft "light" balsa, to attain pure monocoque, a doubtful advantage except in appearance.

If the model has a fin, this fin, or its trimming tab, will be kept straight while the machine is being towed up, by a connection between the towing hook and the directional trimming tab or rudder, which will return to its turning setting immediately the tow-line tension is released. If the model has no fin turns will be produced by the difference in incidence of the two planes. By this I mean that as a glider always turns towards the plane with the greater incidence when gliding, and away from it when being towed, this turning when on the line I will counteract by offsetting the towing hook. You see, it is very easy to reduce the resistance still further by arranging your model's side area so that a fin or rudder becomes unnecessary. This sounds absurd, but when you have considered it a little while, you will eventually see that, as there is no propeller, torque, or propeller area (side elevation), and as a model glider does not have to be steered once its is set up (rigged) for its turns.

Thus, if the nose is kept short, that is, if the C.G. is well forward, the main plane, whose .P. should very nearly coincide with the C.G., will be sufficiently far forward to allow the centre of side area of the side elevation to be sufficiently far back to completely do away with the necessity for a fin, and thus the total resistance will be considerably reduced. To the people who do not believe this I say, give it a trial with a small scale solid balsa model, and remember this is the only possible aerodynamic improvement that can be made beyond conventional sail-plane lay-out, as the machines have complete L ratios of round about 20. And to do away with the D

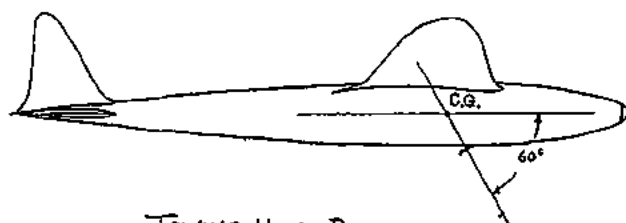
fin will improve on even this.

I am sorry to jump about from one thing to another, so now let us return to structural details. Formers can be diaphragms forward to advantage, both from the weight distribution and strength standpoints, also for ease of construction. The formers behind the main plane should be rings for lightness, and also because there is practically no load on them.

When I stated that the forward formers should be diaphragms I had not forgotten about the internal running trimming weight, which I mentioned in the last article on gliders, and suggest that if this is fitted the forward formers will have to be pierced to accommodate the shaft wire or line which carries the weight.

The nose should be extra strong to absorb the few bad smacks that it may receive in the early stages of trimming, or in the event of a collision, or badly stalled hand launch.

Two struts running from the bottom near the front up and back at about 45° , and having their lower ends



TOWING HOOK POSITION
FROM HORST WINKLER'S
WORK ON GLIDERS.

meeting on the centre line, and their upper ends anchored on the face of a former, and each just under a longeron, the spread of the struts being about 20° , these two short struts will do a great deal to stiffen the front of the fuselage against extreme and unforeseen shocks.

The bottom of the fuselage should be completely filled in with wood (balsa) for the first half of its length, if the model is paper covered. This shouldn't be necessary if the model is silk covered. The towing hook should be small and stiff, as it is liable to injury on one of the many landings, and great care should be given to its shape and manner of attachment, particularly if it is to slide or rock to effect a control movement mentioned in connection with the rudder setting.

The position of the towing hook in a forward or backward position is of paramount importance, and this I give in diagrammatic form, even though it is already published in Frank Zaic's Year Book, and H. T. Winkler's work on sail-planes.

I would stress the importance of the point that a more rearward position than shown would be fatal, and for myself slightly farther forward would make me feel a good deal happier.

If by any chance a glider is towed up with its hook too far back, when it comes off the line, which it may do quite early, the nose either swings or drops, as the machine is in a stalled attitude, in which position it is only held by the excessive pull of the tow-line. On this becoming detached the model dives, and thus starts a series of swoops or pheugoids, thus losing a lot of height before this motion gradually damps out; and will only eventually die down to nothing if your model has a sufficiently strong, or rather stiff longitudinal stability, which can only be procured at the expense of a reasonable sized tail-plane, moment arm, and $1\frac{1}{2}^\circ$ to 2° longitudinal dihedral. In making your general arrangement drawing of your glider decide on a span.

Draw in the leading edge, trailing edge, root chord, and tip chord, so that the 'plane has a taper based on a root chord, one-and-a-half to twice the length of the tip chord, with the tip chord always more than $3\frac{1}{2}$ inches. And these suggested taper ratios should only be exceeded on a very large model, or one in which a very high aspect ratio is used. The fuselage length is generally between .5 and .75 of the span. .6 is reasonable. And remember that on your fuselage length depends tail area of the cross section, and a large proportion of the wetted area of the complete model; also the fineness ratio of the streamlined shape, which unfortunately is bad in most sail-planes, being a great deal too high.

Now on your wing plan you can place the fuselage length, so that .2 of its length is forward of the L.E.

This should give you an ample length for your moment arm from the C.P. of the main-plane to the C.P. of the tail-plane.

The tail-plane area need not exceed 25 per cent of the main-plane area on a large model, but will rise to 30 per cent on small ones. The shape and section of tail-planes should be such that the leading edge is longer than the trailing edge, and the aspect ratio from 4 to 6. The section I favour is symmetrical bi-convex, of moderate thickness. The tail-plane can be set at either neutral, or plus or minus $\frac{1}{2}^\circ$. If the tail-plane setting is plus $\frac{1}{2}^\circ$ the main-plane will need more incidence to maintain the longitudinal dihedral, and the C.G. can be slightly behind the C.P., or, as an alternative, the centre of resistance can be high.

If the tail-plane is set at $-\frac{1}{2}^\circ$ the main 'plane can do with slightly less incidence and still maintain the requisite longitudinal dihedral. In this case the C.G. can be slightly forward of the C.P., or the centre of resistance low.

There seems to be no necessity for a lifting section tail, as a model sail-plane has no variables to contend with once it is free of the tow-line, and in this respect is easier to get into its one best trim, as against a flying model's compensating settings, which are needed to deal with the changes of incidence and speed caused by the gradually diminishing thrust.

The best part about model sail-plane designing is the fact that you can simply put the main-plane in the most convenient and efficient position, build the rear end light, and a very small lead weight forward, "and remember when I say forward," I mean right up to the nose, will produce good balance. If you are going to use an orthodox lay-out, i.e. with pin, this fin area should be decided by the aid of a side elevation in card, and the pin cut so that the machine's directional centre is not less than .58 and not more than .75 of the chord from the leading edge, and must be slightly above the C.G.

You will find that a sail-plane will only need a very small pin, unless the part of the fuselage forward of the main-plane is unduly long or deep, and this need never be the case, unless you have been careless with the weight to the rear of the planes, or have chosen an extraordinarily deep shape for the fuselage.

A very deep shape for the fuselage is not advisable, on the ground that it flattens the curve of the lines as seen in plan, increases the wetted area for a given cross section, and tends to over lower the C.G. and D.C., besides narrowing the wing attachment position, which throws an increase of bending moment on the main spars, and makes the fuselage likely to break on impact, and even though it reduces the interference between the main-plane and the fuselage, this is not very important, as the interference is mainly on the under side. Returning to the fin just for one further point, it can be of higher aspect ratio on large models than on small ones, to advantage in both cases.

The amount of dihedral need not be quite so much per foot run of half-span as is used on aeroplanes, and one inch per foot run is ample, and as little as .75 of an inch will do if the C.G. and D.C. are reasonably placed.

The incidence on sail-planes need not be more than $2\frac{1}{2}^\circ$, just so long as the C.G. is not forward of the C.P. If it is the model will have a nose-heavy tendency.

The German model sail-plane experts say that 2° to $2\frac{1}{2}^\circ$ incidence is about right. While on this subject of incidence I would like to point out to those who do not

already know this, that a sail-plane glides flattest in an attitude which gives it its best $\frac{L}{D}$ ratio, but it will have

a rather lower sinking speed at an incidence somewhat in excess of the one at which its $\frac{L}{D}$ is greatest. So that in

trimming, set the main-plane at $2\frac{1}{2}^\circ$, and the C.G. on the C.P., with the tail-plane at $+\frac{1}{2}^\circ$. Try for glide, and make minor adjustments, until from a hand launch you can get the greatest distance. Then proceed to move the C.G. back, or the rear edge of the tail-plane up or the best method, increase the incidence (and it is at this point when the fine incidence setting advocated by the Germans does not seem to tally with good aerodynamic practice), until the model shows just the slightest tendency towards an undulating flight path. Now move the C.G. forward, lower the rear edge of the tail-plane, or slightly decrease the incidence so that the undulating flight is just, and only just lost, when you will find that though the model does not glide so far, so fast, or so flat, that takes a slightly longer time to descend from a given height than it did when covering the greatest distance. This will be your best longitudinal trim for soaring flight. To this setting must be added the gradual turn, which makes the model circle, and thus remain in a limited space which we hope will keep it in any thermal it happens to contact, and besides which it will help to keep the machine in the judge's sight as long as possible.

The intensity of the turn need not be very great, or it will affect the lift of the model unduly. A circle of 50 to 100 yards in diameter, depending on the size of the model, is sufficiently tight, the larger circle for big models. Also it is less difficult to counteract a slight turning tendency when towing than a severe one. Due to the fact that we have no power weight to carry on a glider, a little extra weight and care can be expended in the way of doping and external finish. And on a large model, if the weight is slightly increased by extra dope, and a final coat of some glossy lacquer or varnish, it may easily pay for itself in the reduction of skin friction brought about by the polished surface, and there is always the odd twinkle in the sunlight for the benefit of those who might otherwise lose sight of the model on a good flight.

There is also another point, which rather returns us to the discussion on the incidence. A sail-plane (full size) appears to around in a tail high attitude. Now this is very safe (anti-stallish), but this apparent tail-high attitude cannot be attained with a small riggers incidence as advocated by the German experts. Unless the machine is flying in an up trend strata of air, which it can only do on a hillside near a cliff face, or in a thermal which is not flowing vertically. If your model assumes this tail-high attitude near the ground it can be adjudged that either it has too much incidence, and this compels the C.G. to be used so far forward that the fuselage may be offering an undue resistance.

Somehow during this preamble I have missed mentioning the plan form of the main-plane, the type of dihedral, and last but not least I have not yet dealt with the shape of the fuselage cross section, and of the position of exit of the main-plane from the fuselage. And even though I suggested in the final rigging $+\frac{1}{2}^\circ$ incidence on the tail-plane I did not mention that this is only to try to fly the tail-plane neutral, as there is down-wash on a glider, even though it may not be so intense as on an aeroplane, due to the absence of the slip stream.

Donor issue had this half-page removed.
I originally thought it to be a diagram
related to the text; but as the page has
the "Kindly mention . . ." footnote,
it was more likely an advertisement.

'Stormin'

This mention of ship sailing, or rather lack of it, leads us to consider the fuselage cross-section. Now this is a point on which aero-modellists do not see eye to eye, but if full-size sail-plane designers were not faced with the necessity of accommodating a pilot they would make their fuselage cross-section egg shape, with the pointed end downward (as this shape will best be suited to the direction of flow on a machine with its wing roots placed fairly near the top of the fuselage. As it is, they compromise with a very round ellipse, and I strongly advise model sail-plane designers to make their fuselage cross section at the point of maximum area, and for some forward and behind this point, either egg-shaped point down or elliptical; you see the egg shape point down gives nice broad shoulders in which to anchor the wing roots, and this shape lends itself admirably to good filleting of minimum size.

In considering the plan for the main-plane we are compelled by the fact that a high aspect ratio is needed, to avoid any shape other than one which will throw the load line on the C.P. position, which is generally at or about the maximum depth of the aerofoil section used. This indicates that if the load is to be carried in a manner which will give the front and rear spars a fair shape each at normal angles of incidence, and so that the rear spar may not be overloaded in the centre of pressure to the rear or fine incidence position, that the taper should be proportioned in such a manner that one-third of it is on the leading edge, and two-thirds on the trailing edge.

The type of wing tip that will fully satisfy this type of wing plan is one based on half of two elongated ellipses whose minor axes are proportioned according to the distances from the leading edge to the centre of pressure

turning edge from the same line, and if the major axes are chosen equally proportioned compared with their minor axes, the result is a very pretty and efficient tip, which can be got down very fine with a laminated wing tip, so that tip vortices are quite small. This type of wing plan and tip offer also complete satisfaction for a single spar or two spars converging from root to tip. The aerofoil sections should be carefully graduated, so that the taper, in depth as well as chord, is correct, and if the designer does not believe in a small but continuous wash-out from root to tip, he should change the section quite gradually towards the tip, so that the section turns from under camber to bi-convex with a tendency to a reflex. But this move necessitates rather sharper taper towards the tip, if the proportion of the section is not to increase in depth. This latter explanation is made in an endeavour to show just how an anti-stalling tip is evolved. But candidly I do not consider it necessary, as models should be trimmed so that they do not approach the stall sufficiently near to warrant such an arrangement of the wing sections toward the tip, besides which anti-stalling plan form and a slight wash-out should have all the necessary capabilities needed in model work.

The problem of dihedral is satisfied by a plain straight setting of the spars, but if anyone feels that a more powerful dihedral is required, polyhedral, or tip dihedral, is slightly more effective. But the type of dihedral which is calculated to give the strongest corrective with the least loss of lift, is half of a very elongated ellipse. This gives an almost straight dihedral, with the tips gradually turning up, so that the outer third of the half span is like a polyhedral wing with the angles blended into a curve.

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SOME LETTERS TO THE EDITOR —AND ONE FROM HIM, TOO!

LETTERS of general interest to aero-modellists are invited for publication in these pages.

Letters should be as short as is reasonably possible, and *must* be accompanied by sender's name (not necessarily for publication), and address. Anonymous letters, or those containing personal and vulgar remarks, will not be published. We mention this because of the extraordinarily rude correspondence we have recently received from one reader.

This correspondent complained of a remark made by "Clubman," said remark consisting of an expression of opinion. We replied that "Clubman," like any other aero-modellist, was entitled to his own opinion, and was merely expressing same.

Our correspondent chose not to accept this, and in writing further to criticise "Clubman," complained of a remark "Clubman" addressed to one of his readers.

In passing, it is only fair to "Clubman" that we record that no complaint has ever been received from any of the persons to whom "Clubman" has addressed himself; that in general his breezy manner of writing is appreciated, and that his postbag is growing steadily.

Not content with "complaining," our correspondent demands that we publish his letter "together with 'Clubman's' apology, meanwhile instructing him to write as promised."

To this letter we replied, quite courteously, suggesting that our correspondent should mind his own business and

cease interfering in ours . . . that in the absence of complaints from the persons to whom "Clubman" had addressed his remarks, we could see no call for an apology to be offered to a third party.

In his third letter our correspondent reveals his true colours. He doesn't like us! Not one little bit! He describes our recent Christmas issue as "lousy, and tripe." He says that our refusal to publish his letter indicates that we "do not welcome criticism when it hits the nail on the head." And then from vulgar language he descends to libel. This is how he ends his letter: "I have heard it said that midland and northern people are rather boorish, and your refusal to curtail uncalled for remarks rather confirms this statement."

No, we are not going to publish the name and address of this correspondent, because we know too well what would happen were the lads from Lancashire, and the lassies from Leicestershire, to meet him.

That any man should express himself so coarsely, and should libel some millions of his countrymen and women, is, in our opinion, deplorable. That he should be an aero-modellist . . . shame.

* * * * *

No, no, Mr. T——. It is *not* possible, so far as THE AERO-MODELLER is concerned, to "get away" with such impertinence addressed to

THE EDITOR.

DEAR SIR,

I was very surprised and pleased to receive your telegram offering fifteen guineas to the Wakefield Fund. On behalf of the S.M.A.E. and the affiliated clubs, and the Wakefield Fund Committee in particular, I thank you.

Yours faithfully,
H. YORK,
Hon. Press Sec., S.M.A.E.

DEAR SIR,

I have just read Mr. Morrod's letter in this month's issue of THE AERO-MODELLER, and it made me smile, but at the same time realise it called for a reply.

In the first case, to limit the amount of rubber in the machine, as suggested, to 25 or 30 per cent of the total weight, is immediately limiting the scope of the designer.

And what useful purpose would be gained by reducing the wing loading to 150 sq. in.? If this suggestion is merely to increase the wing loading there are much better methods. Surely, a better method is to leave the "Wakefield" specification as it is at present, and make the model carry a "pay-load." I suggest this should be about 25 to 30 per cent of the total weight of the machine. This would undoubtedly give a truer reflex of its capabilities and efficiency.

This is only in the nature of a counter-suggestion, however. Mr. Cosh's correspondent strikes the nail on the head in his remarks in this issue by quoting "that a number of people are always ready for drastic revision," the reason given being obscure and usually of no earthly use.

Mr. Morrod's last remark is quite uncalled for. He

refers to "paper bags full of rubber." If the model aeroplane clubs around Warwickshire turn these things out I can assure him that the boys round Halifax do not.

What can look nicer than a smartly finished Wakefield machine, with good lines and nicely streamlined? The most critical observer would not refer to it as "a paper bag full of rubber." Possibly he does not favour streamlining, which will no doubt account for the remarks. It is not a matter of deep mathematical import, but of *common sense only*, to see the advantages of a streamlined machine over a "slab-sided" one.

However, enough of talk of alterations to rules until we have won back the cup from the laddie that won it—with a streamlined machine.

Yours sincerely, LEN STOTT.

DEAR SIRS,

Regarding my letter published in the January issue of this journal, I would like to explain, regarding the "Frog Junior Competition," that at the Wimbledon Rally I did not regard the event as being any different to other competitions on the programme. It was not until some time afterwards that I realised that it was a full S.M.A.E. event. I wish to say this in fairness to the S.M.A.E., as the letter could create a wrong impression of the S.M.A.E., especially if read by, say, a newcomer to model flying. I hope this will help to clear up this point, as I have found that quite a number of modellers thought the same way as myself. Perhaps, to avoid a repetition of this little trouble, which may be possible, as the number of aero-modellers is increasing each year, some sort of formal presentation could be made

on the flying-ground, the trophy returned at the break-up of the meeting, and then the proper presentation as usual at the annual dinner and prize-giving of the S.M.A.E. Regarding "Mister Fairplay's" letter in the February issue (another of these *nom-de-plume* skulkers) surely it is the aim of any contest entrant to win the trophy, and the honour that goes with it. Supposing he showed it to a friend, he would not say to him: "Look what I won; its worth so much melted down," would he? Unless "Fairplay" is hinting at the cash prize. If this is so, all I will say is that I am sorry the S.M.A.E. could not carry out their desire to substitute goods for cash prizes. Finally, I seem to remember Mr. E. F. Cosh in "As I See It," saying that all anonymous letters (a *nom-de-plume* is just as bad in the case of one letter) should be consigned to the usual receptacle. Well, that goes for me, too.

Yours sincerely, W. R. FIELD.

SIR,

Further to my letter which you were good enough to publish in December issue. I wish to thank you for the rebuke which you tendered to Mr. Cosh in the following month. Really, Mr. Cosh ought to be sure what constitutes an anonymous communication, before charging me with resort to such methods. As for his suggestion that I should not attempt a "short-cut," but make my approach through constitutional channels, I would add that, if Mr. Cosh had any experience of the affiliated club to which I am attached, he would never contemplate using it as a channel of any kind, for any purpose! To attempt to pour scorn on constructive criticism, Mr. Cosh, is a waste of time. My criticism *was* constructive and *only* a reasoned, constructive reply has any worth.

In the February issue, Mr. Cosh returns to the attack and, unable to answer a question raised by one of his correspondents, passes on the question and asks, "Who knows the answer?" Well—I *do*, and here it is: When an event is popular ("universally popular," as worded in Mr. Cosh's version, being an absurdity) the promoters invariably sit back in their easy-chairs and congratulate themselves on their wisdom and organising ability, oblivious of the fact that time inevitably shows up faults and weaknesses in the structure of governing rules, and it is not until some layman, or laymen, sting the promoters into a sense of their obligation to maintain and increase the popularity of the event by overhaul and modernisation of the structure for which they are responsible, that the "mutual admiration society" is at last resolved again into its proper metier as a ruling body!

Other correspondence shows that I am certainly not lacking support amongst the general body of aero-modellists, and I repeat my suggestion to refer the matter to Lord Wakefield. Why not? Perhaps the ruling body is afraid lest it should find its patron more advanced and progressive than itself? Or, perhaps, it prefers not to trouble its patron—except when it requires funds?

Allow me to emphasise that I am fully appreciative of the great work done by the S.M.A.E., but I do resent *constructive* criticism being met by an affectation of scorn, instead of polite reason.

"Clubman" receives my letter in a spirit which is appreciated, and I welcome the views he expresses. As to his question regarding Wolverhampton Airport, I am not in a position to state whether or not this site is available for the trials. I can only restate my conviction that the site is ideal. Geographically, it has tremendous

advantages, considered from the standpoint of competitors as a whole, owing to its central situation. It does not have the disadvantages of Warwick Racecourse, as it is situated in the heart of the country, and access is by secondary road only. The airport is the site of the factory of Messrs. Boulton-Paul Aircraft Ltd., whose permission would need to be obtained. I believe the actual site to be absolutely unrivalled in the whole country. I can see no valid reason for holding the trials in the South, to the disadvantage of all but Southerners. The Midlands would be the most equitable situation for all, and this is doubly important this year, as the King Peter Cup Competition is to be held on the following day, and the two-day event will make distance to be travelled of greater moment than ever before.

"Moving Finger" has joined my attackers, and advises me to "study history." I give full marks to Mr. Bullock for gaining a place in every team since 1929, bar one. At the same time I am moved to predict that *no one name* will appear in as many as five consecutive teams in the future—nor even in three. I wonder if "Moving Finger" can figure that out? Also, I would dare point my finger to Hammond, who has "won the toss" seven times in succession. There's skill for you! No, you cannot deny that luck is the governing factor, and in support I will quote that painstaking theorist, Mr. Zaic, "On how to win competitions": "Use large dihedral, large tail, large prop., plenty of power, a weak mind, and strong arm, when you wind to the maximum, launch and pray." That, after all your theory, is what the game "boils down to." Unless we grow-up and encourage something better and worthier in the way of model aeroplanes. Away with Lady Luck and let us enthroned Skill.

ENTHUSIAST.

DEAR SIR,

I have read with much interest Mr. Howard Boys several articles on Beginners' Flying Scale Models, but Mr. Editor, here am I trying to get people to build scale models that will not only fly, but also give a very creditable performance in the hands of the novice, as well as those of the expert, and here is Mr. Howard Boys actually suggesting fitting an R.A.F. 34 wing section to a model.

A convex underside, mark you.

Surely we must know that in model practice a *concave* underside gives us a better lift and a better glide.

It is true we want to eliminate drag as much as possible, but lift is our chief concern, whereas full-size craft, especially of the service type, are more concerned with drag, hence their use of the R.A.F. 34 class of wing section.

Again, the service 'plane doesn't want too much inherent stability, as the pilot must throw the 'plane about in the air as he wishes, but *we* must have inherent stability of a very high order, as our controls are pre-set before flight.

These are just a few of the problems we are up against in designing scale models that will fly, and corrections have to be made, at the same time giving the full size appearance of the job as a whole, both in scale dimensions and also in flight.

Yours faithfully,

H. S. TOWNER.

DEAR SIR,

Since you mentioned rocket flight in your January issue, I thought it would be of interest to know that two

rocket driven 'planes have been made by Bryanston School A.C. One was made from German plans in Frank Zaic's '88 Year Book, and the other was a twin boom model. One penny rocket was used for each flight, and good results were obtained. The German designed machine had no landing gear, and so had to be thrown, just as the rocket fuse sizzled (very nerve wracking!), and a beautifully smooth right-hand climb-turn resulted, the ceiling obtained being very good. The glide left much to be desired, since the large twin rudders seem to put the nose down in any sort of bank. Incidentally, the single boom specified by the plans proved incapable of standing up to many of the landing strains. The home-designed machine had far lighter wing loading, and consequently, while the glide was inherently steady, the climb was only obtained by about 15° downthrust on the rocket, which tended to singe the tail-plane.

We found that 1d. rockets were more satisfactory than 2d. rockets, since the 1d. ones had more kick. In addition to this unknown quantities of stars and detonations are confined in the tuppennies, as evidenced by a most realistic mid-air description!

Hoping this has been of interest,

Yours faithfully, A. G. PARRY.

DEAR SIR,

I was very pleased to read the letter in your January issue from Mr. Albert H. Smith, in which he is good enough to refer to my article on airfoil data in somewhat flattering terms, which I do not feel I deserve.

Constructive criticism of this nature is of real value to the movement, and does help to get us somewhere.

Provided that Mr. Smith can obtain the C_L and C_D figures (in American notation for preference) at a wind speed of approx. 60 feet per second for any airfoil section, he can make suitable slow speed corrections for himself by the following method:—

C_L . Multiply the 60 ft./sec. figures by

·82 for 10 ft./sec.	·90 for 20 ft./sec.
·85 for 15 ft./sec.	·92 for 25 ft./sec.
·94 for 30 ft./sec.	

For C_D multiply the 60 ft./sec. figures by

1·46 for 10 ft./sec.	1·27 for 20 ft./sec.
1·38 for 15 ft./sec.	1·20 for 25 ft./sec.
1·14 for 30 ft./sec.	

L/D figures are obtained by placing the new C_L figures over the new C_D figures and working out.

Judging by his letter, Mr. Smith has both the necessary patience and slide rule!

Any section may be compared with any other by this method, whether they have the same zero lift angle or not. My point *re* zero lift angle in the article was that ordinary proportional correction methods could not be used unless the zero lift angles of the sections to be compared were the same. Hence the use of the present method, as the other was too limited in practice.

The above corrections are all for A. ratio of 6. Further corrections on the lines stated in my article for higher A. ratio.

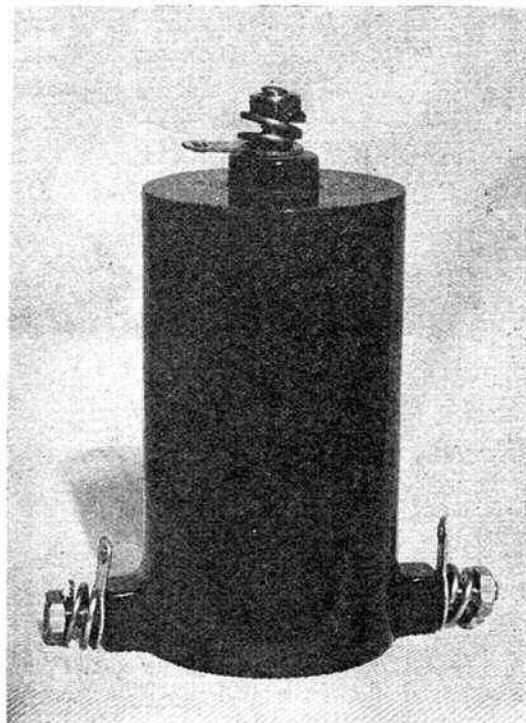
Mr. Frank Zaic's notes on slow speed airflow in his 1938 Handbook, as well as results observed upon models in flight, seem to be in substantial agreement with my figures, so that we may feel reasonably sure that we are working along the right lines.

I should be pleased to correspond further with Mr. Smith, if I can be of any service to him.

Yours faithfully, ARNOLD WATHEW.

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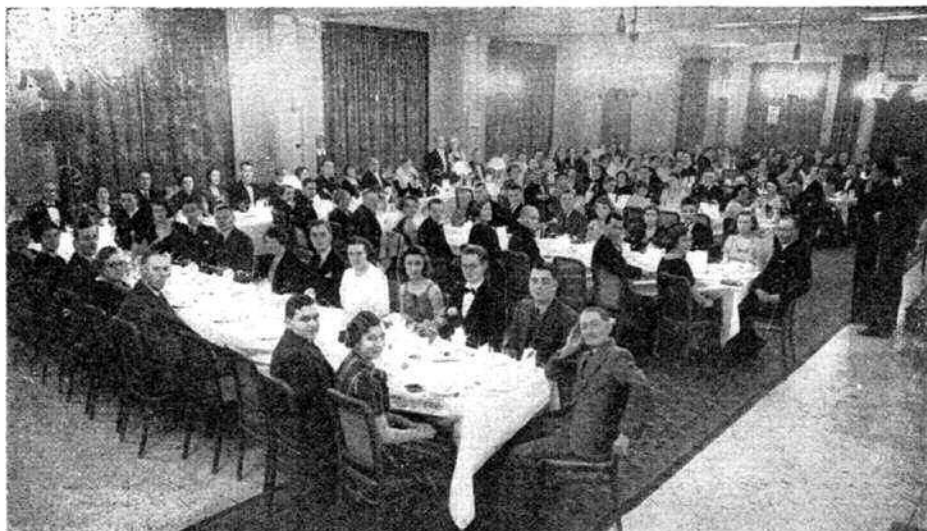
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UNDOUBTEDLY the highlight of this club's winter season was the Annual Prize-giving Dinner and Dance, held at the Empire Restaurant, Victoria, on January 13th, 1939, when 130 guests spent a very enjoyable evening.

It was unfortunate that the President of the S.M.A.E., Dr. Thurston, was unable to be present, owing to his attendance being necessary at the F.A.I. Conference, which was being held abroad this year.

However, we were compensated by the presence of his charming wife, Mrs. Thurston, who is a Vice-President of the S.M.A.E., and a considerable number of well-known aero-modellists from all parts of the country.

Mr. J. C. Smith, the first speaker, offered the toast, "Northern Heights," and during the course of a very pleasing speech referred to the early days of the club. It was interesting to note, he said, that, "formed in 1931, the club was fortunate in having as pioneer officer one 'beretted,' pullovered, rotund friend of mine, one C. A. Rippon. Incidentally, I hope to be excused for telling off one of the junior members of the club approaching Mr. Rippon recently, with the question: 'You are a self-made man, aren't you, Mr. Rippon?' 'Why, yes,' was the reply. 'Well why,' asked the boy, 'did you make yourself so much like Walt Disney's Sneezy?'"

"The other pioneer, Mr. H. C. Chatterley, happily also still with us, I can only describe as the 'Silver-tongued diplomat.'"

Teething troubles over, the club membership has grown to over 100, and new members are joining each week.

The club at the present day owes much to certain personalities, and I think they are entitled to be mentioned.

The ladies, Mrs. Worley and Miss Lumbley, are a serious menace to the men in the game.

Bobby Copland, known the world over; he broke the world's duration record whilst competing for the King Peter Cup, with a flight of 33 min. 9 sec.

Mr. White, of flying boat fame.

Mr. Hall—two-and-a-half years ago he was a novice, and recently broke the British R.O.G. record.

Mr. Bell, the present secretary, who has a difficult job following Mr. Chatterley in that capacity.

And then, as important, if not in the same way, Mr. Barnard, the vice-president, the club's "ladies' man," I understand!

THE NORTHERN

By "THE FANCIER"

And Mr. Coote, our chairman to-night.

Whilst last, but by no means least, we have Mr. E. A. Ross, known affectionately as "Bunny," and still more affectionately as "Mon Petite Bébé."

Concluding a very well-made speech, Mr. Smith amused the company with a good "story," and wished the club a successful season in 1939—a wish heartily endorsed by all present.

Followed Mr. C. A. Rippon, who before introducing Sir Robert Gower, made a short and typically modest speech, in which he said: "To-night I have come here with the express intention of thanking all those who have in the past helped the Northern Heights Model Flying Club to obtain the ambitious schemes they have set out for. They have run several galas, and hope to run more, but they could not have done it without the help and good feeling of others. Any success that the Northern Heights has gained has been on account of these good friends of the members of the Northern Heights Club. We have asked them to meet us here to-night, so that we can pass on that message. We have had our share of bad luck, but now, despite it being Friday the 13th, we look forward to good luck!"

"One of our members, Bob Copland, has had his world's record ratified by the F.A.I. Our membership is 110 and growing quickly. We branch out in different directions, and only hope that the club in the contest field in the future will show itself as it has done in the past. And we are always delighted to meet the 'Blackheath Boys,' and hope other clubs don't feel left out in the cold!"

Mr. Rippon then introduced Sir Robert Gower, K.C.V.O., D.C.L., O.B.E., M.P. (father of the well-known air woman, Miss Pauline Gower), who, in a characteristically witty speech, said: "I feel like a fish out of water. I have very little indeed to do with flying myself, although naturally I have taken a keen interest in the activities of my daughter. She was to have been with you to-night, but was unable to come through illness. It is rather strange for one who has taken an important part in public life for many years now to be known as the 'Father of his daughter'! Mr. Rippon has asked me to give my impression of the members of your club, and I think you are a jolly good lot of people, and people who are patriotic, because the future safety and security of our country lies in the air, and we are waking up to the fact at last that the air is second to none. And let there be no doubt at all that the members of your clubs are doing a very fine service in taking a keen and active interest in the design of aircraft, and I am very pleased to learn that you have made such great progress in that hobby. I am the personal friend of the Minister of State for Air, Sir Kingsley Wood, and I shall tell him that he must take a more active interest in the clubs

HEIGHTS M.F.C. PRIZE-GIVING DINNER AND DANCE

than he has done in the past. I feel sure that he will do so. I must confess that it has come as a surprise to know that your efforts are of a purely voluntary nature, whereas in other countries large subsidies are given to clubs such as yours. I think the S.M.A.E. is doing an important national service to this country, and I wish it, and the Northern Heights Club too, all good luck in the future."

The toast of "The Visitors" was most ably proposed by Mr. A. G. Bell, who, before passing to the naming of a number of the more distinguished guests, delighted the company with the following "introductions":—

"I first must warn you visitors who have come here to-night that you have laid yourselves in danger in coming amongst what are popularly known as 'peculiar people,' but if there were more this world would be a better place. There is nothing so strong in our movement as good-will at all times. Suppose there were a few aero-modellers on the Cabinet? First, the Minister for Propaganda, Mr. York, would ask them to delete the word 'toys'! Then the Officer for Works, Mr. Rippon, would take up all trees round Cockfosters and plant them on Blackheath!" (loud applause).

Continuing in more serious vein, Mr. Bell referred to the honour accorded the club by the attendance of Sir Robert Gower, and expressed the hope that he (Sir Robert) would do his best to convince "certain air officials" that model aeroplanes were *not* toys!

Passing then to a survey of the company, Mr. Bell expressed pleasure, on behalf of the club, at the presence of the following:—Mr. and Mrs. Kronfeld (of glider fame), Miss H. Cook (representing Woman's Engineers Soc.), Mrs. A. P. Thurston (vice-president S.M.A.E.), Mr. and Mrs. Houlberg, Mr. E. H. Coote (vice-president N.H.M.F.C.), Mr. and Mrs. Barnard, Mr. H. York, Mr. W. A. Caton, Mr. L. Hawkins, Mr. J. C. Smith, Mr. D. A. Russell, Mr. S. S. Bird (vice-president N.H.M.F.C.), Mr. and Mrs. E. F. H. Cosh, Mr. Percival Marshall, Messrs. R. Bullock and M. R. Knight, together with over one hundred club members. Concluding, Mr. Bell hoped that all the visitors were enjoying themselves, and on behalf of the club he thanked them for their support, so freely given on so many occasions.

To this speech, Mrs. A. F. Houlberg made a charming reply, in which she appealed to the women folk to support the men. "I do ask you to take a keen interest in aero-modelling, because I think that you can do such a lot of good, and it does make things easier if the men know you are interested. If you don't build you can come to the meetings, etc., and you might become a Miss Lumbley or a Mrs. Worley! On behalf of the visitors I thank you for a very nice evening, and wish the club every success."

To conclude the "speaking," our popular friend, Bob Copland, proposed the health of the Chairman, Mr. E. H. Coote, and emphasised that not only was Mr. Coote a keen supporter of the club, but he was a keen aero-modellist, with a number of excellent models to his credit.

Mr. Coote, on a number of occasions, had been of real practical use to the club, which help was fully appreciated by the club.

Reply to the toast, Mr. Coote said:—

"I would first of all like to say how very much I appreciate the honour of being asked to occupy the chair on such an important occasion as this, and thank Mr. Copland for his very kind and generous remarks and for the excellent character he has given me. I can assure you that any little service that I have been able to render gives me pleasure, and I shall always be pleased to help the club and its members, whose good fellowship and keenness makes me proud to be one of them.

"As a model builder I am ashamed to say that my efforts have not met with success, as I have never won a prize, but there *have* been occasions when my models have soared and have flown very well, in fact, so far that I have got tired of chasing them!

"Now, referring to the 1939 team, which will be shortly going to America, I wish the team a most enjoyable trip, best of luck in every way, and hope that they may achieve success and bring back the trophy to England. Contributions are now being invited towards the 'Wakefield Fund.'

"In the past, as you are all well aware, Lord Wakefield has most generously augmented our funds to enable the best possible team, under the best possible conditions, to compete wherever the competition was held.

"However, the S.M.A.E. feel, and justly, so, that they cannot expect Lord Wakefield to give us unqualified support unless the clubs help, and I therefore appeal to everyone present to give what they feel they can afford."

Concluding, Mr. Coote congratulated the officials of the club on the excellent way in which they had organised such a large gathering, and reminded the company of the several raffles and competitions which would shortly be organised to obtain money for the Wakefield Fund.

Following the conclusion of a very enjoyable dinner, folk gathered to see the presentation of the season's cups and other prizes, charmingly carried out by Mrs. Rippon, supported by Mrs. Thurston, after which the company danced away time at too fast a rate! For all too soon the lights were dimmed, and yet another annual club dinner drew to a close.

From Mrs. Rippon I have since learnt that the most useful sum of £15 was collected for the Wakefield Fund, and I have been asked to express the club's thanks for the generous way in which everybody responded to Mr. Coote's appeal.

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EARLY NOTES FROM AN EARLY BIRD

THE "GALA WARBLER" CALLS FROM THE NORTHERN HEIGHTS



The Coronation Cup.

ALL aero-modellers interested in international and national model flying contests have a full programme before them for 1939, but let us for a while consider those who have interests in model aeronautics other than super-duration soaring flights, and do not aspire to trips to America or miniature walking tours over the face of the English countryside in search of their models! Surely they are as worthy of consideration as those whose sole ambition seems to be duration and yet more duration.

The seventh annual gala meeting organised by the Northern Heights Model Flying Club must have an instant appeal, for many of the contests are certain to draw the attention and the ambitions of those whose interest in model aeroplanes is primarily good design, good workmanship, good finish and a sound technique that is pleasing to the eye. For instance, the Coronation Cup is a handsome trophy which is offered for a good cause—that of improving and encouraging semi-scale models which, although they are not copies of any existing full-size machines, realise the ideas of their designers and builders in that they look exactly like full-size machines (or, at least, that is the idea), but have a performance much superior to that of the best scale flying models—an incentive to many, this contest should attract a good field.

Then the Pusher Contest has an appeal to those who like "something different"—something out of the rut. The models for this competition, for which splendid prizes are offered, have to be of the type in which the airscrew or airscrews are between the main lifting surfaces and the tail of the model, and a typical example of this practice in full-size machines is the Supermarine "Seagull," although, of course, competitors are not compelled to build only biplanes. These notes should enable intending entrants to have their models on the line at Fairey's on Sunday, June 18th next, the date of the gala.

Now for the ladies. Perhaps we were a little too hard on them last year in expecting them to build and fly their own model seaplanes, but a good number did, and right well they all tried to make them do their stuff; but the very windy conditions didn't give them a break, and so we did not see the women at their best. However, this year, in order to encourage a larger entry, we have so modified the rules of the contest for the Northern Heights Women's Annual Challenge Cup that a large entry seems assured. This year they have to build land-planes, and in the flying tests are only expected to do a duration of 30 seconds R.O.G. The judging will be mainly of the workmanship and finish, but extra points will be possible for take-off and stability. But remember, ladies, that the complete model, with the exception of airscrew and wheels, must have been built entirely by yourselves. But, believe me, it's worth an effort, for the winner not only holds the Women's Cup for a year but receives a souvenir prize valued at a guinea. Don't grouse at Dad while he's at his own models—let him "hold the baby" while you get on with it!

The Concours d'Elegance is a very popular contribution to the Northern Heights Gala, for it provides the spectators with plenty of variety and produces some simply marvellous models. Who will forget Mr. H. J. Towner's "Miles Kestrel Trainer" flying scale model, or his Fokker twin-fuselage model, or Mr. C. R. Moore's twin-engined semi-scale job, or his "Viper"? Mr. Dick Sharvell's petrol 'planes, too, have been an education in proving how well an engined model can be built and finished! Where else, too, has there been shown such beautifully finished duration models as Mr. E. W. Evans's? He has proved that good looks and good durations can go together.

Of novelties in this competition we have seen speed 'planes, flying-boats, gliders and pushers, and a whole host of models that prove that the incentive is there to produce "something different"! So you see that the Concours holds not only your interest, and gives you something to think about, but offers you splendid opportunities to pick up a useful prize.

As 1939 will focus attention upon gliders, as a result of the King Peter Cup contest, to be held in Great Britain, we are making the Inter-Club Team Contest for Gliders to F.A.I. Ruling, and I should like to make it quite clear that in this competition for our patron's cup we welcome entries from *all clubs*, whether they are affiliated or not. The teams will consist of three.

The flying scale model enthusiast is not overlooked, for the *Flight* Trophy Contest gives all those interested in this type of model a chance to compete. Just remember, there are *no* limits to size, weight or scale, and if you have built your model from any well-known popular construction kit you stand an equal chance to the man who has developed his own lay-out. To the critics of this decision we would remind them that we aim to get as large a field as possible. For several years the Leopard Moth design in various guises has carried the honours—let's have a change in 1939!

Now it has always been the aim of our organisation to try and cater for all tastes, in spite of the obvious fact that it is tending to overcrowd the programme, but we feel quite sure that the more variety we can introduce into the programme the more the chances of a good attendance and the greater the possible number of new enthusiasts, so we are once more staging our Popular Contest, but this year in two sections—"A," the nearest duration to 50 seconds, and "B," the nearest duration to 100 seconds, and in both sections the flights will be hand-launched. This competition should provide good sport for those possessing general-purpose flying models, and when I tell you that our entry for this contest usually averages 100—150, you will appreciate why we name it "Popular"! But don't do as Bob Copland did last year, put 200 turns on your motor and expect to do about 50 seconds, and then lose the model out of sight!

Finally, we are now privileged to present a Gala Challenge Cup, which has been given for this purpose by the proprietors of THE AERO-MODELLER; and perhaps as poetic justice it was won last year for the first time by a very popular and hard-working member of our own club—Mr. Ivor Hall—who, as one of our younger and most progressive members, thoroughly deserved it. To qualify for the Gala Challenge Cup competitors score three points for a win, two points for a second place, and one point for a third place in any of the competitions, including the Inter-Club Team Contest. The winner holds the cup until the next gala day. So come on, everybody, get your models ready and tested in good time, and do your best to win this trophy offered by our national aero-modelling monthly.

In conclusion, and in a more serious vein, and at the risk of being "barracked" for preaching, may I remind all of you who frequent meetings held at the Fairey Aviation Co.'s aerodrome that you have a duty to perform, if only out of respect for those of us who have for year worked to make these meetings possible and successful, and the privilege of using this aerodrome is not the least of our privileges, that duty is clear—you *must not*, on any account, leave rubbish of any kind upon the aerodrome, neither may you cast it into the surrounding ditches! It should be a point of honour that you should point out to anyone whom you see violating this rule the seriousness of the offence. Also *do not trespass* upon adjoining land to retrieve your models—we shall do our best to make arrangements to avoid this. Do please think, while you are enjoying the hospitality of our patron, whether at our N.H. Gala or at any other meeting that may be arranged for your enjoyment. Remember that it will be nothing short of a tragedy if "Fairey's" aerodrome is closed against us all!

We shall welcome all to our gala, and trust that among other celebrities we may welcome "The Fancier" and the "Moving Finger," and I'm sure that what one doesn't think of the other one will.

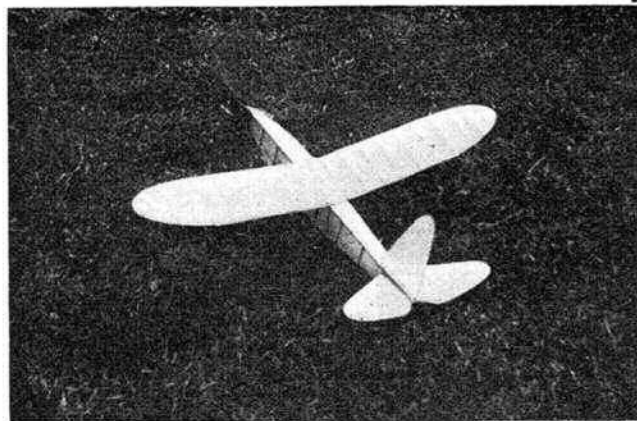
Full advance copies of the rules for all of the contests to be run on Sunday, June 18th next, are *now available*, and will be sent on to anyone interested on receipt of 2d. in stamps from "The Gala Warbler," C. A. Rippon, Hon. Organiser, N.H.M.F.C., 58 Hampden Way, Southgate, London, N.14.

Please remember that anyone and everyone interested in model aircraft is welcome, and all are eligible for the various contests.

ALL ARE WELCOME!

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BUILD THE "SPARROWHAWK"

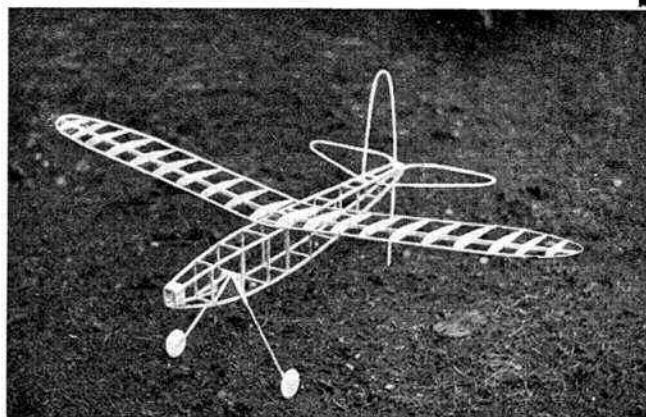


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FULL INSTRUCTIONS ON PAGES 247, 249, 251

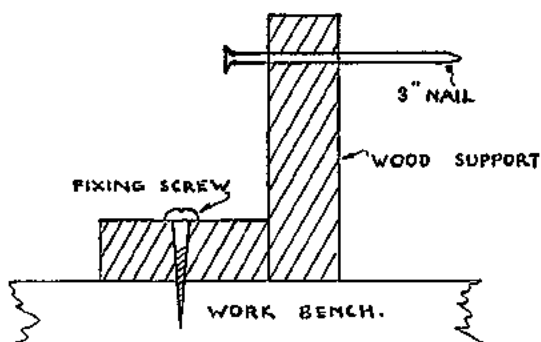


FIG. 2.

THE prime and only cost of this gadget consists of a humble "tanner" spent at Messrs. Woolworth's, who stock a small geared grinder sold in two parts, viz.: A carborundum wheel and a 30-1 geared winder. It is this latter in which we are interested. The wheel, you may or may not purchase, depending upon whether you have use for it.

The method of using this "lathe" is as follows: Obtain some hard block balsa and roughly shape to the desired section with the usual razor blade, and drill out the end to a slightly smaller dimension than the shaft of the grinder. Screw this block on to the shaft (diagram 1) and you are now ready for work.

The only tools necessary are a small chisel or pocket knife and one or two small pieces of various grades of sandpaper, the latter being, in my opinion, the best "tools" of all.

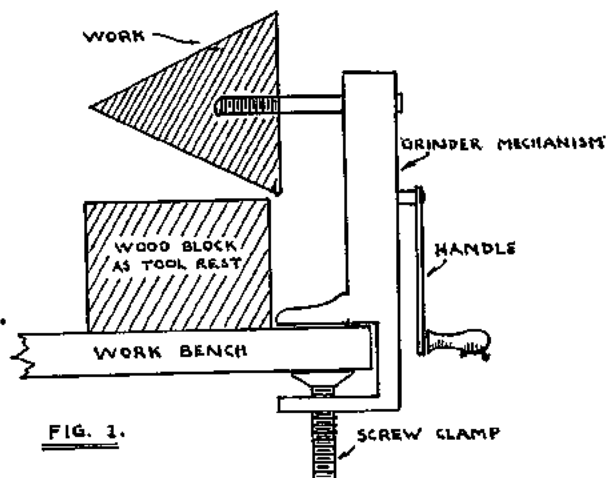


FIG. 1.

If during the turning the work should slip on the shaft a small piece of sandpaper wrapped around the shaft will effect a cure.

With this machine you can turn sections up to about two inches in length. Should it be that you require turnings of a greater length a support at both ends of the work will be required. This is effected by means of a small L-shaped block and a three-inch nail, as shown in diagram 2.

A small block of wood placed in front of the work forms an excellent tool rest.

1939 WAKEFIELD FUND

IT will be remembered that the Council of the S.M.A.E., in an endeavour to raise sufficient money to send a British team to America, to enable Great Britain to regain the Cup, set up a committee consisting of Messrs. Blunt, Hawkins, Houlberg, Rushbrooke, Smith and York. To inaugurate the fund, the S.M.A.E. organised a buffet-dance. Several clubs have since followed this example, and the state of the fund at the moment is (January 26th):—

	£	s.	d.
S.M.A.E. Buffet Dance	...	15	10 0
Northern Heights Dinner and Dance	...	15	0 0
Blackheath M.F.C. Dinner and Dance	...	9	14 8
Lancs. M.A.S. Dinner and Dance	...	5	14 4
Oxford M.F.C. Dance	...	1	2 1
Brighton and District M.A.C.	...	1	0 0
Wakefield (Yorks.) M.F.C.	...	0	14 0
Profit from Sale of S.M.A.E. Diaries	...	7	5 5

£56 0 1

To this figure must be added the sum of £15 15s. promised to the fund by the Editor of THE AERO-MODELLER.

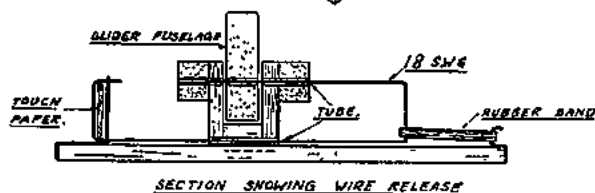
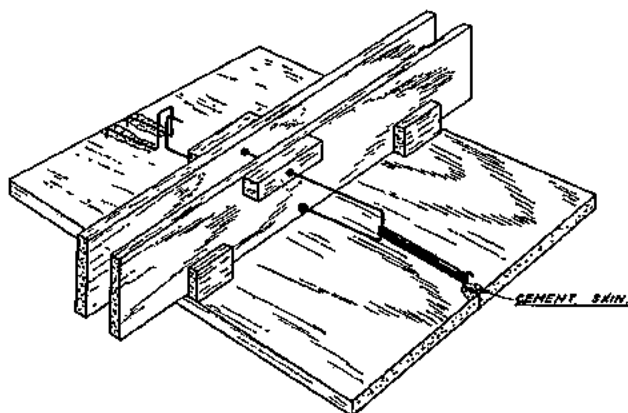
The S.M.A.E. Treasurer, Mr. L. J. Hawkins, 25 Granville Park, S.E.13, would be pleased to receive as soon as possible any monies which clubs and individuals may have for the Fund, so that they can be acknowledged in the Press without delay.

H. YORK.

A RELEASE GEAR

By J. E. TODD

THIS device is for releasing an all-balsa glider from the back of a rubber-powered plane. Two lengths of $\frac{1}{8}$ in. thick balsa, $4\frac{1}{2}$ in. \times $\frac{5}{8}$ in., are cemented $\frac{1}{4}$ in.



apart to a balsa base measuring $4\frac{1}{2}$ in. \times $2\frac{1}{2}$ in. \times $\frac{1}{8}$ in. Two holes are drilled through the upright pieces, one

through the bottom, and the other halfway. Dural tubing to take 18 gauge wire is fitted through the bottom, and two separate pieces through each side of the tap holes. A piece of 20 gauge wire is bent to shape and fixed to one side of the base opposite the holes; another piece of wire is bent and inserted through the holes then shaped (as shown). A rubber band is fixed to a pin, then around the wire.

The base is secured to the centre section of the model with rubber bands, and the glider is placed between the uprights. The wire is pressed through a hole in the glider fuselage, and a piece of touch paper (blotting paper soaked in saltpetre) inserted through the loop at the other end of the wire. The touch paper is ignited with a cigarette, and when it burns away the rubber band pulls the wire and releases the glider. The models used on this experiment were a 4 ft. 6 in. 'plane and a 2 ft. glider.

RUBBER JOINING MADE EASY

By R. COLMAN

TO tie rubber while it is stretched is impossible without assistance, and the little gadget here provides this, and enables one to make a better job than would otherwise be possible.

A start is made with a base $5\frac{1}{2}$ in. \times 3 in., of medium hard wood. In this are cut two rectangular holes $1\frac{1}{8}$ in. \times $\frac{1}{2}$ in., these being $\frac{1}{2}$ in. apart and with their longer sides parallel.

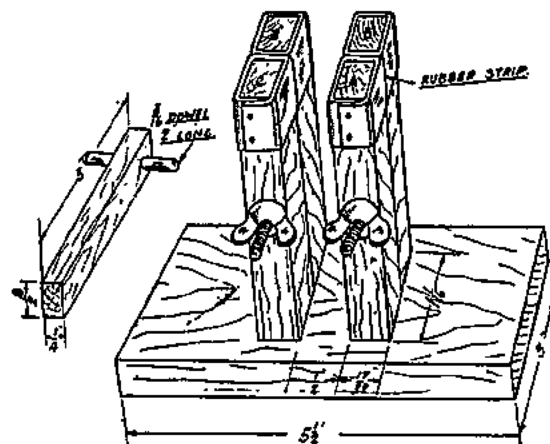
Four pegs of $\frac{1}{2}$ in. square hardwood, each 2 in. in length, are now cut and paired off—A, B, C and D. One inch from the top of each peg drill a hole—a $\frac{5}{16}$ in. in A and C, and a $\frac{3}{16}$ in. in B and D. Through A and C insert $\frac{3}{16}$ in. diameter, $1\frac{1}{2}$ in. long bolts (these being purchased with wing nuts to fit), which are, intentionally, tight fits to prevent them turning when the wing nuts are tightened. The bolts will be an easy fit in pegs B and D, which must have some movement. To prevent damage to the rubber strip the top of each peg is bound with thin sheet rubber (bicycle or motor-car inner tube), this being secured where shown with short pins. The pairs of pegs are next inserted in the base holes.

To operate: Slacken the wing nuts whilst keeping the pegs in the holes, and place the ends of rubber to be tied between pegs C and D, afterwards tightening the nut. Stretch the rubber and bring it between pegs A and B, and tighten the nut. To obtain the necessary extra tension before tying, a hardwood key (3 in. long by $\frac{1}{2}$ in. wide and $\frac{1}{4}$ in. thick, with a 2 in. length of $\frac{3}{16}$ in. birch dowel inserted for turning) is placed between the two pairs of pegs and given a quarter turn, thus pushing the pegs, and the rubber, further apart.

The rubber is best tied with good quality silk, which is taken round the strip three times before tying. A

touch of rubber solution to the short ends will make a permanent and non-slippable joint.

The total outlay for the original model was threepence for the bolts and wing nuts, the pegs and base being cut from boxwood. A motor of 16 strands of $\frac{1}{4}$ in.



rubber (for a 10 oz. plane) tied on this gadget has been used many times without a single loop parting at the joint, whereas with loops tied in the ordinary manner it was common to have two or more break on every flying day.

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BUILD A SOLID D.H. ALBATROSS "MAIL CARRIER"



A SOLID MODEL

By
**STAN
MARSH**

"Aero-modeller"
Staff Draughtsman

The Model.

Start off on the biggest part—the fuselage. Obtain a soft block of balsa 9 in. long; you can have the width of this block to include the wing fillets or only just the fuselage, and although it may be a bit harder to shape the fillets as part of the fuselage, you will be amply repaid for a bit of patience by the improved appearance of the finished job. Mark out on to the blocks with carbon paper the plan of the blank and trim to shape, then repeat the process for the side view. When the blank is finished trim off the corners and start sanding, being careful to watch the section as your sanding progresses; don't forget to leave flats on the block for the wing panels to be cemented on; mould carefully round these with fine sandpaper wrapped round a pencil.

Cut out the "mouth" for the front windows, and these can be framed with split bamboo when the fuselage is finished.

Cut the twin rudders and tail-plane from $\frac{1}{8}$ in. sheet and cement on, filleting well with cement; put this on smoothly to obtain a better finish. Give a finishing sand with very fine paper, and then a coat of paste to fill the grain.

While the coat is hardening commence work on the wing panels. Make these from $\frac{1}{4}$ in. sheet, very soft, and mark out the outline with carbon paper. Trim to this outline and then sand the taper on the wings. Do this flat, afterwards sanding to an airfoil section. Next start work on the nacelles; these are shaped from blocks rounded to dowel section. Wrap a piece of fine sandpaper over the leading edge of the wing, and rub the nacelle block up and down, taking care to keep it at right angles to the leading edge of the wing. (See plan). The nacelle will gradually be sanded away, and may then be snugly cemented on to the wing. You will find it easier to shape the nacelles after fixing them on to the wing. Next cement the wings on to the fuselage, sloping the roots slightly so as to give the dihedral shown in the plans.

Landing Gear.

When the wings have set firmly, mark out the wells

for the landing gear to retract. The circular part may be cut out with a sharpened penholder and the straight part with an ordinary blade. Press out the bottom and sides of the wells with the end of a pencil. The landing legs are made from reed sanded down smooth. The aluminium "horse shoes" are shown in the plans, and should be cemented strongly to the reed; they may be shaped tightly round the legs with a pair of pliers before cementing. Cut the wheels from hard $\frac{1}{8}$ in. sheet and recess with a penholder for the aluminium discs. The axles are cut from pins with the heads on the inside, as the aluminium well covers blank off the outside. Bore small holes in the wings to receive the landing legs and cement firmly in place. The legs are at right angles to the wing panels, so that this gives them a slight splayed effect.

Props., etc.

Cut the props. from thin aluminium and file to a smooth shape, then pierce small holes to take pins. It is best to add the props. after the final finishing on the nacelles, when the tips of these may be cut off and the pins and props. inserted, after which the tips may be cemented on again. Bend a slight pitch on the props.

The little direction-finder is a pairing of aluminium cut with scissors; it will curl round as it is cut. Add the radio mast and twin antenna of thread, also the air speed indicator; note that the radio mast is offset to one side of the fuselage.

Colour and Finish.

The model is finished in aluminium and requires several coats with a sand in between each coat. Mark on the ailerons in Indian ink, preferably with a ruling pen. Indian ink or black lacquer may be used for the international registration letters "G-A E V V," or you may even cut out the plans and dope on. Mark the outline of the doors and windows in fine lines.

The de-icers may also be marked in ink.

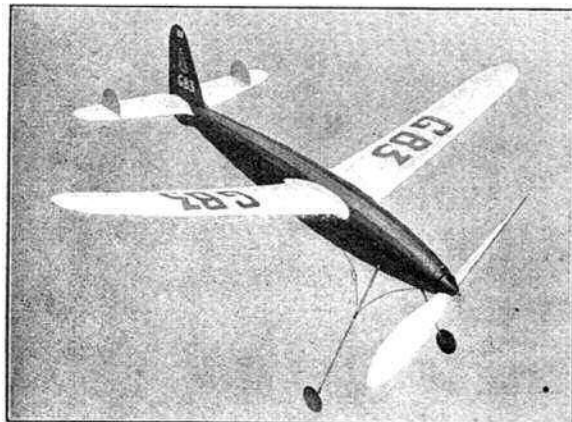
Black the tyres of the wheels, and finally give the whole job a coat of dope, to give it a gloss, then you Albatross is all pushed up ready to be flagged out. Go to it and easy sanding! Full-size plans overleaf.

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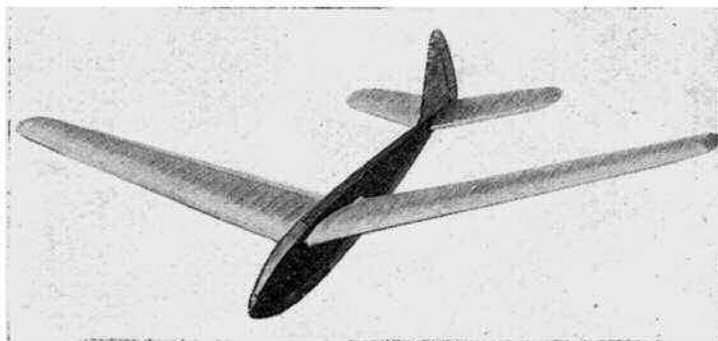
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Holder of British Record 20 min. 7 sec. Member of British Wakefield Team, and Winner of "Premier Shield." 1937 and 1938.

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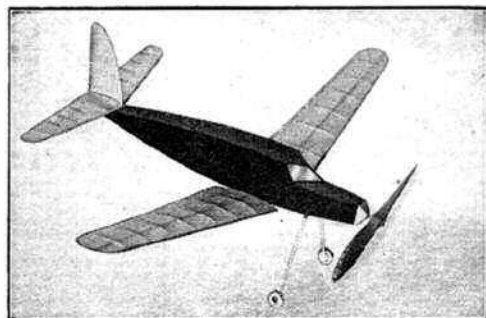
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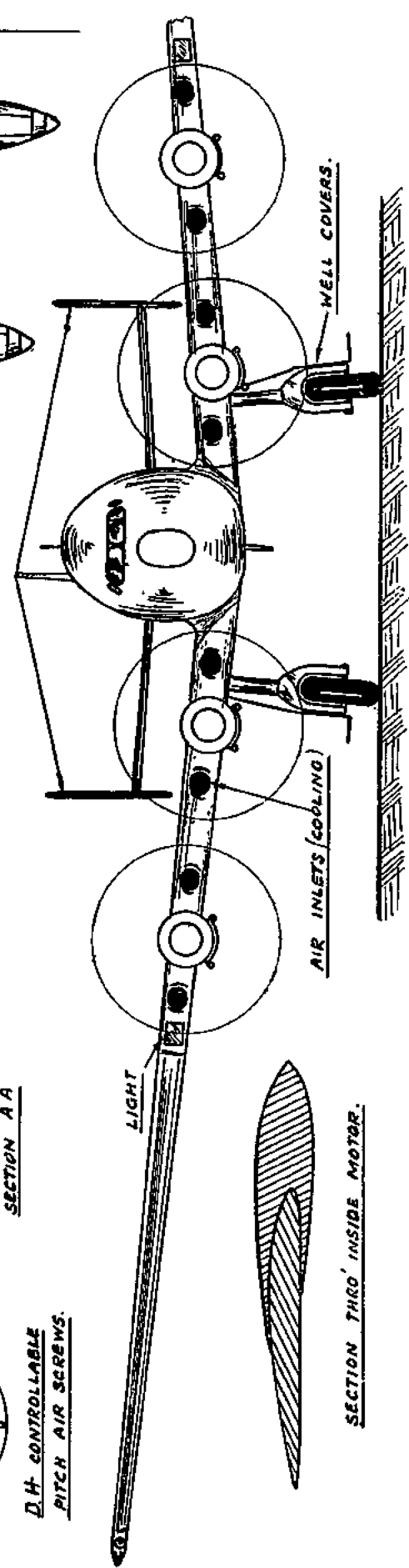
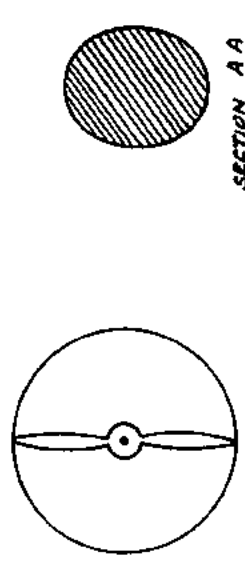
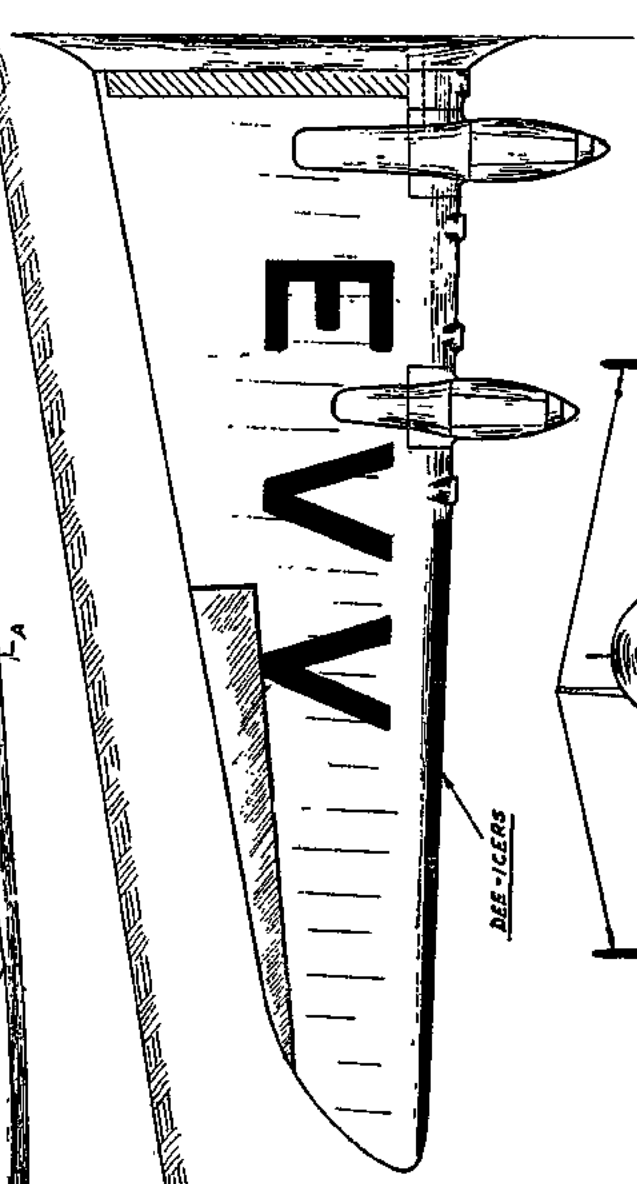
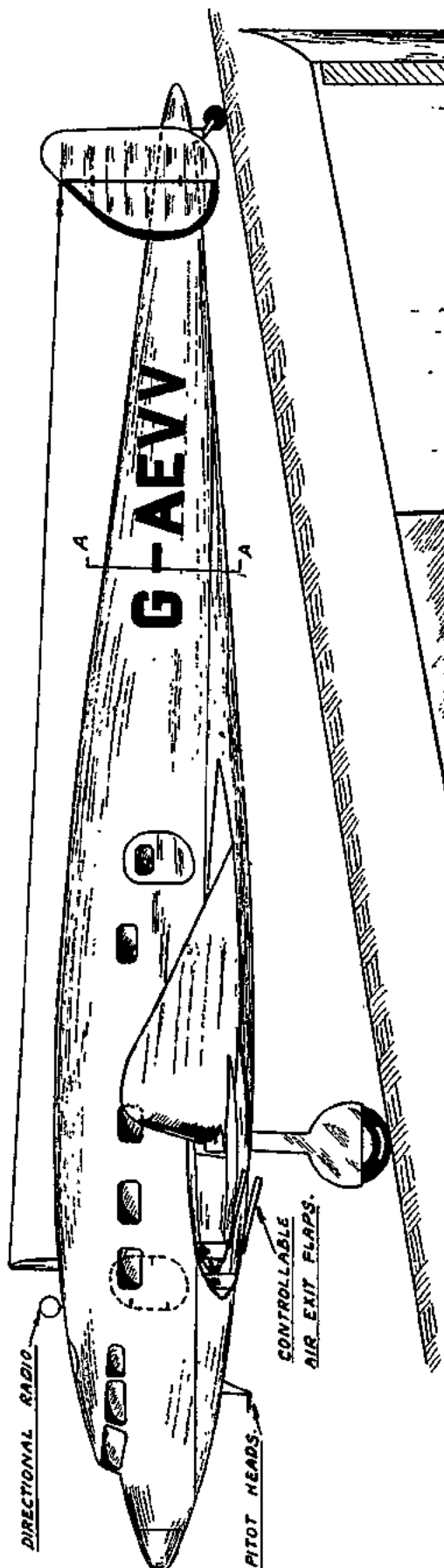
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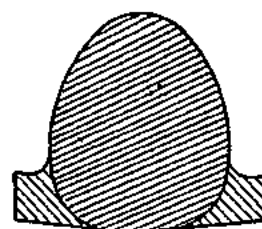


SCALE: $\frac{1}{8}$ " TO 1 FOOT.

SPAN: - 105 FT.
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SECTION B.B.

A-9

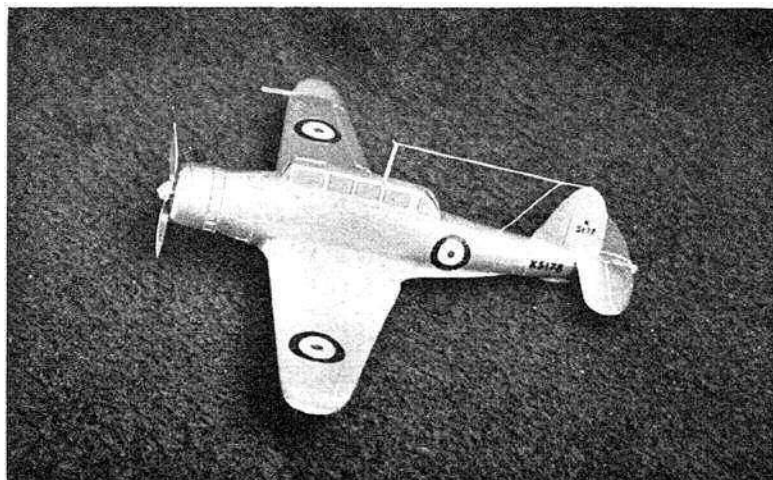
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BLANK FOR WHEEL
FITTING.

DISC AND WHEEL.

FINISHED LANDING
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SKYBIRD LEAGUE SIXTH ANNUAL RALLY

The Premier Event for Solid Scale Modellers

The Sixth Annual Model Rally of the Skybird League takes place this March—the construction of any Skybird model entitles the modeller to membership and participation in this the premier competition for solid scale models.

Last year forty-seven awards and certificates were presented—this year there are several additional prizes to be won. A very handsome Challenge Cup has been presented for annual competition by Henry Channon, Esq., M.P., and a return flight from Croydon to Paris by Imperial Airways Ltd. This is in addition to the usual flights presented by British Airways, Olley Air Service Ltd., and the Air League of the British Empire.

THE AERO-MODELLER will also present a cash prize of one guinea for the best model of a present-day R.A.F. fighter built by a competitor under sixteen years. Also one guinea for the best model, any type, built by an entrant of any age who at the time of entry is holding any kind of position in the R.A.F. Age of entrant will be taken into account. Entries may be from an officer or from a young apprentice.

Other subscribers to the prize-list include the Fairey Aviation Co. Ltd., De Havillands, *Flight*, The Lord Sempill, Sir A. V. Roe, Wing-Commander Warne-Browne, and many other important firms and individuals.

There is a class for modellers who have not previously won an award in these annual competitions. Here is an opportunity for the beginners. For lady modellers there is a special section, with a challenge cup presented by Lady Mairi Stewart. All models must be dispatched to Skybird League Headquarters by March 18th. Modellers must first of all write and obtain the full particulars and conditions governing this competition. Address: The Secretary, The Skybird League, 3 Aldermanbury Avenue, London, E.C.2.

Kindly mention THE AERO-MODELLER when replying to advertisers.

A PLAN FOR "SOLID" MODELLING By B. CARVER

IN previous articles I have emphasised the importance of having a plan for your model work. Here is a suggestion on which you might well base your activities. Why not aim at building a series of models illustrative of the various types in service in the R.A.F.? You would have to build the following types: Single-engined trainer (bi-plane), ditto monoplane, twin-engined trainer, single-seat fighter, two-seat light bomber and general purpose, multi-seat medium bombers (single and multi-engined), general reconnaissance, troop transport, army co-operation, heavy night bomber, dive bomber, flying boat, seaplane. Sixteen models can be considered a minimum with which to make anything like a comprehensive display of the types required by the Service of to-day. Such a display would be of great interest, and I think you will agree that a plan which calls for the making of sixteen models is quite ambitious enough to fill your spare hours for many weeks to come. This plan should commend itself to clubs. It will be realised that a display of the types indicated would be such as would persuade many people to afford them the opportunity of making a public display of the collection, which would provide publicity for the club and also for the premises on which the models were displayed. Clubs should always be fully awake to the possibilities of securing free publicity for the movement by the exhibition of "solid" scale models wherever possible. Model dealers should be only too ready to co-operate in such displays by the loan of space, whilst many cinema managers would be willing to stage a display at a time when they are exhibiting a "flying" film.

Photographing Models.

The many photographs received from readers prove that, in the majority of cases, much more patience is expended on the building of the model than on the photography. This is a great mistake, particularly as most of the photographs show the builder to be a competent, if unimaginative photographer. Usually, the model is well focussed and in good perspective—but, *the backgrounds!* Wallpaper, tissue paper, sheets, and even complete beds! These backgrounds succeed in ruining the picture in very many cases. Your friends, and others, will be interested in a good photograph of a good model, but they will *not* be interested in a photograph of your bed or wallpaper. After spending so much time and care over the model, surely you can afford like time to the photography? I am not advocating the production of fake photographs which aim to disguise the fact that the subject is a model. This fake photography has a very sound use in the cinema, but is quite out of place for the modeller. What you photograph should be designed to convey is a faithful reproduction of the model, neither disguising its shortcomings nor flattering its excellence. Your photograph should be a faithful picture of your handicraft, which you can display where the model itself could not be shown. For this purpose the background can be very simply designed so as to afford adequate relief and contrast to the model, and be quite unobtrusive itself. You remember the sort of portraits which your parents used to keep in the family album? Portraits in which the principal became of secondary import to the elaborate background which purported to show the sitter

in some magnificent palace, or garden of sub-tropical vegetation? Well, photography "grew up," and photographers learnt that the sitter was the subject, and that the background must be neutral. The style of many modellers is the same as that of the early photographer. They think the work of the camera is to tell pictorial lies. All this is simply misuse of the camera, which should be used to obtain a graphically true picture of the original model, devoid of all attempts at disguise. Between these extreme examples of model photography, "fake" and carelessness of what the background will look like, we find the most satisfactory method a neutral background.

This neutral background can easily be obtained, if a little thought is given to the problem. The solution will vary to some extent with the individual. For instance, you may have a plain carpet, without any pattern of any kind. This will make a very good background, but you must take care if the position of the model and the angle of view combine to bring the power part of the wall into the picture. If this is found to be the case, see that the section of the wall in question is in considerable shadow and some distance back from the model, then raise the edge of the carpet (behind the model) sufficiently to cover the offending wall. The raised carpet should be secured in such a manner that it changes gradually from the horizontal to the vertical plane, instead of having an abrupt crease. And, remember, keep the raised portion of the carpet at least two feet behind the model and well in shadow.

A very important point to watch in photographing models is the light. This should be well diffused and not too strong. Strong or directional lighting will cause loss of detail owing to reflection from certain parts of the model. To guard against this, always take a careful observation from the exact point at which the lens of the camera is placed, otherwise you may be surprised to find a brilliant high-light on the resulting photographs, which you were not aware existed at the time the exposure was made.

Remember, keep the background neutral. Black is *not* neutral, and I think that the black background photographs of models are rarely attractive. By all means emphasise the light-coloured model with a dark background, but *not* with black, which is very obtrusive indeed.

Free-Lance Models.

Regular readers will recall that some months ago I published plans for 1-72nd scale model of a single-seat fighter, with engine mounted in the rear of the pilot and driving pusher airscrew, tail assembly being carried on twin booms from the wing. This was an attempt to forecast the fighter of the future, and I was very interested to read of the latest Fokker Fighter, exhibited at the Paris Show. Here, in Fokker's latest product, was my prophetic design, tricycle undercarriage and all, in full scale production! The only important difference being that in the Fokker there were two engines, fore and aft of the pilot. For the gain in stability resulting from elimination of torque, the Fokker design pays with loss of the unobstructed vision which I obtained in my model, and also with increased drag, due, in my humble opinion, to far less efficient streamline. With all due respect to

Mr. Fokker, I think my adventure in modernism is the better of the two, from many aspects. That my figment of the imagination should approximate to a full scale design so very soon afterwards is, to me, at least, of considerable interest. My reason for bringing this comparison to your notice is that there is undoubtedly an interesting experimental side to the "solid" scale hobby. When you tire of copying proved types, just try intelligent anticipation, and design what *you* consider a practical development for the future, and embody your ideas in a "solid" scale model. Who knows, you may be laughed at to-day, but in some future day you may have the last laugh, when you point to some designer's latest "brainstorm," and then to your "solid" model, made long before, and yet incorporating the very same principles.

New Designs.

New full-scale designs came upon us fast and furious, and I am now wondering who will be the first to decorate

these pages with photographs of a model of the new Fairey Air Liner? This will be a task really worthy of the mettle of the most accomplished "solidier." (No, not a misprint). To complete a model of this 'plane you will certainly have to tackle that new retracting wing! And, remember, it does not not only retract upwards! This auxiliary wing has also to move backwards and downwards as a super-flap! The model craftsman who successfully (and neatly) achieves these complicated actions in a 1-72 scale model, deserves to be known as No. 1 Modeller. If you want fame and fortune, here is your opportunity of getting the former, if not the latter.

Space, the Editor allocates, is finite! So "Here's to the next time," and—don't forget—if you have any good photographs of "solids," send them along to me, c/o The Editor, and we will use the most suitable ones on these pages. I know you all liked last month's selection of photographs, and I hope we shall have another selection soon.

AEROFOIL SECTIONS—II

By J. W. B. CRUICKSHANK

IN this second article I propose to give readers some elementary knowledge of how aerofoils are designed and aerofoil theory.

In most cases, aerofoils, are developed from a cambered centre line or mean camber line.

This centre line is then enveloped with a fairing of some symmetrical section, such as R.A.F.30. To illustrate this more clearly the centre line of the symmetrical section, which is a straight line, is given a camber, and the distances from the centre line to the upper and lower surfaces of the aerofoil remain the same.

In the cases of R.A.F.31 and R.A.F.32 the centre line is an arc of a circle, and has the same thickness-chord ratio as R.A.F.30, from which section they are developed. The centre line of R.A.F.31 was given a camber of 2 per cent, and R.A.F.32 5 per cent of the chord, and enveloped by R.A.F.30 (Fig. 1).

Later, aerofoil sections have their centre lines of a parabolic form, as Clark Y. Experiments have been made to find the most efficient position for the maximum ordinate of the centre line, and I propose to deal with this in a later article.

It has been found that for aerofoils of the same thickness to chord ratio, the value of CL_{max} increases as the centre line camber increases up to the limit of about 8 per cent of the chord. In practice, however, owing to the rapid increase in the value of the profile drag coefficient C_{oo} , the max. camber of the centre line is never more than 6 per cent of the chord.

For all normal sections with a centre line in the form of a circular arc, the lift coefficient and the angle of attack are connected by the following equation:—

$$CL = 2\pi\alpha \dots \dots$$

where α is the angle of attack in radians. This equation holds good up to the central angle, i.e. the stalling angle of the section. This equation treats the aerofoil merely as a centre line, and takes no account of the thickness to chord ratio. However, the following equation will be found to apply more closely to almost any aerofoil section.

$$CL = [0.1097 - 0.070 (\frac{t}{c})] \alpha \dots \dots (2)$$

These equations are based on two dimensional flow, that is, on aerofoils of infinite aspect ratio.

For aerofoils of a finite aspect ratio the slope of the lift curve is not so steep as that for an infinite aspect ratio.

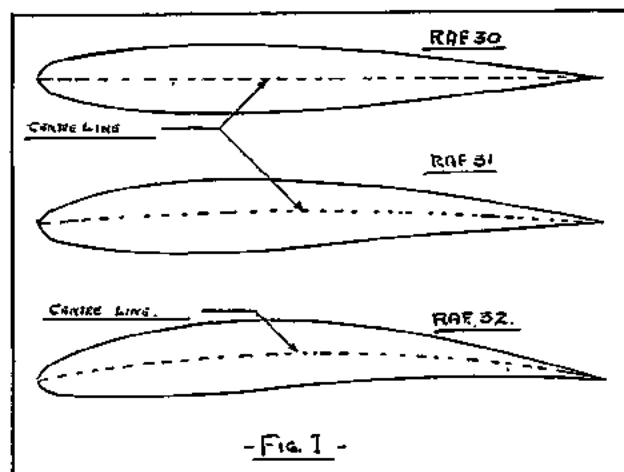
Let the expression $[0.1097 - 0.070 (\frac{t}{c})] = x$

then $CL = x\alpha$.

Then CL for a finite aspect ratio $= x^1\alpha$. And the relationship between x and x^1 is found by the following equation:—

$$x^1 = \frac{x}{(1 + \frac{18.24}{A} x)} \dots (3)$$

where A = the finite aspect ratio.



- Fig. 1 -

It will be seen from the curves for Gott, 387 that the slope of the lift curve for AR 10 is steeper than that for AR 6. There is very little difference in the value of CL_{max} , although it occurs at a different value of α , and the angle of zero lift is unaltered.

The value of C_D is also found to change with the

aspect ratio, and the following two equations connect the changes of α and C_D with change of aspect ratio.

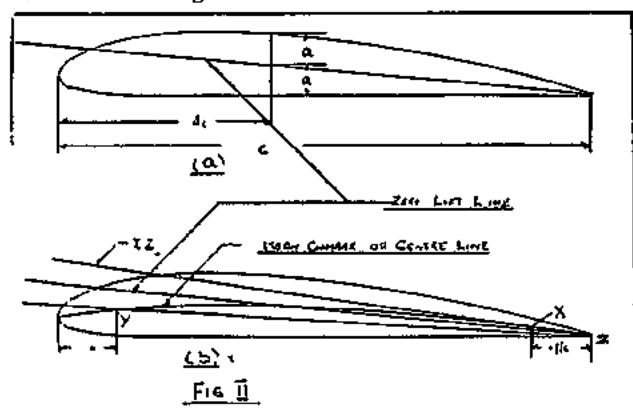
$$\alpha_2 - \alpha_1 = \frac{C_L}{\pi} \left(\frac{1}{A_2} - \frac{1}{A_1} \right) \dots \dots (4)$$

$$C_{D2} - C_{D1} = \frac{C_L^2}{\pi} \left(\frac{1}{A_2} - \frac{1}{A_1} \right) \dots \dots (5)$$

α is expressed in radians.

These equations (4) and (5) can only be used for finite aspect ratios, i.e. aspect ratios of say 5, 6, 7, etc., put changes from infinite to finite aspect ratio. These equations will be explained more fully in a later article.

The curves for Gott. 387 are shown for AR 6 and AR 10. From this it will be seen that C_D decreases with an increase of AR, but the range of incidence between zero lift and C_L max. has also decreased. However, with a high aspect ratio, a greater lift coefficient is obtained from a lesser angle of attack.



Angle of Attack of Zero Lift.

This can be defined as the angle of attack at which $C_L = 0$. This angle is measured from the geometric chord, and has to be modified to read the angle from the datum chord. The geometric chord is shown for the Clark Y aerofoil. The geometric chord can be defined as the shortest distance between the leading and trailing edges. Where the geometric chord coincides with the datum chord no modification need be made.

When the centre line is an arc of a circle, as for R.A.F. 28, 31, 32, the angle of zero lift can be found from the following equation:—

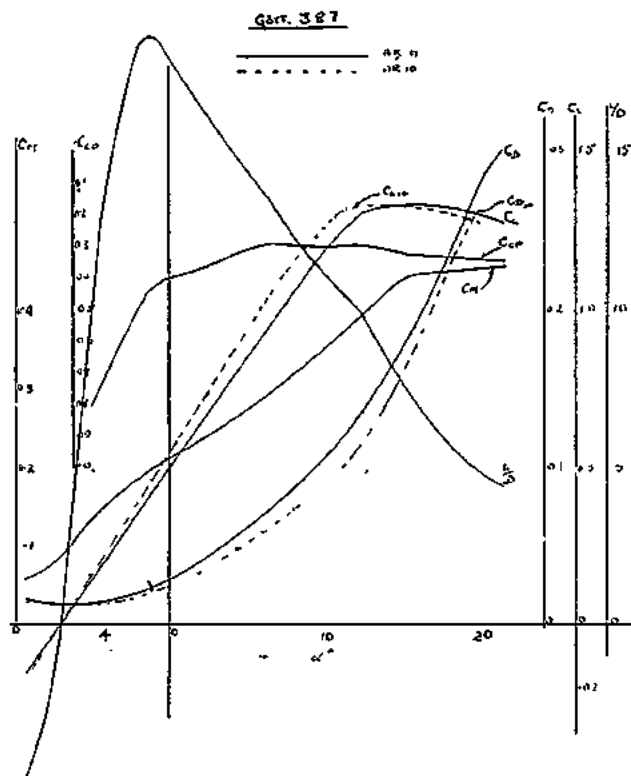
$$\beta = 2j \dots \dots (6)$$

where j is the camber of the centre line in terms of the chord (R.A.F. 31: 0.02) and β is the angle of zero lift measured from the geometric chord in radians (π radians = 180°).

When the centre line is not a circular arc the calculation of β is an involved mathematical process, but two graphical methods are given, which are accurate enough for practical purposes. These methods are shown in Fig. II (a) and (b). Of these (b) is the more accurate.

(a) This needs no explanation, as the method can be followed quite easily from the figure.

(b) Take points on the centre line at distances of 10 per cent from the leading and trailing edges, and call these points X and Y, and call the point at the trailing edge Z. Join XZ and YZ, and produce them. Then the line bisecting the angle XZY is the zero lift line.



Notes on Aerofoils Illustrated.

CLARK Y.—A favourite section for modellers, and is one of the most popular for airscrew sections. A very good all-round section.

GOTTINGEN 387.—High lift slow flying section, useful as the root section in a tapered wing.

GOTT. 426.—Another high lift section with characteristics suitable for slow-flying models.

N.A.C.A. 2409.—This should make a suitable section for faster flying models, and is noteworthy because of the L/D ratio of 23.5

Symbols used in this article are:—

α = angle of attack

π = a constant = 3.14159.

β = angle of zero lift.

C_L = lift coefficient.

C_D = drag coefficient.

t/c = thickness/chord ratio.

A or AR = aspect ratio.

J = max. camber of centre line.

Next Month—

A "WAKEFIELD" NUMBER

Another free plan!

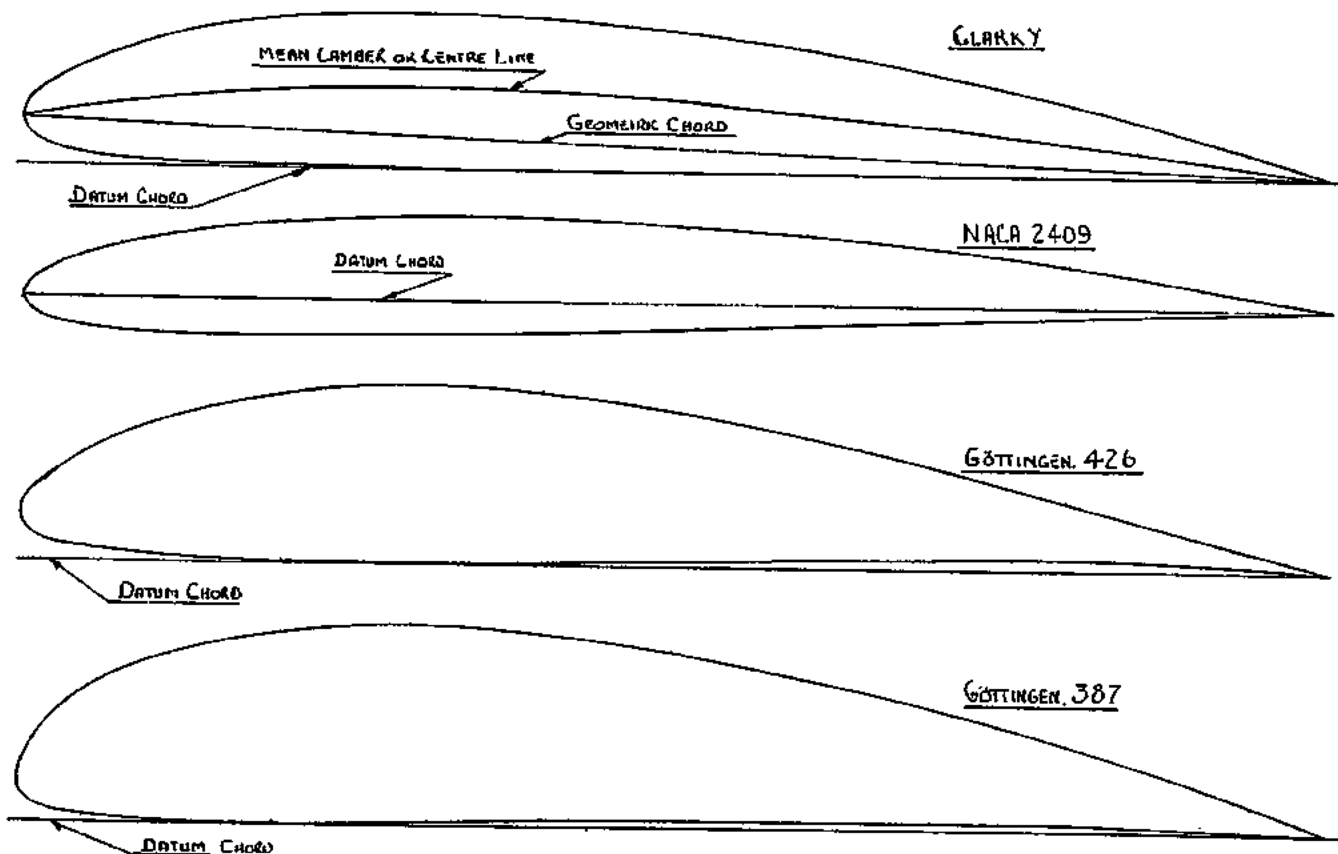
Another fine article by J. Bramah: The "Lysander."

"Bird Flight and the Model Aeroplane." By Major C. E. Bowden.

"The Trend of Design." Especially valuable to all Wakefield enthusiasts.

R. N. Bullock on Wakefield Designs.

Scale plans of Cook's 34 m.p.h. "round the pole" winner.

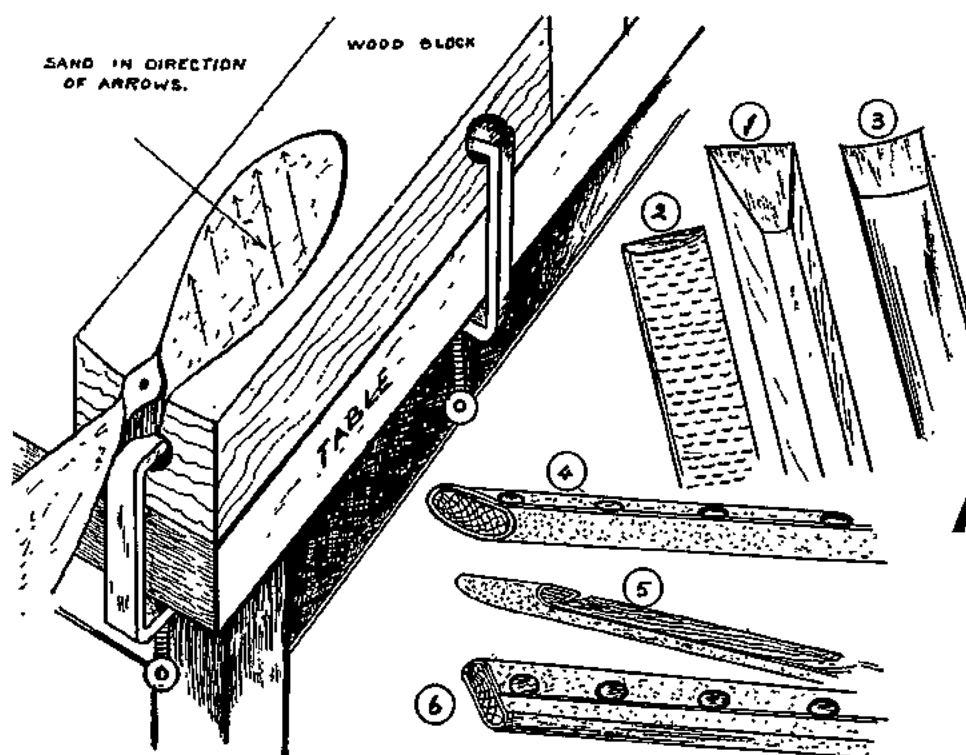


PROFILE CO-ORDINATES IN PER CENTAGE OF CHORD.

Clark Y.			Naca 2409.			Gott. 387.			Gott. 426.		
Station % profile.	Upper.	Lower.	Station.	Upper.	Lower.	Station.	Upper.	Lower.	Station.	Upper.	Lower.
0	3.60	3.60	0	0	0	0	3.78	3.78	0	3.5	3.5
1.25	5.38	1.86	1.25	1.62	-1.23	1.25	6.53	1.43	1.25	5.6	1.6
2.5	6.43	1.42	7.5	2.27	-1.66	2.5	7.91	.93	2.5	6.65	1.35
5.0	7.83	0.91	5.0	3.20	-2.15	5.0	9.89	.40	5.0	8.2	1.05
7.5	8.79	0.59	7.5	3.87	-2.44	7.5	11.32	.15	7.5	9.4	.75
10	9.56	0.39	10	4.43	-2.60	10	12.40	.03	10	10.35	.6
15	10.63	0.12	15	5.25	-2.77	15	13.84	0	15	11.85	.35
20	11.32	0.01	20	5.81	-2.79	20	14.71	.05	20	12.85	.15
30	11.68	0.00	30	6.38	-2.62	30	15.34	.23	30	13.6	0
40	11.37	0	40	6.35	-2.35	40	14.85	.38	40	13.15	.15
50	11.49	0	50	5.92	-2.02	50	13.47	.50	50	11.75	.35
60	9.13	0	60	5.22	-1.63	60	11.54	.57	60	9.9	.65
70	7.34	0	70	4.27	-1.24	70	9.21	.58	70	7.65	.85
80	5.21	0	80	3.10	-.85	80	6.58	.49	80	5.25	.90
90	2.79	0	90	1.72	-.47	90	3.61	.28	90	2.60	.60
95	1.50	0	95	.94	-.28	95	2.02	.16	95	1.25	.35
100	0.12	0	100	0	0	100	.25	.25	100	0	0

CO-EFFICIENTS AT 6.

Clark Y.				Naca 2409.				Gott. 387.				Gott. 426.			
A°	CL	Cd	L/D	A°	CL	Cd	L/D	A°	CL	Cd	L/D	A°	CL	Cd	L/D
-7.6	-.20	—	—	-2.0	-.02	.0085	2.3	-9.06	-.156	.0156	-10	-8.8	-.144	.0642	-2.2
-6.0	-.08	—	—	-1.7	0	.008	—	-5.98	+.062	.0126	+4.9	-6.0	+.072	.0212	+3.4
-2.0	+.205	-.015	16.0	-1	+.06	.0082	7.3	-4.44	.168	.014	12.0	-4.7	.172	.0174	9.9
0.0	.355	-.018	21.1	0	.13	.0085	15.3	-2.89	.28	.0172	16.3	-3.3	.272	.018	15.1
+1.6	.47	-.022	20.8	+2	.29	.013	22.3	-1.35	.39	.021	18.6	-1.8	.376	.0212	17.8
3.4	.60	-.029	19.4	3	.36	.0156	23.1	+0.19	.504	.0284	17.7	-.5	.487	.0248	19.6
5.6	.752	-.042	17.4	4	.44	.0197	22.4	1.73	.612	.0368	16.6	+.9	.586	.0304	19.3
7.3	.88	-.056	16.0	6	.59	.0285	20.7	3.28	.726	.0468	15.5	2.4	.70	.0368	19.0
8.6	.972	-.067	15.0	8	.73	.0406	18.0	6.36	.96	.0712	13.5	3.7	.80	.0464	17.3
10.2	1.09	-.082	13.9	10	.89	.0556	16.0	9.44	1.146	.1004	11.4	5.2	.905	.0556	16.3
15.4	1.45	-.137	10.6	12	1.02	.073	14.0	12.5	1.308	.134	9.8	7.9	1.09	.0796	13.7
19.5	1.565	-.215	7.6	13	1.1	.084	13.1	15.5	1.328	.1848	7.2	10.7	1.27	.1134	11.2
23.0	1.37	.32	4.4	14	1.19	.0953	12.5	18.5	1.32	.2462	5.4	13.7	1.28	.1612	8.0
25.0	1.257	.388	3.4	19.5	1.51	.1573	9.6	21.49	1.272	.3002	4.3	—	—	—	—



CARVING MODEL AIRSCREWS

By S. E. CAPPS

The sketch above shows (items 1, 2 and 3) the types of chisels and rasp to use; and (items 4, 5 and 6) how to fix the sandpaper to pieces of wood.

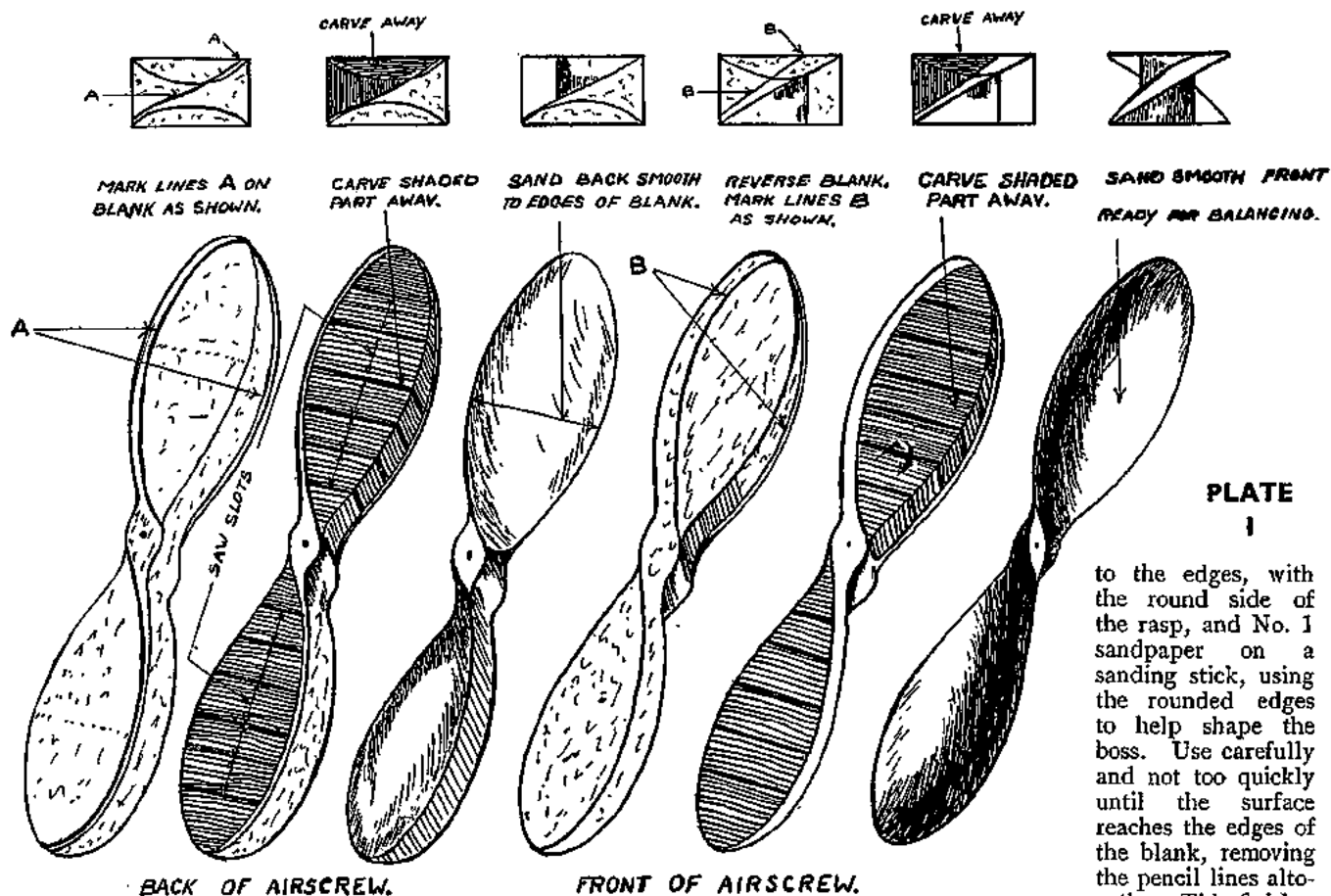
THERE are many aero-modellers to-day, both skilled and those new to the sport, who find considerable trouble in carving airscrews to suit their models. Many exceptionally well-made models have been damaged early because of the behaviour of an unsuitable airscrew. Some of these airscrews are quite efficient, but they do not suit the model they are used on. Others are inefficient because of unsuitable workmanship in carving, resulting in badly shaped and badly proportioned blades. Add to this the possibility of the forward pitch of the blades not being equal and one blade being heavier than the other, and you have an airscrew that, while being very graceful to look at, will not fly the model any too well. There are many ways in which an airscrew can cause faulty performance, but in this article the most troublesome will be dealt with, that is, correct carving and balancing.

Firstly, let it be pointed out that it is best for beginners to use blanks already shaped and pitched. With these a fair measure of success can be obtained without undue trouble, and in consequence this article is centred on carving these blanks. These shaped blanks are obtainable in all the diameters used on models, with three or four pitches and blade widths for each diameter, and are cheap to buy. The blade widths and pitches have been decided by the designers, and it is very doubtful if they can be improved by the average aero-modeller.

The troubles that can beset anyone not well versed in the art of airscrew carving are enough to dishearten many modellers altogether particularly when one's attempts at making airscrews has resulted in a smashed model or four or five airscrews being carved before one is found suitable.

It is not the writer's purpose to state here the exact airscrew to use on a certain model, but to remove this doubt from many minds as to what they should use, let it be understood that models with wing loading not exceeding 4 oz. to the square foot, and with a power-weight ratio from 25 per cent to 50 per cent rubber can use successfully any of these shaped blanks up to one-third of the wing span in diameter, using a forward pitch of $1\frac{1}{4}$ to $1\frac{1}{2}$ times the diameter. For heavier loaded models the diameter and pitch will be less, in order to obtain a more intense and constant driving torque from the motor. With lighter loaded machines larger diameters and forward pitches can be used, as lighter pulling power is required to keep model flying.

However, the modeller who is in any doubt is advised to purchase a blank, and at the same time ask the most suitable for his own particular need. Accompanying this article are sketches which show the various types of tools used by the writer and equipment necessary, and the carver can be assured that using his own skill in conjunction with these he will be able to turn out an airscrew very near the equal of the purchased finished article. The tools consist of a flat bevelled edge wood chisel with a very keen edge, a shallow half-round rasp, a shallow gouge, and two or three sanding sticks. One should be flat on one side and round on the edges; the other can be of oval section. These are simple to construct, and will probably have to be made, as they are unusual, therefore not likely to be stocked by the stores. They can be made quite simply, needing one or two pieces of wood about 12 in. long. These are next shaped to the curves shown, and the sanding paper secured in one of the same ways. The writer uses a shaped bench block, which is very useful, and saves cutting the table



or bench about. Furthermore, it allows the job to be moved about and operated on from any angle. This is a great help and prevents quite a number of mishaps.

Having decided the blank to be used, start by marking the sides to be the back and front of the airscrew. This is done as shown at A, plate 1. A black pencil line is made round the edge, about $\frac{1}{16}$ in. from the actual edge, and continues over the end and back to the boss or centre along the bottom of the opposite side. How this appears is shown in the illustration and end view in plate 1. Take care to do this correctly, as this determines the way of rotation of the airscrew, which in this article is right-handed or clockwise direction when viewed from the rear. Having made quite sure that the lines are in the correct position on both blades, carefully shade the parts shown. These are the parts that have to be cut or carved away. Now to further simplify removing this, and at the same time to ensure the blade is not spoiled in carving, cut a number of slots across the shaded portion from line to line. Stop when the saw just reaches the line. This is well worth while, as if well done not only prevents spoiling the blade through splitting, but will definitely decide the sides of the blank to be carved away.

Using the flat bevelled chisel very carefully, remove the shaded part in small chips and do not attempt to remove the lot by one or two strokes of the chisel. The closer to line the more care must be used to avoid cutting through the edge and making nasty corner digs with chisel, which will be difficult to remove, and may spoil the whole job. When this has been accomplished correctly, carefully rasp and sand to a flat surface right

to the edges, with the round side of the rasp, and No. 1 sandpaper on a sanding stick, using the rounded edges to help shape the boss. Use carefully and not too quickly until the surface reaches the edges of the blank, removing the pencil lines altogether. This finishes

the back of the blades for the moment. Next reverse the blank, and mark lines B the same way as with A, about $\frac{1}{2}$ the greatest width round the blank, end and side as before. This also is clearly shown in the illustrations, which should be studied carefully to ensure that no mistake is made. Shade the parts to be cut away and cut the slots as with A. Use the bevelled chisel to remove the shaded portion, cutting away gradually in small chips until the pencil lines are reached. When both ends are carved they should be sanded smooth with the sanding stick, and the ridge that is left on the front side should be just rounded with the sandpaper. This gives the airscrew the required aerofoil shape to the leading edge of the blade. Extreme care should be taken in all these operations to see that the boss is not cut into and thereby weakened, which will only result in the airscrew breaking in use. In sanding hold the airscrew and sanding strip firmly and with the airscrew on the block use the strip in the manner shown and not straight across. This will be found to give a smoother and better finish.

This completes the carving, and it only remains to balance the airscrew and to finally finish with very smooth sandpaper. Before proceeding to balance the airscrew it would be as well to go over all the operations that have led to the carving up to this point and make certain that no mistake has occurred.

A balanced airscrew is very necessary in the writer's opinion, as an airscrew that is out of balance will absorb the power of the motor in driving it round. The method used by the writer is shown in plate 2, and as will be seen is very simple. Firstly, drive a sharp true needle

into the side of the shaping block or table, and use this as a spindle on which the airscrew to be balanced is placed. It must be free to revolve without any friction. Now mark the blades A and B. Revolve airscrew slowly by hand and note which blade stops at the bottom. This blade is the heavier, and it must be lightened. This is done by sanding this blade at any point as far away from the centre as possible, using the sanding stick lightly. Replace on the needle and test again; it may be now that the other blade is the heavier. Sand this the same way as the first, and continue to test until both blades will remain in a horizontal position. This is shown in Fig. 3, plate 2. This shows that A and B are of equal weight, and therefore balance each other.

Now for many modellers this is sufficiently balanced and good for most models, but although both blades balance each other it may be, and very often is, that the airscrew is still considerably out of balance. To explain this more fully and without making it too difficult for the builder to follow, plate 2 should be carefully studied at Fig. 4.

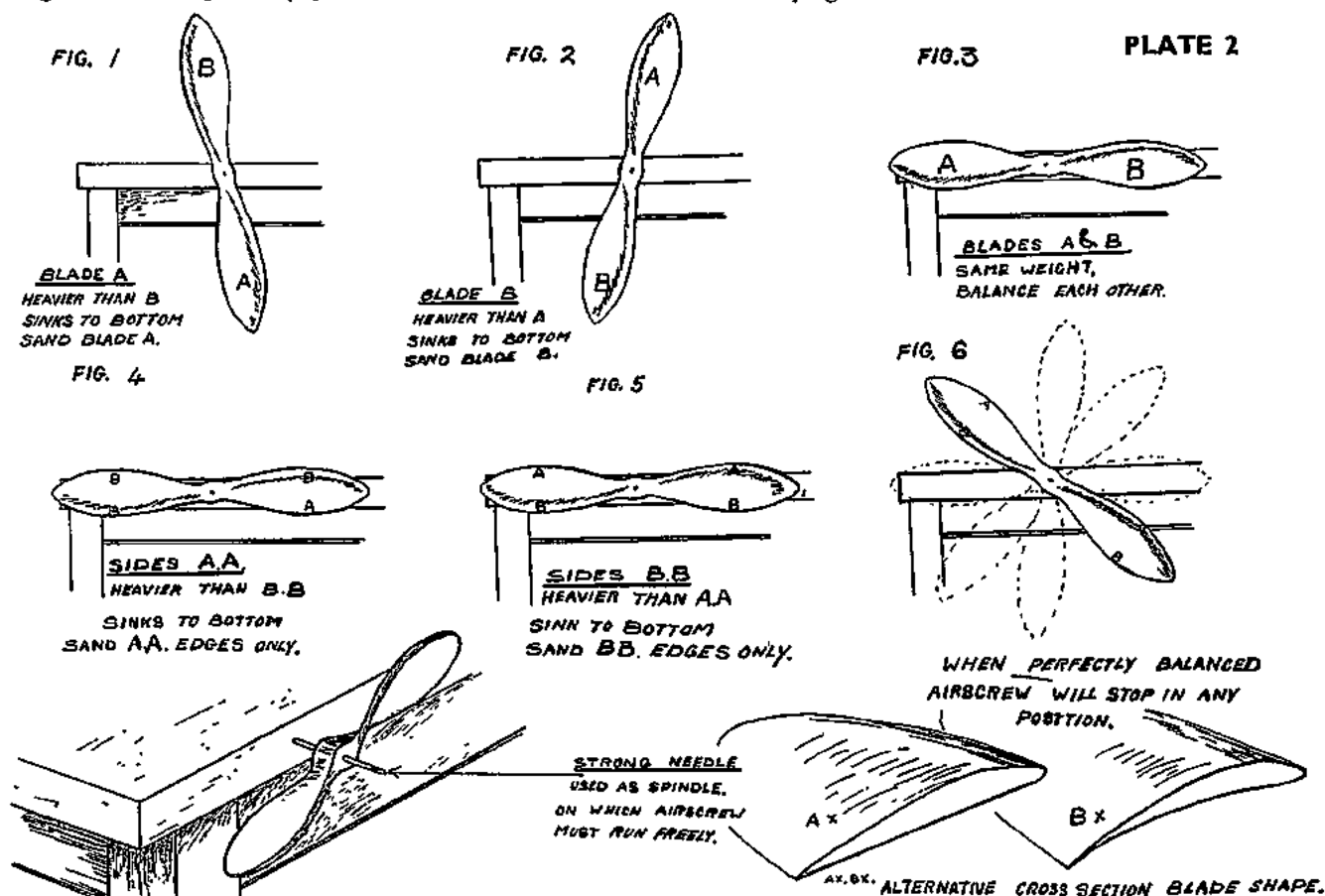
Here it will be seen the blades have been remarked AA for one complete side, and BB for the other. It may be found that on revolving the airscrew sides AA always return to the bottom and BB remain at the top. This shows that sides AA are heavier than BB. To rectify this sides AA must be sanded slightly all the way from tip to tip. Test again and note new position; it may want more, or sides BB return to the bottom instead. If this is so, BB must be sanded the same as sides AA, but only take a very small quantity of weight away at a time. When airscrew is perfectly balanced it should, on being revolved, stop in any position. This is illustrated

in Fig. 6, plate 2. Too much explaining on this point will only confuse the builder here again, and he is advised to study the illustrations throughout the whole balancing procedure, to obtain a good mechanically-balanced airscrew.

Now a few words as regards the finish. The rear of the blade can be left flat as at AX, or slightly concaved as at BX. Both finishes are used by modellers, and unless the carver has very decided views on this aspect it is advisable to leave the back of the blades flat. This will give an all round satisfactory performance. The curved back may give a slight added advantage in delaying the stall of a model slightly, but this is very slight, and unless the model is exceptional in aerodynamical design, it is very doubtful if a concaved rear surface is an advantage.

The final finishing of the airscrew should be done with the finest sandpaper obtainable, and the airscrew rubbed very lightly all over until the natural sheen of the wood is obtained. Polishing or painting is left entirely to the carver's choice, but it must be remembered that any increase in the weight will make it more difficult to drive, especially if applied unevenly, as this will throw the airscrew out of balance, and all the time spent on balancing will have been wasted.

In conclusion, may it be understood that if anyone who has not had the best of luck in carving airscrews cares to try the methods adopted by the writer and set out here, he can be assured that with the help of his ability he will be able to produce good serviceable airscrews without a lot of bother that will materially help him in flying his models.



Notes on the Annual General Meeting of the S.M.A.E., held by permission of the Royal Aeronautical Society, in their library, 7 Albemarle Street, on Wednesday, January 11th, 1939.

Mr. A. F. Houlberg was in the chair.

The minutes of the last Annual General Meeting were read and confirmed.

There was no business arising from the minutes, and Mr. E. F. H. Cosh, the Hon. Secretary, gave his report on the year's work of the Society. It was proposed by Mr. T. Wickens, and seconded by Mr. C. A. Rippon, that this very excellent report be adopted.

Mr. L. J. Hawkins, the Hon. Treasurer, then gave his report on the financial statement of the Society, and issued the Income and Expenditure Accounts for 1938. Arising from this, the meeting discussed the advisability of altering the price of the S.M.A.E. handbook, but after a vote it was decided that the handbook should remain at 4d. Mr. Hawkins was congratulated on the financial side of the Society, and the accounts were accepted.

Mr. J. C. Smith, Hon. Competition Secretary, then gave his report on the year's competitions. The report was accepted.

The officers of the Society then resigned, and election of the 1939 officials resulted as follows:—

President.—Dr. A. P. Thurston.

Vice-Presidents.—Duke of Richmond and Gordon, Major C. E. Bowden, Messrs. W. E. Evans, C. R. Fahey, M.B.E., F.R.Ae.S., A. F. Houlberg, A.M.I.Ae.E., B. K. Johnson, D.I.C., F.R.M.S., A.R.C.S., Percival Marshall, A.I.M.E., G. Geoffrey Smith, M.B.E., Mrs. A. P. Thurston.

The meeting requested that Commander Perrin, Secretary of The Royal Aero Club, Captain Pritchard, Secretary of the Royal Aeronautical Society, and Colonel Moore-Brabazon be invited to become Vice-Presidents.

Chairman.—Mr. A. F. Houlberg.

At this point a vote of thanks was passed to Mr. Houlberg for his past work on behalf of the Society.

Vice-Chairman.—Mr. L. J. Hawkins.

Hon. Secretary.—Mr. E. F. H. Cosh.

At this juncture, it was proposed and unanimously passed that Mr. Cosh be elected a Fellow of the S.M.A.E. and be given an honorarium of £20. Mr. Cosh explained that he was quite prepared to carry on his duties, but the Society had grown since he took up the reins of secretaryship, from a mere dozen clubs into almost one hundred, and he was finding it humanely impossible to work single-handed. He suggested that a committee be set up to go thoroughly into his work, so that the society can be informed of the position.

The meeting then carried on with the election of officials.

Hon. Treasurer.—Mr. L. J. Hawkins.

Hon. Competition Secretary.—Mr. J. C. Smith.

Hon. Technical Secretary.—Mr. R. N. Bullock.

Hon. Press Secretary.—Mr. H. York.

A committee, consisting of the following gentlemen, was then elected to discuss the secretarial duties of Mr. Cosh:—Dr. Thurston, Messrs. A. F. Houlberg, L. J. Hawkins, J. C. Smith, H. York, T. Wickens, and, of course, Mr. E. F. H. Cosh.

Mr. L. J. Hawkins, the Hon. Treasurer, then suggested alterations dealing with the reaffiliation of clubs

THE SOCIETY OF MODEL FULL REPORT OF THE HELD ON JANUARY

whose reaffiliation fees lapsed. It was finally decided that any club who, after due notification, failed to pay their affiliation fee, shall be struck off the roll of the affiliated clubs after the expiration of four weeks, and that any member of a club in arrears with their affiliation fee shall forfeit the right to receive a prize in any competition organised by the S.M.A.E. unless he or she pays an entrance fee as an unattached person. Any club so struck off shall apply for reaffiliation to the Secretary in the usual way, and that the Treasurer shall inform the Council at each meeting of any clubs in arrears with their affiliation fees.

The Northern Heights M.F.C. brought to the notice of the meeting the fact that it was possible for a member of an affiliated club to enter an S.M.A.E. competition, although his subscription to his local club was unpaid. After some discussion, the meeting decided that in future clubs should provide their members with cards or some evidence that proved subscriptions to their local clubs had been paid. This card must be shown to the persons organising both centralised and decentralised competitions before an intended competitor be allowed to enter a competition.

General Rule No. 10, which limits the number of time-keepers of any affiliated club to six, including the Council delegate, was next discussed, and the meeting passed a proposal that in the case of service clubs and any exceptional circumstances, this number might be increased.

The meeting then fully discussed the Area Scheme and passed a proposal that this should be put into operation.

Mr. Houlberg then gave the meeting an outline of what occurred at the F.A.I. conference in Paris, held the week ending January 7th, the most important point being that a special code sportive dealing solely with model aeroplanes was being prepared.

Suggestions put to the meeting by Mr. E. A. Ross for the Bristol Club, were ruled out of order owing to the fact that these had not been submitted to the Secretary twenty-eight days before the Annual General Meeting.

It was brought to the notice of the meeting that some of the lists published of the 1939 competitions might give the impression that the Woman's Cup Competition is centralised. This is not the case.

Mr. Houlberg read the following telegram, which had been received: "To wish the 1939 Wakefield Team all success. Shall be pleased to swell the fund by the sum of fifteen guineas.—EDITOR, THE AERO-MODELLER."

A cheque from the Lancs. Club, value £5 14s. 4d., collected at their dinner, and an amount of £1 2s. 1d. from the Oxford Club, the proceeds of a dance, were handed to the Treasurer toward the Wakefield Fund.

The meeting closed at 11.15 p.m. with a vote of thanks to the Chair. H. YORK, *Hon. Press Secretary*.

HON. SECRETARY'S REPORT, 1938-39.

MR. CHAIRMAN, LADIES AND GENTLEMEN,

THIS is the fourth Annual General Meeting at which I have been privileged to present to you my annual report of the Society's activities, and it gives me particular pleasure to do so on this occasion, as the year

AERONAUTICAL ENGINEERS

ANNUAL GENERAL MEETING

11th, 1939

under review has been an outstandingly successful one for the Society.

One of the most outstanding features of the past year has been the large increase in the number of clubs which are affiliated to the Society. When I became Secretary there were 12 affiliated clubs, at the end of the 1937 season the number had increased to 52, and in my last annual report I predicted that within the next two years we should have 100 affiliated clubs. The growth of the movement has been so rapid, however, that this figure was almost reached at the conclusion of the past year. There are now 92 affiliated clubs, which is an increase of 40 over the previous year. It may interest you to know that the approximate membership of these clubs is 2,553, or a little over 28 members per club. From the enquiries which I am continually receiving from new clubs it is apparent that we have by no means reached the saturation point in this direction; in fact, I believe that at present we have only reached the fringe of its possible development. Before leaving this subject I must say how gratifying this influx of new affiliated clubs is to my fellow-officers and myself, as there is no surer indication than this of the tremendous increase in the popularity of model aeronautics.

The increase in the number of affiliated clubs has had a beneficial effect on the Society's financial position, which, as you will see from the balance sheet, has greatly improved. I do not propose to add anything further in this connection, as our Treasurer, Mr. L. J. Hawkins, will deal with same in his report, but I should like to take this opportunity of expressing my appreciation of the quietly efficient manner in which Mr. Hawkins has again carried out his duties as Treasurer.

The recognition of model aeroplane records by the Federation Aeronautique Internationale has placed a further burden of work on the Society and its officials, making it necessary for the Society to be represented at the meetings of the Model Commission of the F.A.I., in order to safeguard the interests of British model flyers.

I am fully aware that there are a number of affiliated club members who consider that we should take no part in the work of the F.A.I., and should devote ourselves entirely to controlling the movement in this country. This course of action, even if it was advisable, is not possible, because this society is appointed by the Royal Aero Club of Great Britain to act as the governing body, and as such we are bound to undertake whatever work this may entail. There is, in my opinion, room for great improvement in the manner in which these international matters are dealt with by the Council, and I feel it my duty to strongly impress upon every member of the Council the importance of giving these matters very careful consideration before making any decisions, remembering always that it is their duty, and theirs alone, to make such decisions. There is much more that could be said on this subject, but time will not permit me to do so. I should, however, like to make it quite clear to affiliated clubs and their delegates that apathy on their part towards this sphere of the Society's work is fatal to the Council's position, which must on no account be undermined.

The increasing progress made in model aeronautics, and the corresponding increase in the number of affiliated clubs, has created a number of difficult problems for the Society to face. One of these is the increase in the size of the Council, which many feel has hindered its work. The Area Committee Scheme, which will shortly be placed before you, may assist in this connection. Although it is not possible for me to comment on this scheme before it has been discussed by you, it should be remembered that the proposed scheme will not affect the size of the Council until it comes into effect throughout the country, which may take some considerable time.

There are, however, ways in which an immediate improvement could be effected in the conduct of the business of the Society by the Council.

Firstly, I consider that the present seating arrangements of the Council is not conducive to efficient working. When the Royal Aeronautical Society moves into its new headquarters I have every reason to believe that we shall have at our disposal better facilities, which will enable us to arrange the seating in the correct manner.

Secondly, from past experience I have come to the conclusion that the Council should select an Emergency Committee, composed of such of its members who could be called together at short notice to decide matters which do not justify calling a full Council meeting, even if the time was available. It would also relieve me of the responsibility of making decisions which afterwards have to be confirmed by the Council. If such a committee was elected it would not only be of assistance to the Secretary, but would, I feel sure, facilitate dealing with business requiring prompt attention.

Although Mr. Smith will give you a report of the past competition season, and I do not wish to "steal his thunder," I should like to comment on certain aspects of this important part of our work.

The introduction of the competition programme in the form of a handbook has been a great success, and I know you will agree that it is an improvement over the old method of presenting the competition rules, etc. I am sure that the increase in the number of affiliated clubs is due in no small measure to the fact that by means of the handbook I have been able to provide new clubs with the information they require in a concise form. 2,000 copies of the 1938 Handbook have been distributed, and despite the fact that a number of these were given away, the difference between the cost of printing and the receipts from the sale of the handbooks, only shows the small deficit of £4 5s., which is considerably less than the cost of the old competition programme sheets, which were distributed free.

With regard to the competitions organised by the Society last year, I have some criticisms to make, which are, however, no reflection on the work of the Competition Secretary, but are mainly due to the fact that the Competition Committee failed to function as such during the competition season. I realise that the affiliated club, quite rightly, expects the organisation of the S.M.A.E. competitions to be an example to them in conducting their own competitions, but I must frankly admit that on a number of occasions the organisation was not of the standard that one would expect from the governing body. I would humbly suggest that steps should be taken early to ensure a very definite improvement in this direction during the coming competition season. In order to effect this object arrangements should be made for the competition committee to meet at least once each month during the competition season; it should be the duty of this

committee to meet at a date well in advance of a centralised competition, and to discuss the methods to be adopted in running the competition. This would ensure that all the details of organisation would be planned well before the date of the contest, instead of, as at present, at the last moment. I know that these remarks of mine will be accepted in the right spirit by both the Competition Secretary and the Competition Committee, also that Council members will appreciate that in view of the number of important centralised contests to be run this year, it is necessary in the interests of the Society to be frank. Before leaving our competitions mention must be made of the Wakefield Cup Competition. I have no doubt that the fact that this cup has been won by the United States of America will once again spur every British model flyer to play his, or her, part in winning it back again. This feat seemed to be almost impossible in 1936, but nevertheless it was accomplished, and I know that our team this year will go to America confident that what has been done once can be done again.

And now I have come to my annual complaint, namely, the increase in the amount of secretarial work. I make no excuse for again raising this matter, because I believe that it is taken as a matter of course by a large section of the Council. As I stated in my last report, this work is becoming far more than I can cope with in my spare time, and as the number of affiliated clubs has increased by almost 50 per cent since that time, it should be obvious that I am now finding the work to be overwhelming. I have no desire to exaggerate in the slightest the amount of work that I am now called upon to do as Secretary, but to mention only one item, it may interest you to know that during the past year I have received and answered approximately 2,000 letters, an average of 40 each week. There is not the slightest doubt whatever that during the present year the secretarial work will again be greatly increased, and will, in fact, become more than I can possibly undertake. Apart from the anticipated growth of the movement, the introduction of the Area Scheme would add still further to this work.

I believe that it is considered by some Council members that this problem is largely one of finance, but I should like to make it perfectly clear that this is not the case as far as I am personally concerned. I am, and always have been, quite willing to carry out my duties without any form of payment, providing always that I can find the time to do so. The real problem now to be faced is that even by devoting every spare moment to this work I cannot keep pace with it. The problem, then, is not one of finance, but of time, and time only. May I take this opportunity of suggesting two courses of action:—

- (1) Appoint another Secretary who has more spare time available than I have.
- (2) Elect a sub-committee to investigate the matter, and ascertain that the position is as I have stated.

Should you agree to either of these suggestions I would emphasise the need for this matter to be treated as one of urgency. I should be neglecting my duty if I did not place on record my sincere appreciation of the help that I have received during the past year from our Chairman, Mr. A. F. Houlberg, indeed, without this help I should not have been able to continue my work as Secretary up to the present time.

In conclusion, may I add that we must not let the excellent progress that we have made overshadow the fact that this progress has inevitably brought in its train many difficulties which have to be faced. The Society of Model

THE SOCIETY OF MODEL

REPORT OF ANNUAL GENERAL MEETING.—Continued.

Aeronautical Engineers is approaching one of the most interesting, but none the less difficult, periods in its career. I am confident, however, that it will surmount these difficulties given the support which I know it will receive from everyone who has the interests of model aeronautics at heart.

THE HON. COMPETITION SECRETARY'S REPORT.

MR. CHAIRMAN, LADIES AND GENTLEMEN,

IT is entirely unnecessary for me to dwell on major competition events of the past year, as they have already been aired, perhaps too fully, in print, so I will confine my remarks to a few congratulatory ones.

First and foremost, the performance of Mr. E. Chasteneuf, of Blackheath M.F.C., in winning the Premier Shield for two years in succession, is outstanding; as also is Mr. Copland's flight of 33 min. 9 sec. made in Yugoslavia whilst helping to win for Britain the King Peter Cup. To the Lancs. M.A.S. on winning the Plugge Cup; to Luton and District on winning the Farrow Shield; and to Northern Heights M.F.C. for carrying off the National Cup, the heartiest congratulations.

Naturally, mention cannot be made in such a short report, as I intend this to be, of all contest winners, but congratulations to them also.

It is pleasing to note that, apart from the Weston Cup Contest and the Wakefield Cup Trials, team events attracted most entries.

Centralised Competitions.

These, again eliminating the Wakefield Trials, have only increased entries of 9 per cent over last year. London and District supplied 79 per cent and the provinces 21 per cent of total entries. Wakefield Trials, London 57 per cent, Provinces 43 per cent.

Decentralised Competitions.

Here is a much better showing. Entries increased almost 100 per cent over 1937, whilst of total entries London supplied 50 per cent and the Provinces 50 per cent, the Plugge Cup being undoubtedly responsible.

Petrol Registrations.

Since the introduction of the Power Driven Model regulations, 147 have been registered, not, I imagine, a representative number of models of this type being flown.

Records.

Record have been made or broken no less than thirty times during the year, which I submit is a very healthy sign.

My thanks to all clubs for their loyal support throughout the year, which is so essential to keep pace with such rapid expansion, and a hearty welcome to all new clubs.

J. C. SMITH,
Hon. Competition Secretary.

AERONAUTICAL ENGINEERS

BALANCE SHEET, 1938

HON. TREASURER'S REPORT FOR 1938.

THE year 1938 has been a very successful one for the Society financially, due mostly to the increase in affiliated clubs and the consequent increase in S.M.A.E. competitions. This year resulted in an increase in affiliation fees amounting to £37 15s. 6d., whilst the increase in competition fees over 1937 was £22 5s. 6d. Patron members' subscriptions were deficient by £5 19s., but donations to the Society increased by £11 9s. 6d. The Society profited through the sale of badges by £17, whilst the handbooks resulted in a deficiency of £4 5s., but this loss to the Society is considerably less than in former years, when the competition programme was printed on sheets and distributed free of charge. It is actually a saving on the old method.

The annual dinner, dance and prizegiving showed a deficit of £1 12s., against a deficit of £4 10s. 4d. in 1937, which shows that the social side of the Society's activities is being more widely appreciated.

There is an item on the income side of the accounts of a surplus to the general fund of £7 11s. 5d. from the Yugoslavian Fund. This counterbalances an item of

£12 14s. 6d., being carriage and insurance for the trophies from Belgrade to London, the account for which was received too late to include in the 1938 figures. This figure of £12 14s. 6d. will be reduced by £5 7s. 6d., an amount which is being claimed for repair to the King Peter's Cup.

The year showed an increase on the postage charges of £11 10s. 3½d. over 1937, due to increased membership, and therefore increased correspondence. The payment for the year for stationery showed a saving of £4 0s. 7d. over last year, due to new methods adopted by the Secretary of duplicating notices, etc.

The prize money showed an increase of £6 3s. 4d. over last year.

It will be noted that there is a substantial balance at the bank, and before any consideration is given to reduction in fees, etc., I submit that thought should be given to the expenditures the Society may be put to this coming season, namely, the cost of organising the King Peter's Cup Competition, and the sending of a team to America, which in all probability will be considerable.

Will clubs send me their donations to the 1939 Wakefield Fund as soon as they can, as a list is to be published monthly, showing a statement of the fund?

I would like to put on record my appreciation of the way the other officials of the Society have worked with me and helped me during the past year.

L. J. HAWKINS,
Hon. Treasurer.

THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS.

INCOME AND EXPENDITURE ACCOUNT, 1938.

INCOME.				EXPENDITURE.			
		£	s. d.			£	s. d.
Balance brought forward from 1937	...	34	0 9	Cost of Handbooks	...	28	6 0
Subscriptions	...	2	7 6	Postages	...	20	17 11½
		£	s. d.	Printing and Stationery	...	15	17 8
Donations:—				Prizes (Cash)	...	19	14 9
A. F. Houlberg, Esq.	...	5	5 0	Hire of Rooms (Albert Hall £4 5s.; Comp. Comm. 2s.; Tips to Caretakers £4 4s. 6d.)	...	8	11 6
H. H. Price, Esq.	...	5	5 0	Badges (Engravings, 1,517 at 3d., £13 19s. 3d.; Tags for Wakefield Team, 10s.; 6 Badges at 5½d., 2s. 9d.)	...	19	18 0
Major C. E. Bowden	...	5	0 0	Cost of 1,699 at 5½d.	...	38	18 8
Dr. Thurston	...	2	2 0	Exhibition Expenses	...	3	2 6
W. A. Caton, Esq.	...	5	5 0	Mr. Cosh's Expenses to Paris (January, 1938)	...	5	10 0
				28 Lantern Slides	...	2	17 6
Competition Entrance Fees	...	22	17 0	Telephone Account (Mr. Cosh)	...	4	1 10
Affiliation Fees	...	43	10 6	Scouts Lunch (Petrol Competitions)	...	1	0 0
From Albert Hall Tickets	...	105	17 0	Public Address Van (Petrol Competitions)	...	3	3 0
Registration of Petrol Models	...	1	0 6	Mr. Collins and Mr. Cosh, Expenses to Brussels	...	8	3 0
Balance from Lord Wakefield Fund	...	9	12 6	Repair to Typewriter	...	0	9 0
Balance from Yugoslavian Fund	...	107	17 10	Honorarium (Mr. Cosh)	...	10	0 0
Mrs. Thurston	...	7	11 5	Cash Book	...	0	4 6
From Sale of Badges	...	1	19 0	Rubber Stamps	...	0	4 3.
From Sale of Handbooks	...	75	16 9	Insurance, Thurston Cup	...	0	3 0
From Sale of Annual Dinner Tickets	...	24	1 1	Cheque Books	...	0	12 6
		38	9 9	Mr. Smith, Return of Registration Fee	...	0	2 0
				Refund to Hayes District M.F.C. (unused Albert Hall Tickets)	...	0	4 0
				Transfers	...	1	8 2
				Reimbursements to Colwyn Bay M.F.C.	...	0	2 6
				Embossing Stamp and Stapling Machine	...	0	19 0
				Insurance of Cups	...	2	18 9
				Tickets	...	0	4 0
				Reimbursements to H. H. Price (unused A.H. Outgoings re Annual Dinner	...	40	1 9
				Balance in Hand at Bank	...	237	10 9½
						£475	1 7

Examined and found correct this 29th day of December, 1938.

(Signed) A. H. SIMMS, Hon. Auditor. £475 1 7
L. J. HAWKINS, Hon. Treasurer.

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Balsa	$\frac{1}{4}$ in. square	3 ft. long	5 off
"	$\frac{1}{4}$ in. \times $\frac{1}{8}$ in.	"	2 "
"	2 in. \times $\frac{1}{8}$ in.	1 ft. long	1 "
"	2 in. \times $\frac{1}{16}$ in.	3 ft. long	1 "
"	12 in. \times $1\frac{1}{2}$ in. \times $1\frac{1}{2}$ in.	Aircrew	1 "
Block	$1\frac{1}{2}$ in. \times 2 in. \times $\frac{3}{4}$ in.		
Three-ply	$\frac{1}{8}$ in.	4 in. \times 4 in.	1 "
"	$\frac{1}{16}$ in.	4 in. \times 4 in.	1 "
Bamboo	approx. $\frac{1}{8}$ in. wide	12 in. long	3 "
Jap. tissue	White or coloured	—	2 sheets
Rubber	Motor; 10 strands		
	$\frac{3}{16}$ in.	7 yd.	—
Piano wire	16 gauge	5 in.	1 off
"	18 gauge	12 in.	1 "

Sundries: Cellulose glue, mounting paste, razor blades, laundry clips, sandpaper (0 and 00), dope, thread, paper, ruler and pencil—also indiarubber!—and strong table to work on.

Begin by carefully studying the drawings, until you are sure that every detail is quite clear. Read the text through a couple of times, referring to the drawings, and get familiar with the sequence and methods of construction. Many a good job has been spoilt because someone started right off without studying the plans. Also see to it that all materials are on hand and all the tools complete before building is started; there is nothing so annoying than having to hold up a job that is shaping well just because one forgot to get an important piece of material.

The Fuselage.

Pin the plan on a flat board. Take two of the $\frac{1}{8}$ in. square balsa spars, place them along the upper and lower curve of the fuselage side, and cut them approximately to the right length. The illustration shows how the assembly is done by means of small blocks of scrap wood, pinned or nailed to the board. Start by putting in just a few, and adding on where needed. It doesn't require many. Next, place small bits of greaseproof paper under all the places where the struts will have to be glued to the longerons. This prevents the joints becoming stuck to the wood. Now, when the longerons follow the side view perfectly, you can start cutting the vertical struts and fitting them in place. First try the fit and cut the struts a little too large. Never pass one which is too small and does not take up a sliding fit, nor one that is too long and forces the longerons apart. When the struts are ready, dip the ends in cellulose glue and drop a little glue on the longeron as well. Fit the strut in place and leave undisturbed to dry. (A better method, but it takes more time: cover the ends of the struts and the longeron with a thin film of glue and leave to dry. When dry apply glue once more and fit the strut in place. This gives a better joint.) When all the struts have been put in their proper places, cut the nose and tail pieces from $\frac{1}{8}$ in. balsa sheet. Note that the grain runs vertically. This is not sound from a carpenter's point of view, as one should never glue grains at right angles. However, if the grain ran horizontally the wood would split after a bad shock. And balsa absorbs so much glue that we are justified in adopting this method.

When one side is finished, leave it to dry thoroughly. Some glues dry more quickly than others, but all like to be given time. Therefore a few hours' rest is advisable. (Meanwhile one can start on the ribs). When making the second side, take great care to get it exactly

like the first, or the fuselage will be twisted. Now for the assembly.

Take the two sides and run a little glue on the four corners of the bulkheads 4 and 5, as well as on the four horizontal struts, which have been measured up from the plan-view. Leave to dry, and then glue the struts all on one side. They will tend to fall over, but one should just hold them more or less vertical until the glue has set and become tough. Then apply glue to the four remaining ends, and the corresponding point so on the other side. Again hold the job in place. When the glue has set so that there is no more danger of the struts becoming detached, place the fuselage in the normal position on the board and start trueing up. Place a drawing office set-square against the sides to see that they stand perfectly vertically. Also check the plan to see that one side is not ahead of the other. Next stretch a couple of elastic bands over the sides, fastened to the board by means of pins. This will hold the sides in place. Do not tighten the bands too much or they will cause the whole job to collapse. Don't force—persuade.

After the sides have been thus connected, fit the struts of the other bulkheads, upper and lower at the same time. Measure the length from the plan view. Finally, fit the balsa nose and tail pieces. Now look carefully along the fuselage to see if it is straight. If the job has been carried out properly, all the struts should be parallel. In the case where it is badly twisted, the only thing to do is to cut out the offending strut or struts and correct the misake by refitting them properly.

The Wing.

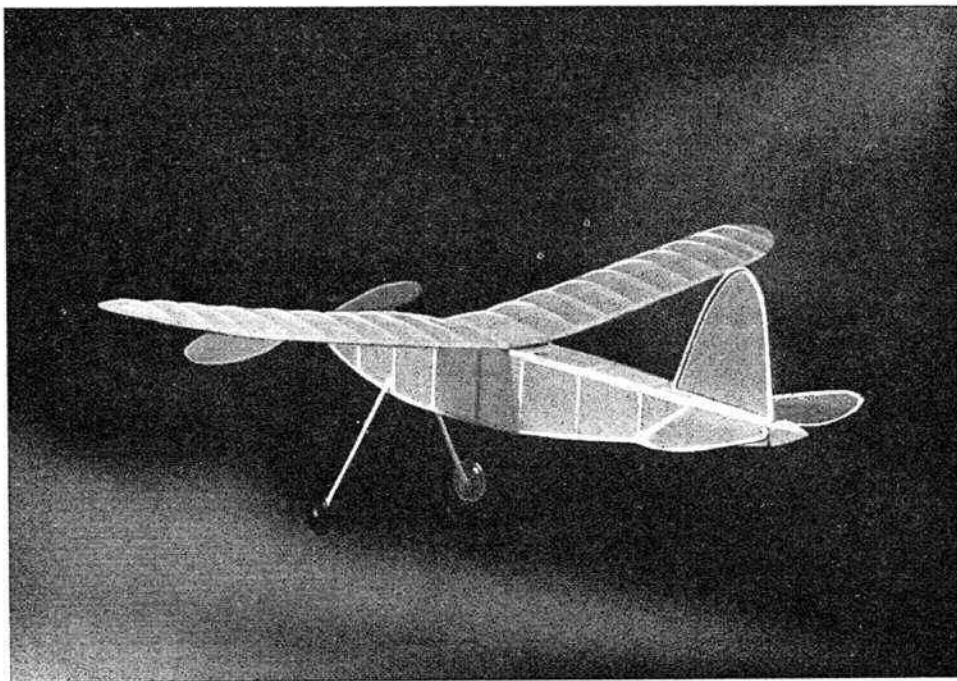
Begin by making two templates of $\frac{1}{16}$ in. three-ply and of the form shown for the ribs 1—7. Take care over this job, as the shape of the actual ribs will depend upon the accuracy with which this is done. Cut out the templates and finish with sandpaper. Then trace twelve ribs on the $\frac{1}{16}$ in. balsa, grouping them in such a way that the material is used most efficiently. Two ribs are made of $\frac{1}{8}$ in. balsa. Cut out the ribs, taking care to keep beyond the outline. Finish the lower surface straight by means of sandpaper and clamp them together, the two templates on the outside. By stretching a strip of sandpaper over a block of wood and nailing it to the sides we can make a very useful tool for sanding down flat surfaces. With this the curved upper surface of the ribs is brought to exact similarity to the template. Before the ribs are taken apart we mark the place where the

(Continued on page 249).

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main spar is to be placed, and where we shall have to cut a slot. This slot is made by carefully "sawing" into the wood with a razor blade and picking out the small rectangle with the tip of an ordinary penknife. The slots in the ribs must be of such a size that the spar fits just nicely. It must not be too large, so that the ribs sit loosely on the spar, nor must it be necessary to force the spar in the slot. Therefore cut the slot a shade too small and increase the width by sandpapering or slicing off thin strips, after fitting on a sample length of spar. When all these fourteen ribs are ready (and do not forget that two of them are $\frac{1}{8}$ in. thick—see drawing!) make the ribs Nos. 8, 9 and 10. It is unnecessary to make templates for these, as only two of each are needed. Draw them carefully on paper and transfer this to the balsa sheet by means of carbon paper. Note the attitude of the ribs. They are placed at a twist towards the tip of the wing, and this twist must not be neglected.

Now we take the $\frac{1}{4}$ in. \times $\frac{1}{8}$ in. spar. This is longer than necessary, so we measure off about 82 in. and cut this length in halves. First we must make the centre, which incorporates the dihedral. From the lower surface of the spar we cut off a small triangle, so that when the spar rests on the base of this triangle the outer portions are swept up at a slope of one in seven. To joint the two halves we glue a triangular piece of balsa on top and thin strips against the sides. Take great care to get the right dihedral of one in seven, and check to see that both sides are the same. Next take the sandpaper block and carefully taper the spar so that the height is gradually reduced from $\frac{1}{4}$ in. at rib 1 to $\frac{1}{8}$ in. at rib in the tip. This saves some weight, and, moreover, it is logical, as the spar need not be of the same strength at the tip as at the centre.

Spar and ribs being ready, we now fit the ribs temporarily, to see if the front and rear ends run parallel. Do not glue yet. Place a straight-edge or good ruler along the noses and tails of the ribs. If some do not toe the line there must be a mistake somewhere. Either some ribs are too short or all the others too long; or the spar may be slightly bent in plan view. Correct these faults and glue the ribs in place. Take one of the remaining $\frac{1}{8}$ in. square spars and sand it to a half-round section, as shown in the sketches. Cut off the noses of the ribs and obtain the proper dihedral in the leading edge by gently bending it in steam. Then cover all the places marked for the ribs with glue; also the noses of the ribs. Leave to dry and apply glue again. Place the leading edge in position, holding it there by means of rubber bands. The same applies to the trailing edge. Take care to get the right triangular section, with a sharp edge. The next job is to make the tip outlines. Split the bamboo in halves, and repeat this until you have two thin spars about $\frac{3}{16}$ in. square, or a little more. As we shall make the tail surfaces in the same way, it is best to manufacture a small store of these, say six or seven, to allow for breakages. Place the small spar flat and start scraping it with a razor blade or piece of broken glass. Do this carefully, otherwise the wood will break. After reducing the section to about $\frac{1}{16}$ in. round, it is finished with fine sandpaper. Now bend it very gently in steam, holding it with the hands and not with pliers, as these crunch the wood. Take time over this job, and follow the exact curve given in the drawing. It is particularly important that both tips shall be exactly the

same shape. The same applies to the tail-plane. See to it that the tip is well connected to the leading edge, main-spar and trailing edge. The wing skeleton is now finished, and all we have to do is to bend four hooks of 18 gauge piano wire, to be glued against the inside of the centre ribs, as shown.

The Tail Surfaces.

We already know how to make the bamboo framework. After they have been bent in steam, point the ends and press them lightly into the wood at the places indicated on the drawing. Note the fact that the tail-plane makes a negative angle with the horizontal datum, in the sense that the leading edge is placed lower than the trailing edge. Glue the ends well, so that the tail surfaces are strongly connected to the fuselage.

The Nose and Tail-Pieces.

These are fully explained in the sketches. Take care to have the airscrew shaft running lightly. A length of brass tube, well glued in the nose-piece, serves as a bearing. The loop which is to take the airscrew drive must be well soldered to the shaft. The motor hook on the tail-piece must not be able to turn, and the short prong must therefore be well soldered to the wire and bedded into the three-ply as shown. In this connection one should check the offset at the front end of the fuselage, which is given in the side-view. The nose-piece must be placed so that the shaft points downward at a slight angle.

The Undercarriage.

This consists of two cantilever bamboo legs which slide in paper tubes glued to the fuselage. The sketches show clearly how bulkhead No. 3 is made to take the tubes, while two short $\frac{1}{4}$ in. square struts carry the landing loads to the lower corners of bulkhead No. 2. First make the bamboo legs. Again we cut a length of bamboo and scrape it down until we obtain approximately the right section, after which we continue with sandpaper. Next cut a strip of ordinary writing paper and wrap it one-and-a-half times round the top of the leg. Cover about two inches with mounting paste and wrap this carefully round the top. Do not use too much paste, as this will run out of the seams and the tube will get stuck to the leg. After the paper has been given plenty of time to dry, remove the tube, to see if it is not in any way defective. Always keep tube and leg together, and do not interchange. Slide the tube on again and cover the outside well with cellulose glue and leave to dry. Also apply glue to the bulkhead where the tube will be fitted. Next cover tube and bulkhead well with glue and place the former in position so that it rests against the lower longeron while the lower ends of the legs are about 8 in. apart. The distance between the tops of the tubes, 2 in., serves as a check. Hold the tubes in place by means of laundry clips. Do not touch or remove legs until the tubes are thoroughly fixed to the fuselage.

The wheels and axles need little explanation. The wheels are kept in place either by glueing on a couple of cup-washers or merely a little blob of glue. In the latter case just glue the wheel on to axle and when dry cut it free. See to it that the axle cannot swivel on the leg.

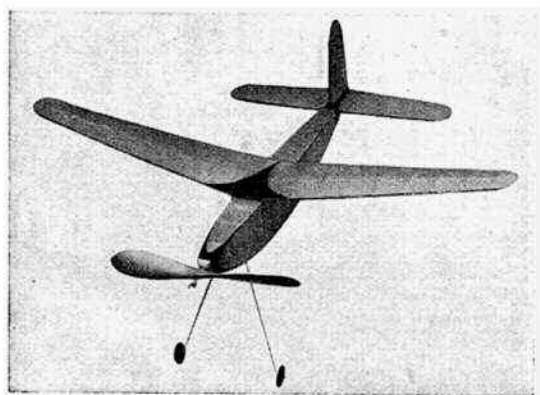
(Continued on page 251).

"BRITANNIA"

The Quality Endurance Kits

98% BRITISH MANUFACTURE

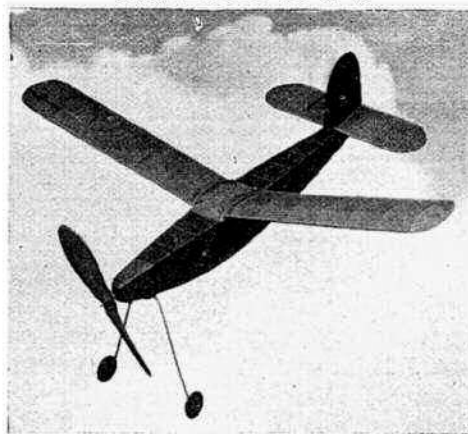
"SEAFLY"



Class "B" Type (under 150 square inches). Wing span 36 inches. Length 25½ inches.
This model has taper Mainplane, and the fuselage is of "L" Section construction.
A 14½-inch finished Balsa Airscrew is furnished with this admirable kit, and Freewheeling propeller shaft.
Best time to date, over 11 minutes.

Price 10/6

"SKYSCOUT"



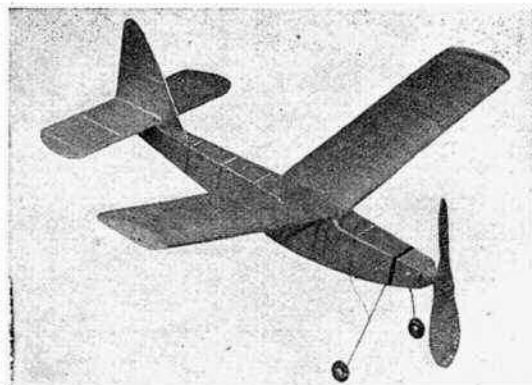
Class "A" Type (under 100 square inches). Wing span 27 inches. Length 22½ inches.
A sturdy general purpose 'plane, 2½ minutes is the best duration to date.
Finished 10-inch Balsa Airscrew included.
Freewheeling Propeller Shaft.
Not difficult to build.

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"NIMBUS"

Designed by practical aeromodellists for easy construction and first class performance.

NO SOLDERING
REQUIRED TO COMPLETE.



Wing span 20 inches. Length 14½ inches. Finished 8-inch. Balsa Airscrew supplied.
A sprightly performer, easy to build, the best duration to date is 1 minute 25 seconds.

Price 3/11

Each Kit is complete in itself; full sized plans, sheet of instructions, ribs, etc., printed on Balsa sheets and ample first quality materials are included to complete each model.

Out soon! Class "C" 209 sq. in. Duration Model. Simple to build, 50 in. wing-span, 36 in. long, usual "Britannia" features. See also announcement on page 259 for **SPARROWHAWK KITS**, at 5/6 and 6/- post free.

THE MODEL DEPOT

2 BOLD STREET
BOLTON, LANCs.

INSTRUCTIONS FOR BUILDING THE "SPARROWHAWK"

The Airscrew.

Carving an airscrew is not an easy job, and the whole process cannot be explained in this description. The best method is to cut the block first according to the plan view, then shape the side view, after which one cuts away the superfluous wood, keeping strictly to the sections and angles shown. If this is the first effort, however, it may be wiser to obtain a ready-made airscrew from a good store. The diameter is 12 in. and the pitch 18 in. Material: Hard or medium balsa.

Covering the Model.

This is not a very easy job, but with care it can be carried out satisfactorily. We begin with the fuselage. Cut two strips for the sides, having a width about $1\frac{1}{2}$ in. greater than the greatest height of the fuselage. Take the length in the direction of the strong grain in the paper. Fasten one end of the strip to the nose by means of dope, cellulose glue or mounting paste. The latter is recommended because it is possible to remove the covering more easily in case the job turns out badly or the model must be re-covered later. Leave to dry and then fix strip to the rear of the fuselage, stretching well. After drying, apply paste or glue to the sides and wrap the paper round the longerons, stretching lightly. After every side is covered it should be doped. During the doping the paper will become wrinkled and loose and the job may look like a failure. Leave it to dry, however, and it will finish up taut. Two coats of acetate dope are given to the fuselage.

We cover the lower halves of the wing first. Attach the covering to the inside of the centre ribs. When dry, pull and attach the paper to the tip where it meets the main-spar. Then work round the tip, still stretching but gradually less so as one approaches rib 10. Cut the paper so that it overlaps the leading and trailing edges by about $\frac{1}{4}$ in., and, stretching slightly, wrap it round these. The top is covered in very much the same way, but the covering must be serrated to follow the curve of the rib inner ribs (see sketch). Apply dope to each lower and upper half after covering. Cover the centre-section with separate pieces of paper. While the dope on the right-hand half of the wing is still wet, twist the framework so that the trailing edge is raised $\frac{1}{16}$ in. Hold in position until dry.

Covering the tail-surfaces is fully explained in the appropriate drawing. Do not tighten the covering along the chord, as this will deform the shape of the outlines. The paper must not be doped, as it would tighten too much in the heat. It must be damped slightly and allowed to dry, when it will tighten sufficiently. The drawback of this method is that the covering will not stand rain. However, flying in rain is no fun at the best of times.

The Motor.

The motor consists of ten strands $\frac{1}{8}$ in. wide elastic of a total length of 18 ft. (six yards). The length of the motor is therefore, 4 in. longer than the distance between the hooks. This motor will take 550 turns

safely, when stretched during winding. If, however, one stretches the rubber to five times the normal length, the number of safe turns can be increased to 650. As this is a simple model, no rubber-tensioning device is incorporated, but the maker can adopt any existing system which has proved reliable. In that case the motor can be arranged in eight strands, which gives us a maximum number of turns—fully stretched—of 750. "Entwining" or "plaiting" the motor is a good method. The weight of the model without motor is 1.65 oz. The motor weighs 0.85 oz. Total weight, 2.5 oz.

Area, 0.725 sq. ft. Loading, 3.2 oz./sq. ft.

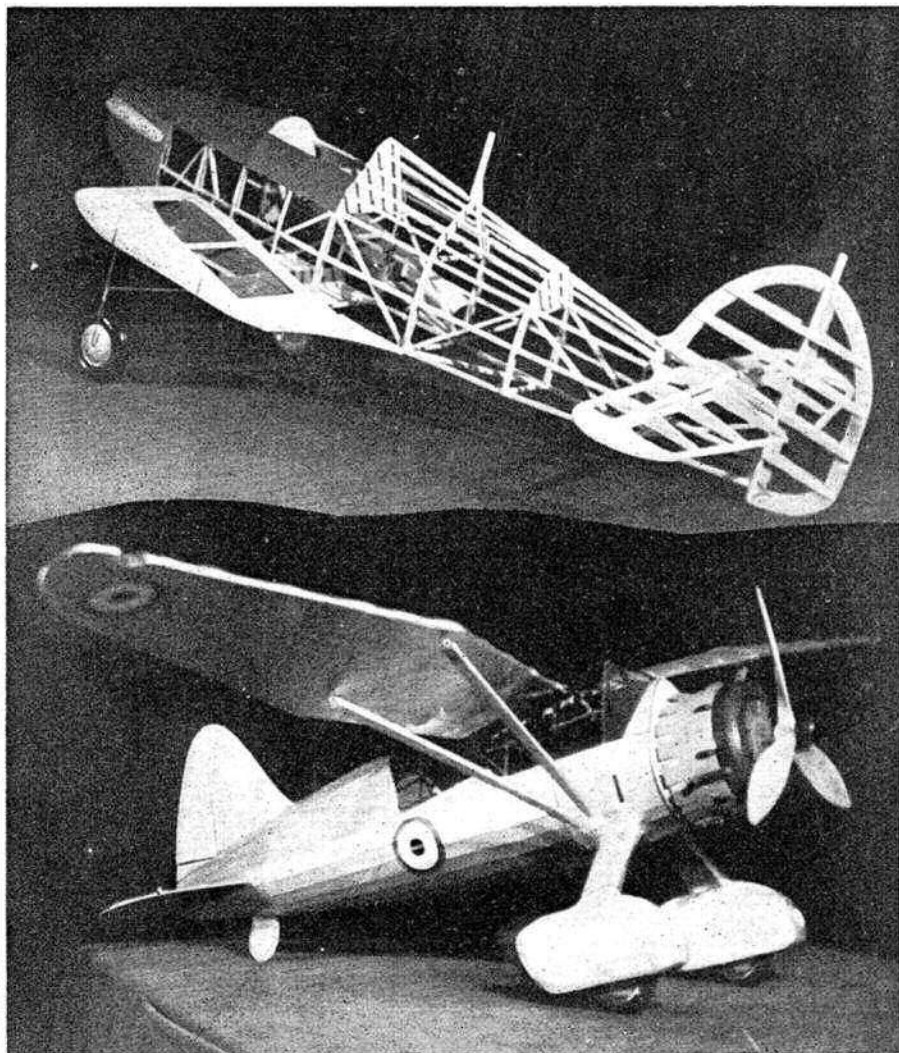
Flying the Model.

Full details about testing a model can be found in the various articles which have appeared in this paper. In this particular case we first check over the model thoroughly and correct any faults, particularly those which affect the alignment. Check rigging angle, dihedral, rigging angle of tail-plane, fin and down-thrust, and position of centre of gravity. Lubricate motor and fix wing to fuselage by means of strong rubber bands. Also fix nose-piece so that it will not drop out during flight. Test the model from the ground on about 150 turns. It should run along and just life into the air. If it fails to rise, give the motor more turns. If it still does not rise, bend up the trailing edge of the tail-plane. It is assumed that the wing is placed in the right position with regard to the centre of gravity. If, however, the angle of the tail-plane conforms to that given in the drawing, we must move the wing forward about $\frac{1}{8}$ in. If this does not improve matters, move it forward again, until the model takes off properly.

It is also possible that the model climbs too steeply after the start, drops the nose and dives back to the ground. In that case bend the trailing edge of the tail-plane down a little, but see to it that it still has a negative rigging angle. If the model still "stalls," move the wing back about $\frac{1}{8}$ in., and so on until it flies without following an undulating path. Now give the motor about 200 turns and try again. Possibly one of these difficulties will crop up again. Correct them and increase the number of turns. It will now be noticed that the model shows a tendency to turn to the left. This is caused by the turning couple of the airscrew and can be corrected—as we have done—by decreasing the angle of incidence of the starboard wing. If the model turns away too steeply after the start on full turns, this twist should be slightly increased. Do not use too much washout, however, as it will affect the glide.

Now we must turn our attention to the glide. Possibly the climb and power flight are perfect, but the glide is either too steep or stalled. If the glide is too steep we must either shift the wing forward or bend up the trailing edge. But in order to keep the good characteristics when the motor is running we must slightly increase the down-thrust of the airscrew. Inversely, when the model undulates in the glide the wing must be pushed back, or the trailing edge of the tail-plane depressed, while the down-thrust must be decreased.

Before building this model, study the plan very carefully, and also read the announcement on page 227



CLUB NEWS

By CLUBMAN

Two fine 1-inch scale models built by Mr. C. Cudmore, of the Ealing and District Model Flying Club. Surely no caption is needed for the lower photo! The upper is of a semi-scale "Hurricane."

committee has been set up to discuss how best this vital matter can be coped with, and I should like to make a special appeal here to anyone who feels he can undertake one or more of the routine duties that clutter up the files of the Secretary, to step forward and do his bit towards relieving one who is finding it increasingly difficult to deal properly with the thousand and one items that crop up in this steadily advancing hobby of ours.

I FEEL many of us have lost a good friend with the death of Mr. H. H. Dray—and it is all the more unfortunate when we consider the tragic circumstances in which this took place. My material for last month's club news had left before I knew of this, so I am forced to make my acknowledgment rather late. I knew Mr. Dray well, and I think the best I can say is that he was "one of the lads," and a fellow well worth knowing.

Many of you will read with interest the report of the S.M.A.E. annual general meeting, and there are one or two points well worth noting. I was pleased to see that the retiring officials were re-elected *en bloc*, a sure indication of the manner in which they have conducted their duties during last season—and that's no sinecure of a job, believe me!

My congratulations to Mrs. Thurston, who has been elected to the vice-presidency of the S.M.A.E., and may she continue to do the very good work which she has so assiduously carried out in company with her husband, our respected President.

The yeoman services of Mr. E. F. H. Cosh have long been appreciated, and I am very pleased indeed to see his election as a Fellow. One thing must be very carefully guarded against, however, and that is the loss of this hard worker owing to the piling of too many duties on to the already tremendous list he deals with. A

It is surprising to see the necessity for a rule regarding lapsed subscriptions to the S.M.A.E., and it is a sure indication of the haphazard way some clubs are run. To be successful, a club must be managed on businesslike lines, but I have been amazed at the large number who cannot be sure whether they are running at a loss or not, and, as Mr. Cosh pointed out in his notes last month, the surest way to fail is to try to manage on insufficient finance. My biggest laugh for a long time was at the fellow who objected to paying 10s. a year subs. to a club, pointing out that a neighbouring club only charged 6d. per week. Work it out yourselves! Incidentally, I wonder how many of these "objectors" have tried enquiring whether these "10s. subs." can be paid in instalments. I know of a number of clubs who operate on these lines, and very successfully too.

So the F.A.I. is getting out a special code for models. May I say, "Not before time!" Too long have we been handicapped by rules formulated by people who do not fully understand the peculiarities of aero-modelling, but we may look forward to an improvement. Dr. Thurston and Mr. Houlberg have been doing some good work at F.A.I. conferences on our behalf, and it seems that their efforts are going to bear fruit.

The Wakefield Fund has had a good send-off I see,

but I would appeal to all clubs once again to lose no time in getting down to things in this respect. There is always a tendency to leave it to one or two groups of individuals to do the bulk in these affairs, but I would point out that it is far easier for 100 clubs to collect £1 apiece than it is for two clubs to scrounge £50 apiece. Apropos of this appeal, I acknowledge receipt of a book of tickets for a grand Wakefield Draw organised by the Lancashire M.A.S.: 1st prize, a petrol engine; 9 prizes all told; tickets, 6d. each. If any of my readers would like an engine for a "tanner," here's your chance, tickets to be obtained from the L.M.A.S. Secretary. The Croydon Club are also putting up a petrol engine, tickets in this instance being 1s. 6d. each.

I see from reports this month that competitions are now being held for indoor flying at the Albert Hall, and some records are already being broken. Mr. Woodthorpe recently raised the Indoor Fuselage R.O.G. record to 2 min. 20 sec., but I understand this has since been broken again.

A great deal of activity is being shown at indoor meetings all over the country, pole flying coming in for a great amount of attention—and speed is spreading its ugly head on the end of strings! May I repeat my appeal of last month for news of definite findings, and results of this type of flying. I really would appreciate a word or two on this matter, as a number of readers are asking for information on this aspect of pole-flying, and I would prefer to give them guidance from those clubs who have already tried it out.

The number of clubs applying for affiliation, or announcing their intention to do so, is a good indication of the growth of the movement. I would repeat my earlier warning on the inadvisability of forming too many clubs in the same area. I know that this very often happens where there has been some falling out amongst members, resulting in a section breaking off and starting another club. This only splits the strength of both, and petty rivalries and jealousies get us nowhere. In large districts, of course, there is some justification for a multiplicity of clubs, but when I see the size of some of the areas where two and more clubs operate, it seems rather futile, and I am certain is another reason why some clubs fail. Unity is strength, fellows! And I'm darn sure one club of 40 members can operate with greater success than four with 10 members each. Really, at times, some

of this inter-club competition and rivalry gets out of all reason, and ceases to be sportive.

To get down to the actual reports for this month, I must make some generalisations first. Many Press secretaries ask that photos sent in with reports be returned, and in some cases send a stamped envelope for this to be done. I have been asked by the Editor to state that it is not practical to do this, as by the time a photo has been cut and used by the block-maker, the print is of no further use. So will you please endeavour to get a further print from the negative! This would undoubtedly be the easiest way.

Many reports deal largely with annual general meetings this month, and it is good to see the success of so many clubs, practically all reporting good progress, financial soundness, and little or no change in officers—a sure indication of the seriousness with which the majority of these folk take their duties. Where a committee is working well, it is not always advisable to make changes for the sake of changing. Those clubs who send details of their annual general meeting must excuse me if I do not fully report each, but space forbids, and I can only deal with the salient points in each.

Having regard to the time of year, with the consequent occasional changes in secretaryship, it seems advisable to correct the list of "Clubs and Secs." published in the August, 1938, issue. Will secretaries please, therefore, send in to the offices of THE AERO-MODELLER, *not later than the 25th February*, a POST CARD—not a letter—stating only the full title of their club, and name and address of the secretary, and number of members in the club.

Now, this is very important, as we want to make this list as complete as possible. If there is no change, don't take it for granted that we are aware of it, as the list will be compiled from the P.C.s received, and if you don't send in, and your members start cribbing at me about it, I shall turn 'em loose on you! So don't forget, it's to your own benefit, and will only cost you a penny stamp.

I have a photo this month from Phillip Smith, of Chelmsford, showing him with a finely built low-wing model he has built, and which he claims is a good flyer. Considering this lad is only 12 years old, the standard of workmanship seems very good indeed, and I'm wondering if the Chelmsford club have the name of this lad. If not, I advise them to see to it!

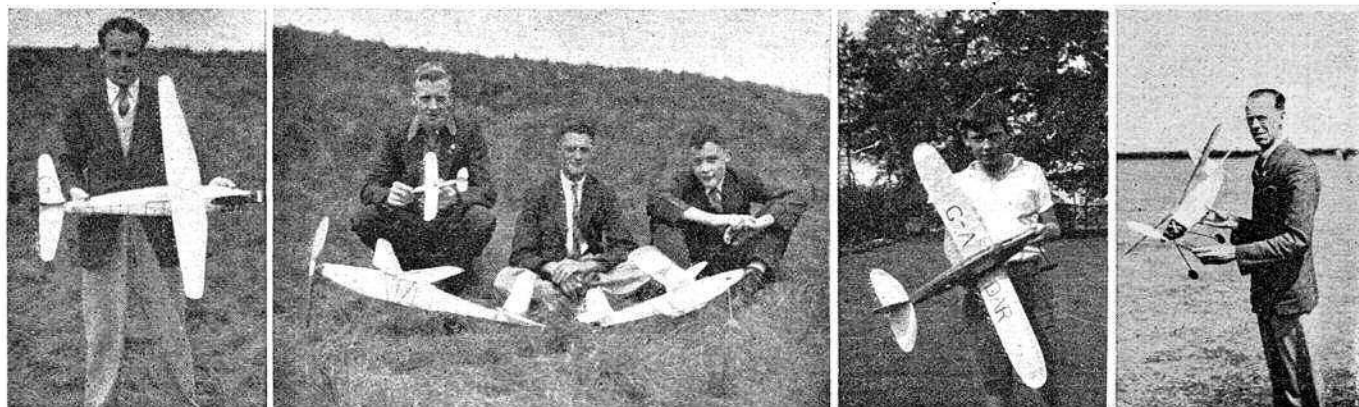
Left to right:

Mr. S. Parkington, with his model, which holds the Keighley Club record, O.O.S. 10 min. 45 sec.

Three members of the Keighley Club with some models.

Master Phillip Smith, aged 12, of Chelmsford, with a 32 in. span model which he made himself. Well done, Phillip!

Mr. G. Cudmore, Hon. Press Sec. of the Ealing and District Model Flying Club.





A "mighty midget." flies this 3 lb. weight 5 ft. span petrol plane, built by Peter Bowers, of Los Altos, California.

The HAYES AND DISTRICT M.A.C. held their annual general meeting, and from all accounts are to be envied on their progress, facilities, and records. Who wouldn't envy the chance of using Fairey's Aerodrome for a club ground! This club numbers 111 members, with a petrol section of 30. J. Marshall, a junior member, won the Club Trophy for the best performance of the year with 740 points, 60 points over his nearest rival. This young man has won two cups in open competition at Brighton and Wimbledon, and was a leading member of the club team that won the Brighton Inter-team Challenge Cup. He is also holder of four club records, a remarkable performance, and Mr. Brind, as secretary of the Juniors, has cause to be proud of his section, especially as another junior, F. Gurney, won second prize in the Frost Trophy Competition for petrol models.

Hayes Competition results, etc., for 1938, are:—

CLUB TROPHY.

1. J. Marshall	...	...	740 points.
2. A. C. Minion	...	...	680 "
3. R. Wilson	...	...	280 "
3. W. G. Evans	...	...	280 "
4. J. Wheatley	...	...	200 "

RECORD HOLDERS IN CLUB.

Fuselage, Hand-launched, J. Marshall	...	532	sec.
Fuselage, Rise off Ground, J. Marshall	...	351	"
Stick, Hand-launched, J. Marshall	...	90.6	"
Glider, Catapult-launched, V. Perry	...	256	"
Glider, Hand-launched, H. Brind	...	45	"
Biplane, Hand-launched, A. C. Minion	...	165	"
Biplane, Rise off Ground, A. C. Minion	...	297*	"
Tailless, Hand-launched, H. Bohling	...	72	"
Sea Plane, Rise off Water, J. Marshall	...	216	"
Stick, Indoor, T. Brench	...	28	"

* British record.

HORNCHURCH M.A.C. have succeeded in obtaining the Ardleigh Green School Hall for indoor flying, and meetings are held there every Tuesday. These chaps have been doing well at the Albert Hall meetings, one of their members breaking the R.O.G. Fuselage record, as mentioned earlier. Following a very successful exhibition at Romford, arrangements are being made to hold the annual display of models at Dury Falls School, Upminster, on March 24th and 25th. Several scale models are well in hand for this show.

Another club who has been descending on the Albert Hall in force is the ILFORD AND DISTRICT M.A.C.

They report that on December 16th they set up three new indoor records, but I take it these are club records! On January 12th, R. Aaron and E. Stoffel took first and second places in the competition arranged on that date, D. Elmes being beaten to third placed by 3 seconds. This latter gentleman has been getting good flying with a scale Rearwin Sportster. These chaps had a good idea when, on Christmas Eve, they produced an exhibition in a part of the King George Hospital, to the delight of the patients. Stout effort, Ilford!

The former Kettering section of the Northants. M.A.C. has now been formed into the KETTERING AND DISTRICT M.A.S., the secretary being Mr. W. E. Mole, of 9 Granville Street, Kettering.

The ABERDEEN M.A.C. draw my attention to the fact that the Huntley Boys M.A.C. is a section of their clubs, and were surprised to learn from these columns of their report. I can understand your surprise, Aberdeen, but how the — was I to know! I'm not clairvoyant. This club has arranged some interesting lectures, one of which will have been held by the time this is read, the second to be given by Mr. R. J. Urquhart on March 3rd. A film of the "Hendon Air Display" is to be shown at a later date. This club has been going now for three years, and has almost 200 members, though the officials wish they were all as enthusiastic as they. Sorry you got the bird from your members, Mr. Bretner, but may I say in answer to your "If not —" "So what!" You can blame it all on me if you like!

A recently formed club report satisfactory progress, e.g. the MANSFIELD AND DISTRICT M.A.C., who now number 25 members. Secretary is Mr. A. E. Richardson, "Thornby," Balmoral Drive, Mansfield.

Whoopie was made in Bolton recently, when a social evening proved a big success, about 50 members and friends of the BOLTON M.A.S. had fun and games, finishing up in a reet Lancashire manner with potato pie supper and film show. The club expresses its thanks to members of the Lancashire M.A.S. who helped with films. Mr. W. Foddy has taken over the duties of Secretary, and all communications should be addressed to him at 684 Tonge Moor Road, Bolton.

I have been asked by members of the CROYDON AND DISTRICT M.A.C. to give their love to the "M.F." — (some other clubs also sent me notes for this gentleman) — and I have passed same on to the elusive blighter for his attention. This club held an exhibition in conjunction with the local modern engineering society, and proved very well received. The annual general meeting of the Croydon group takes place on February 22nd, at the Y.M.C.A.

Before proceeding, there is one point which comes to mind. Will Press secretaries please note that it is only worth while advising of happenings that are scheduled after the 20th of the month in which their reports are issued. Many have sent in details of meetings, etc., that will be over by the time this issue is on sale. Thanks!

CHINGFORD M.F.C. had a "bun-fight" and film show last November, and are looking forward to the next! "What a wonderful bird is the Pelican; his beak can hold —." A scale model competition was won by Mr. Green with a fine model of a "Fairey Hendon Bomber," second place going to Mr. Trace with his "all controls workable" Flying Flea. Lectures have been given by Messrs. Copland, Barratt and Towner. The members wonder how the latter gentleman got home after the many directions given him on leaving.

Juniors are well catered for this year in the NORTH KENT MODEL AIRCRAFT SOCIETY. Points are awarded in five contests, the winner getting a newly acquired Points Cup. Plans of Mr. F. Almond's 1938 Wakefield team model have been distributed to many members, and already two models have made their appearance on the flying field with great success. Juniors have representatives on the committee, and in this way a programme is arranged that satisfies seniors and juniors. Recent indoor activities included a very interesting talk by our old friend and "Fliar," Mr. M. R. Knight, of the T.M.A.C. He gave a lengthy talk on low-wing models, in his usual breezy style, and I advise any clubs who has not had the pleasure of Mr. Knight's presence, to book him at once. Mr. F. Almond and Mr. R. Smith have both given interesting talks on Wakefield models. At a recent meeting three complete models were raffled, as follows:—A replica of Almond's 1938 Wakefield, Mr. E. A. Davis's 1937 Wakefield team model, and a semi-scale job by Mr. J. Manakee. All three models were won by junior members. (One had actually joined that very evening, and went home very pleased with himself).

For the umpteenth month in succession, weather has put the kibosh on flying at Brighton, and that holds good practically everywhere else! Members are very busy on Wakefield jobs, and Mr. Towner has an extremely interesting scale Airspeed Envoy on the stocks. Rubber motors are housed in the centre section.

The WOODFORD M.A.C. point out a mistake in the caption to a photo showing a "Harold Wood" enthusiast, this actually being Mr. B. A. Smith, of the Woodford club. Sorry chaps, but that was the information on the back of the photo submitted, but I apologise for the photographer!

The WOLVERHAMPTON M.A.C. has been holding fortnightly indoor meetings, to the benefit and increase of membership. Small indoor jobs have gone well on two or three yards of cotton, but have had fun with the electric lights on occasions. Solid scale models are becoming popular, and a lady member is showing the way to many of the boys; These chaps are designing and building a club Wakefield model, and hope to prove that a pooling of ideas, etc., will prove successful. And not a bad idea at that.

The LIVERPOOL M.F.C. has retreated indoors, and is preparing for the efficiency competition for the cup kindly presented by Mr. Edwards, the Vice-President. These chaps inform me that they also can R.O. Snow.

Six Wakefield jobs have already "taken the air" in the ALDERSBROOK MODEL A.A., and a large number are under construction. Streamlined fuselages, retractable undercarriages, and folding props. are much in evidence.

Mr. Anderton, of the LEEDS M.F.C., writes the following (yes, we are the best of pals again!):—

"Naturally, the report for the past month is of indoor activities, not the least of which is a visit from Len Stott, of Halifax, who gave us a very fine evening on Wakefield design. It was particularly appreciated by the members for the fact that Mr. Stott has no secrets from his listeners; he even showed and explained his 1939 model. Good luck to him, indeed!

"As far as construction is concerned we have a large number of craft on the stocks, including six or seven petrol models, one being a scale Hillson Prago, mounting an Ohlsson 2.8 cc. Amongst the gliders we have one, if

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CADET JUNIOR ... 3/6
The following are Real De-Luxe Kits containing genuine M & M air wheels.
36" span FLA, Gas Type, rubber powered, ... 12/6
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"Miss America" "gas" type rubber-powered, wing span 40", length 27 1/2", weight 4 1/2 oz. 12/6 post free.

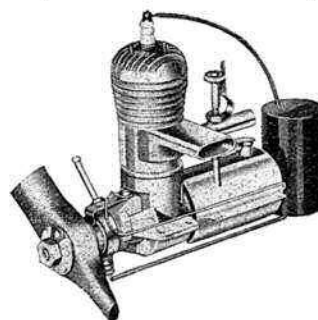
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25" span HI-FLYER DE LUXE MODELS each ... 6/6
20" span HI-FLYER KITS—27 different models, each ... 3/3
M.S.S. "Scale" 16" span ... 1/3
25" span Celebrated Mx. MULLIGAN, only ... 9/-

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MIGHTY MIDGET Upright assembled and tested ... 67/6
Inverted asmb. ... 70/6
GWYN AERO Upright asmb., as illustrated, ... 75/-
Inverted asmb. ... 80/-
MIGHTY MARINE Assembled ... 30/-

First batch of the new baby petrol motor: the "Brat." A splendid engineering specimen, 17/32 in. bore, 5/8 in. stroke, 1/10 h.p., only 3 in. high, engine weight 3 1/2 oz., price £4.10.6. All orders in strict rotation.



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BUNCE SUPER SCORPION 42/-, SYRAM-LINER 32/6, REARWIN SPEEDSTER 32/- post paid. 6ft. RED ZEPHYR 38/6; 7 ft. MISS AMERICA 50/-.
"Commodore de luxe" "gas" model, wing span 60" length 50", total weight with motor 3 1/2 lb. 55/- carr. paid.

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1. N.G.A. "*Volas cum cura*" . . . *volo, non valeo*. The d— thing just won't fly.

2. My apologies to "Freddie," our cartoonist. I forgot to mention him in paragraph one last month. But, like Suzie, he gets there by himself even if he has to build a rocket 'plane with the hot dog shop the first stop.

3. Answers to correspondents:

(a) Robert A. Read. Most decidedly a compliment old top, but even these carry stings in their tails sometimes.

(b) "Anon," of the Essex Gassies, points out that the club is being run on a business-like basis. So it should be, but I have not been asked for my 1938 subscription yet. I wonder who is to blame for that.

(c) When you become a man, Renshaw, of Southport, you may learn that tact goes a long way. Incidentally, I am neither of the two gentlemen you mention with so much animosity.

(d) Hullo, "Anon," of West Bank, Lancs. Surely, as chairman of the club with a grouse, it was up to you to see that the club held the cup before the competition was run. But anyway it seems a funny business, and I would like to hear the other side of the story.

CLUB REPORTS.—Continued.

not two, fitted with a device to centralise the rudder, while in tow, and giving a small amount of right rudder on the release. The Wakefield models are mixed slabs and streamlines, some very hopeful designs showing up. One or two biplanes and seaplanes are also appearing.

"By all this we may presume that the decentralised competitions will be seriously contested by us.

"We are also very busy trying to raise the wind for our rent of £10 for the field, and then we shall be able to attend to the 'Wakefield Fund.'"

Three photos are to hand this month from SHORT'S M.A.C., and show various aspects of the recent exhibition held in the works canteen in January. Models ranged in size from 3 inches to 8 feet, and embraced all types and classes of models. Mr. Tippet, a new member, showed a fine petrol job, incidentally his first, a photo of which is shown. Other photos give a general view of the exhibition, and the other a group of petrol jobs, Mr. G. Curtis's fine model, winner of the "Kemp" Cup, being seen in the centre. Two flying boats were interesting exhibits, since both embodied unusual methods of propulsion.

(e) Thanks, Field, glad everything is to your satisfaction.

4. Congratulations to "Fairplay" for his letter last month. Why not the Minister for Hot Air? Ge tonw ithth efl yinga ndn otso mu chg as. That lot looks like Welsh to me.

5. Hull, Morrod, of Coventry and Warwick. After reading your letter all about Warwick Racecourse, I feel more inclined than ever to tell the Fliers of to-day how you cleaned that place up in 1934. May I? But why not go to a council meeting, you might hear another side of that "open letter."

6. Fliers all, Grimsby had a little supper and some liquid refreshment to celebrate their first anniversary. I hope they will have more of the latter next year. I don't like coming away dry.

7. Remember my paragraph 14 of last month? I have been collecting club letter headings since, and do you know that neither the S.M.A.E. Chairman's club in Oxford or the S.M.A.E. Competition Secretary's club, Barnes, have "Affiliated to the S.M.A.E." printed on their club notepaper? The reason, I suppose, is that they are sending all their surplus cash to the Wakefield Fund.

8. Will Manchester tell me the joke about Snow White? Like—, they will!

9. I note that in the *Yorkshire Observer* Len Stott is a water tester. I wished he were a water diviner on Wakefield Cup day in France. Both he and I looked like red herrings and felt worse.

10. While on the subject of the Wakefield trip I have always wanted to know how long, and why, Rabbits White sat in the dark.

11. I wonder if the Essex power lads have seen that photograph of a girl in her working clothes?

12. And while on this subject, Bunny, I'd like to know a few things about you. Firstly, when did you get married (A.M. last month); and, secondly, when did you win the Bowden with a Gwyn Aero?

13. Bristol Club tell me they have some fine blue prints for sale. I wonder if they will be shown on N. Kent's balance sheet.

14. I was most amused at the S.M.A.E. annual general meeting to hear, "Mr. Chairman, Ladies and

sion. A gull-wing, or "knuckle-duster" type with twin airscrews, situated at the knuckles of wings, is intended to be driven by independent rubber skeins passing from the shafts to the hull, through the sides via enlarged wing roots, at an acute angle. The other boat has four airscrews, and resembles an Empire flying boat, bevel gearing transmits the power of two large skeins of rubber in the hull to the props. An appeal for the Wakefield Fund was made, and realised £1.

Mr. Shillito, of the WAKEFIELD (Yorks.) M.F.C., hashed a brain storm! Obtaining drawings of the D.H. Albatross, he was so impressed that he redrew the fuselage minus the cabin, inverted it, and turned it into a gull-winged Wakefield job. These Yorkshiremen are preparing a "beano" of their own, and I look forward to news of their frolics.

Activities of the YEOVIL AND DISTRICT M.A.C. during the past two months have been confined to gliding (when it has been possible to venture out of doors). Messrs. Dunn, A. B. Fox, Waterman, Bird and Evans are all hard at it, and from what can be heard and seen the "King Peter Cup" should find a home in Yeovil!

Gentlemen," sounded as though a votes for women campaign had proved successful.

15. And, Woodford M.A.C., the S.M.A.E. did not alter their title to save you wasting your stationery.

16. But I can assure you, gentlemen, that D. A. Russell was suggested as Technical Secretary. Such is the fame that design and destruction brings.

17. Friend Orchard again proposed and seconded as many resolutions as he possibly could, and then he felt called upon to make a spirited defence of his action. I wonder why?

18. Congratulations to the N. H. lads for organising such a wonderful evening. Everybody who is anybody was there, including C. J. Burchell, who was apparently forgotten.

19. How was it that so many B.M.F.C.-ites went to that dinner, and have they all paid yet? Have patience, Baines, you cannot run a bloke in for debt you know.

20. *Faux pas* to the right of them, *faux pas* to the left of them. *Faux pas* all round them. These social affairs I'm talking about.

21. Scene: The Albert Hall.

Time: The end of the evening, January 19th, 1939.

Action: The Golden Voice wiping his daughter's face with Grace Lundy doing likewise for herself.

And the great play entitled, "Were their Faces Red," commenced.

22. Will someone send Len Stott a pin? For use exclusively on the O of his typewriter.

23. Thanks to all those correspondents who wrote agreeing with my own views that the type used in the heading of my "wagging" last month did not become my great wisdom and serious discourse. *Valeat quantum valere potest.* (That dictionary of mine again).

24. Congratulations Stoneygate on your treasurer's name. Let's hope he Does you more.

25. What's it feel like, Rushy and Copland, to have a few minutes bunged on?

26. Met a Fliar from Eire. Told me they fly in Central Park, Dublin. Seems that one of their big noises is a doctor who can get busted rubber out of a

fuselage as easily as he can remove an appendix. Now don't all go rushing round to your hospital trying to get recruits; you may get a dose of castor oil.

27. While on the subject of Ireland, you Fliars in the north should tell Creighton Daniels where he gets off. He only wanted N.I. to be included in the Manchester Section in the new Area Scheme.

28. Who knows very much about the scheme, anyway? All that I know is that the idea puts me further than ever from getting a seat on the Council.

29. By the way: Have you ever heard of the Midland Model Aircraft Club member who, having won the National Biplane (1937) Trophy, never even saw it, and was then asked by the S.M.A.E. for its return, for engraving, etc., prior to presentation to the 1938 winner?

30. I've heard of all kinds of "queer" meetings, but that at the Northants Club sounds about the queerest I've heard of for a long time—and all over a badge! And was the caretaker pleased?

31. I see from the S.M.A.E. Hon. Competition Secretary's report that 147 petrol 'planes have so far been registered with him. I wonder if the other several thousand owners will send their P.O.s to Dudley Ship; or whether they will still go on until a bad accident awakens some sense of responsibility in them!

32. So Cosh has had his leg pulled by me, has he? Let him live this one down. Amongst his Fliar pals he is known as Eddie, at business Ted, while at home with his family it's Sonny. Now, lads, take your choice, but don't blame me if he returns your chosen title with interest.

33. T.M.A.C. I withdraw paragraph 8 last month. I attended the N.H. dinner, and although it was a very dark Knight, it was a wonderful white front.

34. Paragraph 19 last month has brought me letters from several European countries, assuring me that English flyers were not forgotten during the Christmas festivities abroad. To end on a serious note, I think that after last September we should thank Heaven for the good sportsmanship and friendship that model aircraft have made between nations.

The "Moving Finger" writes and having written, vanishes until next month.

CLUB REPORTS.—Continued.

Presentation of club trophies won during the past season was made by Mr. Snarey, Test Pilot of the Westland Aircraft, and Mr. Bird, also of the same company, Mr. Penrose, for whom the club members have a soft spot, being unavoidably absent through illness. We all wish him a speedy recovery.

Club Champion, A. B. Fox. Holds Aggregate Trophy. Open Duration, A. B. Fox. Holds Challenge Cup.

Glider Contest, S. Dunn. Holds Glider Cup.

Seaplane Contest, S. Dunn. Holds Seaplane Cup.

Heavy-weight Duration, K. B. Evans. Holds Yeo Cup. Secretary Medal, A. B. Fox.

A photo sent from this club shows a fine streamline model built by Mr. S. Dunn. Note the tailplane fitted on top of the rudder.

I have a plea for someone to start a club in Blackburn, as E. Aspdon of that town is anxious to join same.

A new club is the LETCHWORTH AND DISTRICT M.A.C., and all interested are asked to contact the secretary at 155 Glebe Road, Letchworth. Lectures are

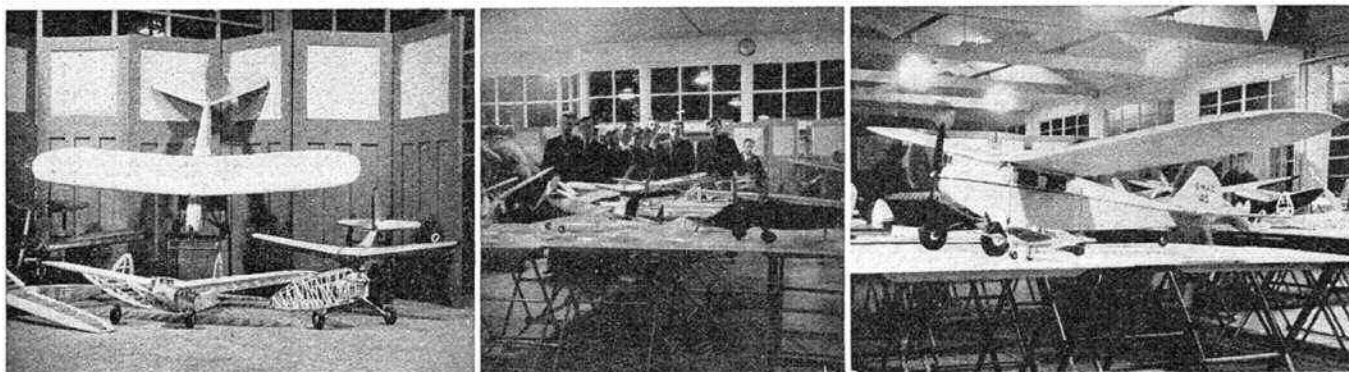
being held fortnightly, at the Astoria Cinema at Baldock, but no dates or times are given.

Mr. S. Wincott, of the BARNES AND DISTRICT M.A.S., informs us that the M.F. Competition results describe him as a member of the Birmingham club. This was printed as given to us, but we apologise for the mistake. He goes on to report:—

"Prevailing winds have tended to curtail our activities during this off-season, but we have managed to get the last ounce out of this beautiful British climate. This is evidenced by the regular flights obtained by our enthusiasts every Sunday (we might say they 'religiously' attend) at our flying ground in Richmond Park.

"A club record for gliding was created recently by Mr. J. C. White, who put up a time of 108 seconds.

"Lectures are a regular feature, the last being on January 4th, by Mr. R. Copland, who gave a very interesting and instructive talk on indoor models and general "line-up." The time was too short, however, for him to fully cover the subject, and he has promised to come again some time next month."



Three photos from Shorts' Model Aircraft Club. Left: A 6 ft. span streamlined petrol 'plane, designed and built by Mr. G. Curtis (winner of the "Kemp" Cup for design and workmanship). Centre: A general view of the Exhibition. Right: An 8 ft. span petrol model built by Mr. Tipper.

The SALISBURY AND DISTRICT M.F.S. has now fixed its competition programme for 1939, and intend to hold nine contests this year, including events for seaplanes, scale models, gliders, and biplanes, in addition to the usual S.M.A.E. contests. Besides these, they have arranged a six-round contest, one round to be held each month, i.e. six in all, alternately R.O.G and H.L. Competitors will have three flights in each round, making eighteen in all, the average duration of which will decide the winners. I think that this will prove to be a very exciting event. It will eliminate, to some degree, the effect of "lucky" thermal-assisted flights, and as the same model must be used throughout the contest, reliability and consistency will win the day.

The HALIFAX M.A.C. annual rally has been fixed for May 30th, and as this will probably be the first of the northern fixtures, they are looking forward to seeing all the "old faces," and some new. All intending competitors are asked to pray for better weather than last year! Some good publicity has been obtained through a "write up" in a local paper, and I have been sent a cutting. Can you let me have a print of the picture shown Stott. It is not possible to reproduce well from the newsprint, and I would like to see that in these columns. The Halifax boys are looking forward to the "kick-off" on March 19th, and what a day it will probably be!

Mr. Pettit has resigned the secretaryship of the NORTHAMPTON M.A.C., this duty now being held by Mr. P. Peach, Junr., 58 St. Edmunds Street, Northampton. The former gentleman has been elected an honorary member in acknowledgment of his past services. This club is pleased to announce the donation

of two new trophies, and building is going on apace. It has been decided to scrap all existing club records and make a fresh start—which will certainly give a start to the season.

A new club was inaugurated last month in the north. to be known as the BLACKPOOL AND FYLDE M.A.S., and the secretary, Mr. R. V. Bentley, of 9 Bampton Avenue, Watson Road, Blackpool, wishes interested folk to get in touch with him. Application for affiliation has been made to the S.M.A.E.

An exhibition of models by members of the STONEY-GATE M.A.C. is to be held at Messrs. Sports Ltd. premises in Belvoir Street during the week, February 27th—March 4th. This is an occasion when the normal "duration-job" enthusiast dusts his "show" job and adds the necessary paint!

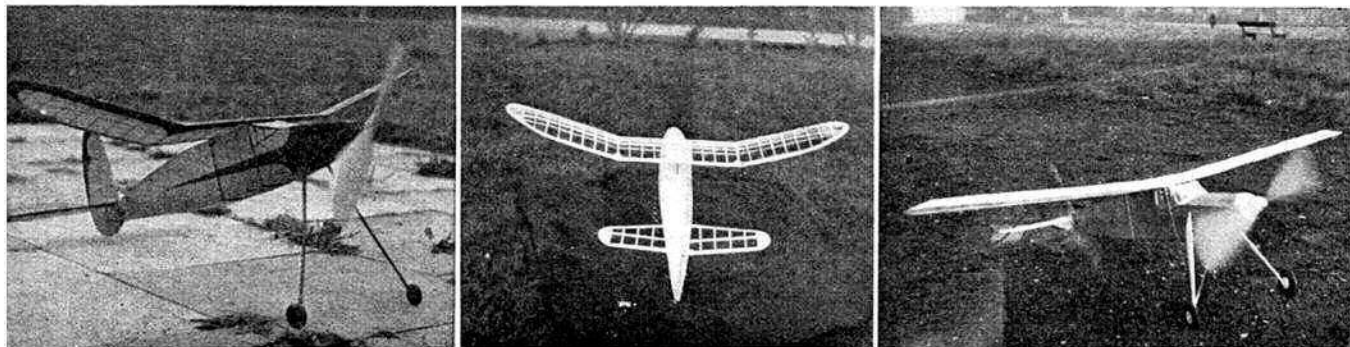
During the months of hibernation members have all been busy building, some Wakefield jobs, others gas jobs, and so on.

The former gang are very secretive with their patent retractable undercarriages and folding props., but we still have our spies, and soon the patents will be released and the experimenters will throw down their crates in disgust when they see their ideas in print even before they have flown the planes.

The gas job fans (seven of them) are all worrying for news from the S.M.A.E. regarding the approval of their field, and many a good job is sitting pretty "dying to fly."

The HYDE AND DISTRICT M.A.C. are yet another body who have lent models to a local cinema for the publicising of "Test Pilot." The number who have done this must run into three figures by now, but it

Three typical duration models. Left: American "Korda," built by Mr. J. Coope, of the Blackpool M.A.C. Centre: A free lance design by Mr. S. Dunn, of the Yeovil Club. Right: A "Fairey Facular" built by a Mr. Morris.



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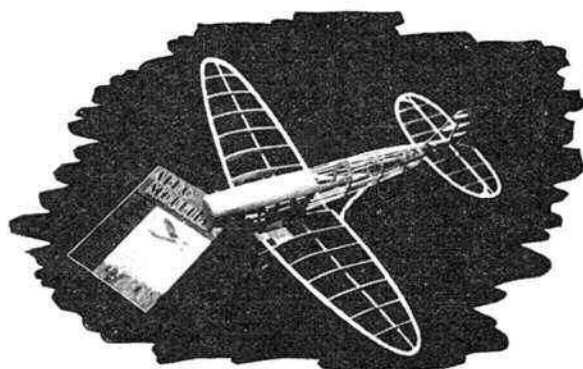
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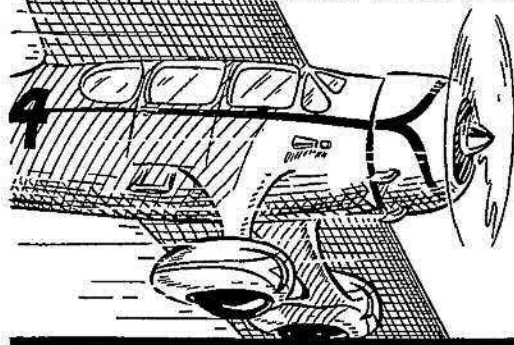
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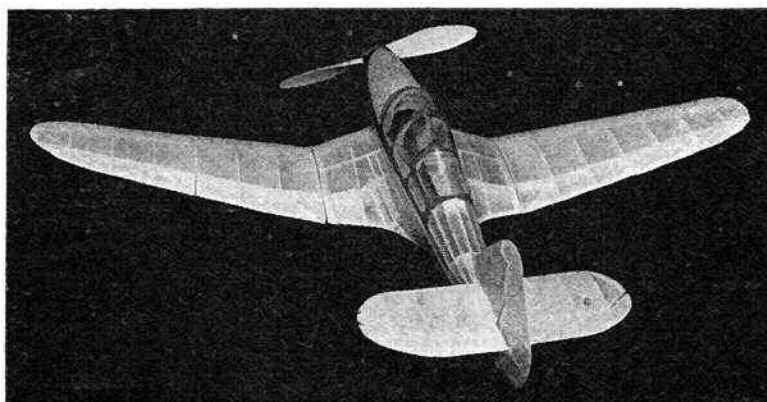
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Weight ... 9½ oz.

certainly has been a good publicity move for the local clubs.

The TWICKENHAM AND DISTRICT M.A.C. write in appreciation of a series of talks and films given by Mr. Cudmore, of the Ealing club. I am glad to see this help between clubs, and think a lot more could be done in this direction.

My pal, the Press secretary of the BLACKHEATH M.F.C., sends in his usual breezy report, and one that I am sure will be of use to many other clubs:—

As pole flying is now a popular feature of our meetings, we have decided on some rules to control the various types of contests, and as they may also be useful to other clubs, we take the opportunity of printing them:

FOR SPEED.

- Fuselage 30 in. maximum overall length.
- Wing loading, 8 oz. sq. ft. maximum.
- S.M.A.E. fuselage formula.
- Model must make two laps.
- Half lap allowed for take-off.
- Two timekeepers.
- Height of pole 3 ft. maximum.

FOR DURATION.

- Wing span 30 in. maximum.
- S.M.A.E. fuselage formula.
- Two timekeepers.
- Timed from release of model.
- Tissue covering only.
- Height of pole 3 ft. maximum.

FOR DISTANCE.

- Rules same as duration.

Laps to be counted from spot model leaves ground.

Winner will be machine which does the greatest number of laps, not duration.

Our first R.T.P. Speed Contest was a "wow" in many ways. The local A.R.P. were almost called in to control the many flying "missiles." Speeds of 35 m.p.h. were reached. Jessie Wright's machine snapped the retaining cord and went off into the stratosphere, or at least into the paper chains, left hanging from Christmas (You should have seen these chains after the contest). Young Cook, with a snappy blue and white job, won the contest with a speed of 34 m.p.h. J. Jackson was second with a speed of 31 m.p.h. (Cook's model will be described in THE AERO-MODELLER next month).

Thanks for typing your report, Sammy; it makes it a lot easier for yours truly!

The ESSEX POWER M.A.C. are pleased to report a very successful year, two members having won the Bowden Trophy and the Sir John Shelley Cup—a feat it is hoped to repeat this year. Activities have not been altogether dormant, many new jobs being tested at Hornchurch R.A.F. Station, whilst the competition spirit will be sharpened by the presentation of a new trophy by Mr. Oldham.

The MACCLESFIELD M.A.S. have been doing a spot of flying in the snow—I understand they have had plenty of opportunity, too, just lately! R. W. Higson has set up a R.O. Snow record of 75 seconds, and has been working out a special "Mayo" job with J. G. Eifflander, which both claim to be infallible except when the main prop.-shaft gets bent. Thirty seconds has been

done by the "parent" model, with the "baby" continuing for a further thirty seconds after separating. Bifflander has built a promising autogiro that has flown 100 yards, and great things are hoped for in this direction. *Re your P.S. Mr. Turner:* Have you looked on page 192 of the February issue!

You will doubtless be interested to learn that several model enthusiasts in the Cheam (Surrey) district, have banded together, and have formed a model club, to be known as the CHEAM MODEL AIRCRAFT CLUB.

Most of the members have had considerable experience with both petrol and elastic models, not excluding gliders, and the prospects of a very healthy club developing are very good indeed, they having received the interest of several local influential people, two of whom have expressed their willingness to stand as President and Vice-President. Those interested get in touch with Mr. S. Kelsey, of 120 Ridge Road, Sutton, Surrey.

A highly successful exhibition has just been held by the GLASGOW M.A.C., over 100 machines being on show, ranging from indoor flyers to petrol models. In the course of six hours over 1,000 people visited the show, and were entertained with pylon flying, which was won by Mr. Ken. Henderson with a flight of 67.5 sec.—and frequent showings of a film showing a club "Fairey Facla" doing its stuff. Enquiries from interested applicants for membership have been numerous, and it is hoped to run another exhibition some time in March.

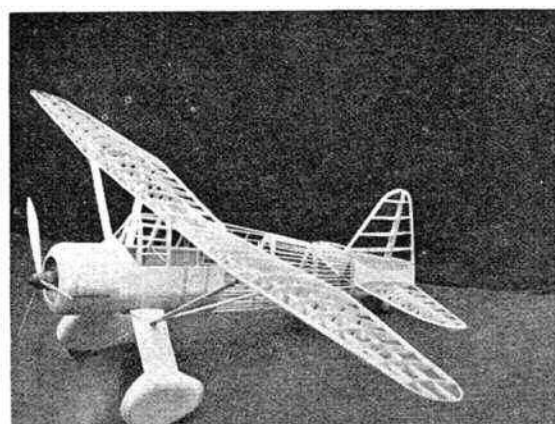
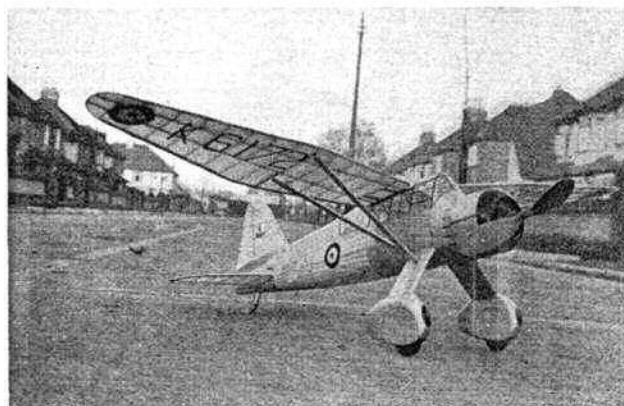
It is pointed out that the proposed Scottish Competition reported last month is open to any person resident in Scotland and a registered member of a Scottish club.

The LANCASHIRE M.A.S. held their annual general meeting in January, when the most successful season in the annals of the club was reported. This club, as you know, won the Plugge Cup, the Shorts' Seaplane Cup, wiped the floor with all competitors in the Biplane Competition, placed second and third in the Women's Cup, and hold two British records. That is in national competitions alone, and these chaps have been making their weight felt in many other directions, having an imposing record in inter-club contests. Apart from these honours there is the highly successful Northern Rally, and a large share in the biggest exhibition of model aircraft yet held.

Social activities have been enlarged—see last month's report of the "Lancs. Whoopee"—and the increase in lady membership has helped considerably in this direction. Membership figures put this club among the largest in the country these days. (With regard to this I should appreciate it if you secretaries would state the number of members on your cards when sending in the details asked for earlier on, as it will enable us to judge how the clubs place for strength).

Four new trophies found their way into the Lancs. coffers, these being THE AERO-MODELLER Challenge Cup, the "President's Trophy," the "M.S.S. Cup," and last, but by no means least, a magnificent trophy, the "Women's Challenge Cup," received from an anonymous donor, bringing the total number of "pots" to 13. Me-thinks I shall have to donate a "Clubman's" thimble to break the unlucky number there!

The internal efficiency of the club was shown to advantage in the handling of the enormous rally entry, and the general position of the club, both financially and otherwise, shows good management all round. Organisation is a strong point here, and I would point out that this is



The "Lysander" again! Top: Two photos of a 1 in. scale model, i.e. 50 in. span, built by Mr. J. Richardson, of the West Sussex Club; and below, Mr. C. W. Dyer's $\frac{1}{2}$ in. to 1 ft. model. Weight is 4 oz., and duration 20 sec. Mr. Dyer won a silver cup 18 months ago at a Romford M.A.C. Exhibition, and is now a member of the Hornchurch Club.

one of the main factors by which a club succeeds or not. Appreciation was shown of the work of the officials, and nine new members were elected to the membership—a healthy sign at this time of the year. Arrangements are going ahead for the production of a club bulletin, to which the members are asked to contribute anything of interest.

Mr. J. Coupe, of the BLACKPOOL M.A.C., won the club championship for the past season, and a photo of his model is reproduced here. The club record for

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duration job stands at 3 min. 16 sec., with the glider figure at 4 min. 43 sec., both of which will come in for a lot of assaults in the coming season.

The EALING AND DISTRICT M.F.C. have instituted a new competition for the "Watkins Memorial Cup," in memory of their late vice-president, who met his death in tragic circumstances, as reported in the November issue. This will take the form of an average of three flights affair, multiplied by wing loading plus power loading in ounces, all models to be of the international class.

The annual general meeting of this club was followed by a pole speed contest, whilst a recent duration indoor competition resulted as follows:—

H. C. Potter, average 35.45 sec.

M. Ellis, average 35.15 sec.

E. Adair, average 33 sec.

Mr. G. Cudmore, Press secretary of this club, sends in two photos of a 1 in.—1 ft. scale model of the "Lysander"—(boy, is this job popular with the scale fans?)—and a semi-scale "Hawker Hurricane," whilst a third shows the builder himself with a duration model. Nice work, Mr. Cudmore.

The NOTTINGHAM AND DISTRICT M.A.C. report:—

"Two competitions were included in the latter part of our last season, the biplane contest and the flying scale, the latter proving a final entry of only four. The biplane was more popular and attracted nine, the winner, Mr. Chapman, putting up flights with his model equal to any of our duration monoplanes. He can do a regular minute to more than two minutes with this fine biplane, which represents one of the best rubber-powered models of last year. The flying scale was run on a duration plus workmanship basis for arriving at the points for decision. Mr. Iliffe proved the winner with a Stinson model of approximately 80 in. span, making steady and consistent flights, together with a fair average of points for workmanship. We hope, as usual, to commence our season's flying at Easter, and anyone who would care to make enquiries concerning the club should do so on the club's ground at Wollaton Vale (Astoria end), where they will see us in action during Easter. Written applications should be sent to the Hon. Sec., Mr. A. Chapman, 198 Toton Lane, Stapleford, Notts."

I have a letter from a Mr. Williamson, of Stockport, whom, I take it, is secretary of the STOCKPORT M.A.C., but who does not mention the name of the club! These chaps held a Concours d'Elegance contest, the winner being C. Hobson, with a scale Curtiss Tripod Pusher—no easy job to tackle. The engine alone contains over 100 parts, and the amount of detail is remarkable. Membership is now up to 20, and they can just manage to squeeze into the clubroom if not too well fed, and with elbows kept tucked in!

Another new secretary is Mr. W. Geddie, "Garmouth," 109 South Hill Road, Bromley, Kent, who now looks after the interests of the BROMLEY M.A.C. These fellows have been "up the poling," and speed has come in for its share of the thrills, the maximum to date being 30 m.p.h., some going on an 18 ft. circuit. Mr. Curwen took along a nifty miniature "gas" job, hollowed balsa monocoque fuselage, 1 cc. Hallam engine, all-up weight being 16 oz. Sounds like good weight saving here!

HIGH WYCOMBE M.A.C. write:—

"At the last monthly club meeting we decided to

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affiliate to the S.M.A.E. and we hope to get our application in for the February meeting.

"One of the club members brought along a model built in 1910 by Mr. Brooker. This actually flew, in spite of the fact that it was made of mahogany veneer and powered with $\frac{1}{4}$ in. sq. catapult elastic. It is a biplane canard pusher, and we must excuse the sag and warp of the wings, as this model has not been renovated or cleaned for 28 years. It has now been adopted as the club mascot.

Little outdoor flying has been done this month, but a very successful and well attended indoor pole-flying was held on January 19th. The pole was mounted in a socket in the concrete floor of a garage, and had a ball-bearing head. Nearly all the models were of the outdoor type, and in spite of their weight and speed, flew quite well and gave good durations. Mr. Creswell's model was lapping the pole at about one rev. per sec. It is surprising the lack of damage we sustained, as when these models are flown outdoors there is nearly always plenty of crack-ups.

We are very pleased to announce the fact that Dr. J. Murison Craig, F.R.C.S., himself an ardent modeller, has accepted our presidency.

N.B.—Change of Secretary's address to: 65 Eaton Avenue, High Wycombe.

The Oxford M.F.C. winter programme started on December 6th, with a lecture by the President, Mr. A. F. Houlberg. He showed, with the aid of lantern slides, just what must be taken into consideration in designing a really efficient Wakefield model, and I don't expect many members realised to what extent formulæ and mathematics entered into aero-modelling! What is more, he showed the figures he arrived at for his own Wakefield model, and many came away with heads buzzing with figures and suffering from acute brain fog!

This was a very valuable lecture, and should fully convince any sceptic that model aeronautics is not just sticking tissue paper to wood, with a piece of elastic thrown in.

The annual social was held on January 6th, and Mr. C. A. Rippon attended and gave a most interesting lecture on the uses of various materials in aero-modelling. He augmented his remarks by passing round various samples of balsa and other materials, and complimented the club on its honesty when he got them back again! In the case of the bobbins for rubber motors (of which he is the inventor) this was mostly due to their being different sizes! These lectures demonstrate the real need for keeping members together during the winter months by stimulating interest in model matters, when flying is not possible.

The "Gladding Cup" competition of the GRIMSBY AND DISTRICT M.A.C. was won by Mr. M. Green. with an average for three flights of 111 seconds, runners up being D. Gladding, 81 sec., and P. Hoyland, 80 sec. Models had to be between 140—150 sq. in., and weigh 4 oz. Mr. Green also won the first pole contest with a flight of 70 sec., likewise both classes at the exhibition held during December. I'll bet the other lads are bursting to haul down his colours!

The VICTORIA M.A.C. has succeeded in obtaining a good size hall for indoor flying, and is hoping other clubs will visit them and try their models there. Anyone wishing to go should get in touch with Mr. F. Hay, of 45 Eccleston Place, Victoria, S.W.1.

A photo shows a "Fairey Facula," built by Mr.

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Morris, of the DERBY AND DISTRICT M.A.C., no performance figures being available yet. This club held its annual general meeting on January 1st, and it is felt that some must have gone in with the morning milk. What a time to hold such a meeting! Askin' for it, I calls it. By the way, Mr. Bryan, please note what I said regarding the return of photos earlier on.

A new club, to be known as the WYTHENSHAW AND DISTRICT M.A.C.—where is this, by the way?—has been formed by D. Valleley, of 20 Mayfair Road, Cross Acres, Wythenshawe. This chap asks if it is possible for a trade concern to print sets of the popular wing sections suitable for taper wings, as he feels it beyond the abilities of many builders to do this. I rather incline to the view that more can than cannot!

Following the annual general meeting of the MIDLAND M.A.C., the prizegiving for the 1938 season took place, the lucky ones being:—

S. W. Smith, Flint Trophy and Allman Cup.

P. Lyon, Asman Cup.

B. W. Asman, Medal.

D. Smith, Medal.

Mr. R. Haigh, of 28 Frederick Road, Erdington, Birmingham, is once again in charge of the secretarial duties.

The SHEFFIELD S.A.M. hope to make their 1939 open rally the real goods, and a suggested date is June 11th, subject to there being no clashing of dates. A scheme has been instituted by which those members wishing to attend various "out-of-town" visits can pay into a fund as and when they wish, thereby eliminating the sudden expenditure of the week's pocket money. Quite a good idea, Sheffield!

Mr. F. Avis, of 6 Pike Street, Stockton Heath, Warrington, has formed a club in that district, and wishes others to get in touch with him. May I make two suggestions, Mr. Avis? One, that your sketch of a badge is too close a resemblance to the S.M.A.E. official badge; and, secondly, is it not better to support the existing Warrington club? Does the district warrant two

identical clubs? I should be glad of your views on this, and please regard the suggestions as helpful.

"The formation of a club is being commenced, under the heading of 'The North Coventry Model Aero Club.' An ideal flying ground has been obtained, with the view to being central with main districts, viz., Shilton, Bulkington, Bedworth, Foleshill, Stoke, etc.

"Will anyone interested communicate with either Mr. G. W. Rose, 98 Bell Green Road, Coventry; or Mr. F. Pegg, 'The Cottage,' 9 Sunningdale Avenue, Foleshill, Coventry.

Mr. G. Cliffe, a new member of the new SWINTON AND DISTRICT M.A.C., has broken the club record with a flight of 70 seconds O.O.S. Mr. Snape, the Chairman, has been elected a patron member of the S.M.A.E.—a fact of which he is justly proud.

The "air turbine" idea seems to have caught on with some of the WORTHING M.A.C. members, and experiments are going ahead. I should be pleased to have details of their findings, as I have always regarded this as very much of a hoax. Still, I may be wrong!

A photo from the KEIGHLEY M.A.C. shows Mr. S. Parkington with the model that holds the club record of over 10 minutes, another showing three members of this club. Results of a recent solid scale contest were: Messrs. N. Ferguson, C. Butterfield, and S. Parkington. Points are awarded for the annual Silver Championship Cup, the next event being a flying scale competition.

Other new clubs noted this month are:—

Other new clubs noted this month are: NORTH-ALLERTON AND DISTRICT M.A.C., Secretary, C. R. Brand, Tees Cottage, Brompton, Northallerton; CHESTER M.F.C., Secretary, F. Wilde, 9 Eaton Road, Handbridge, Chester; ILKESTON M.A.C., Secretary, V. Barratt, 1 Field Road, Ilkeston, Derby.

Mr. C. Mobbs, of "Fairview," Bournvile, Aldridge, nr. Walsall, wishes interested aero-modellers in the Streetly district, to get in touch with him, as he is eager to form a club in that area.

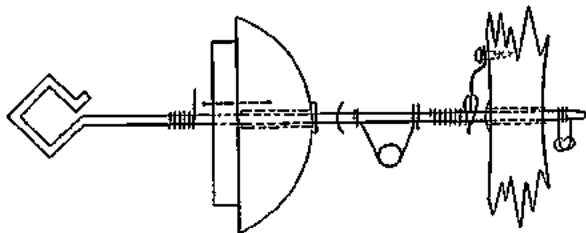
And so my old rubber stretchers, I fare thee well for another month, and may I express all your hopes for better weather, plenty of it—and darn quick, too! I'm just about fed up with waiting for a decent day to try out all the models I have ready for the season!

With which I close my weary eyes. I wish all clubs could have the use of a typewriter! See you on the flying field—minus waders, I trust.

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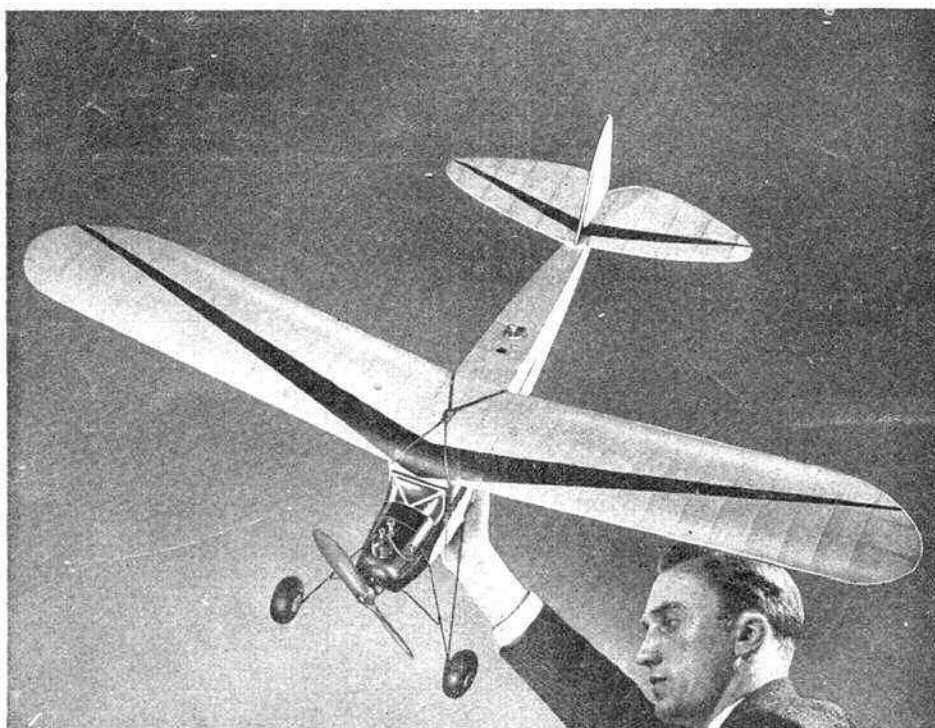
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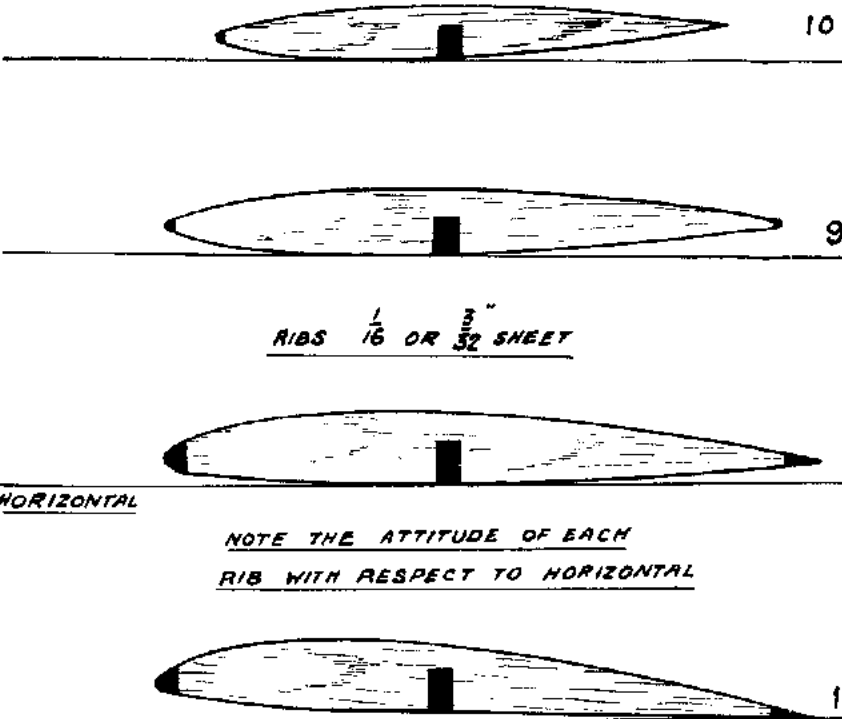
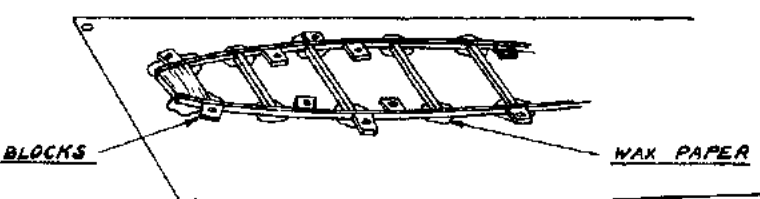
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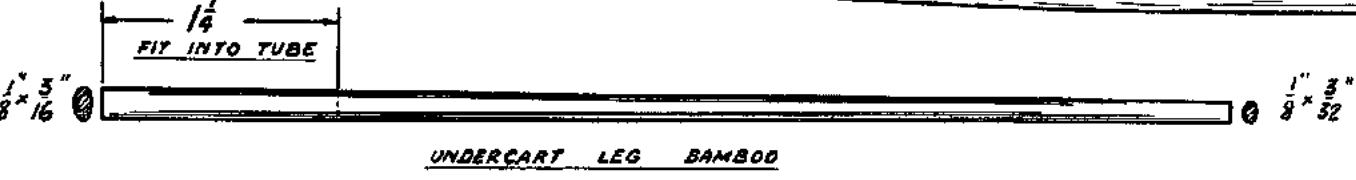
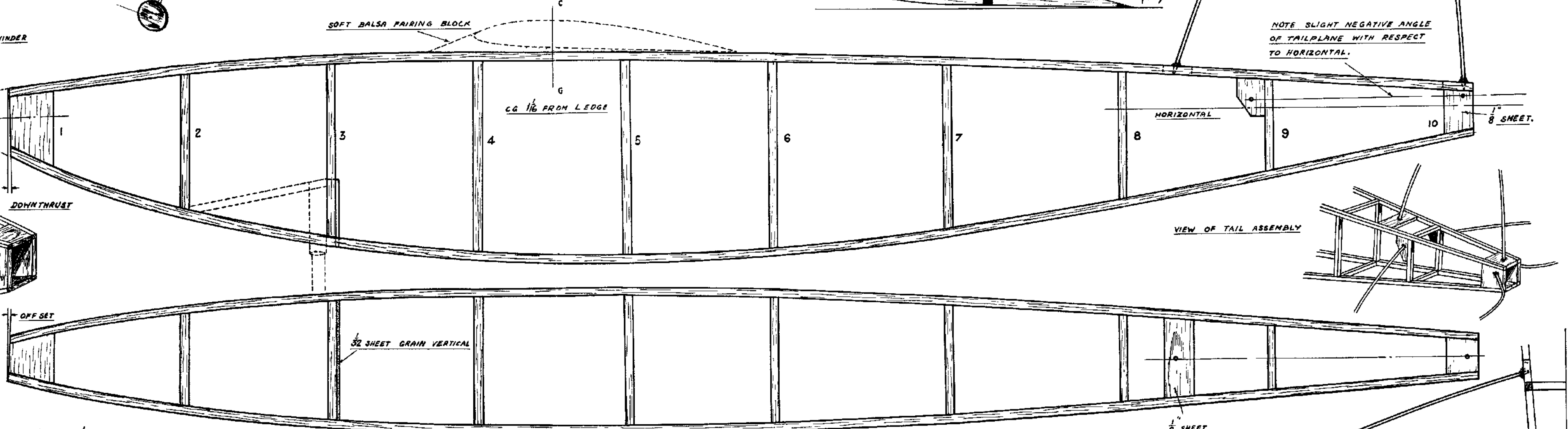
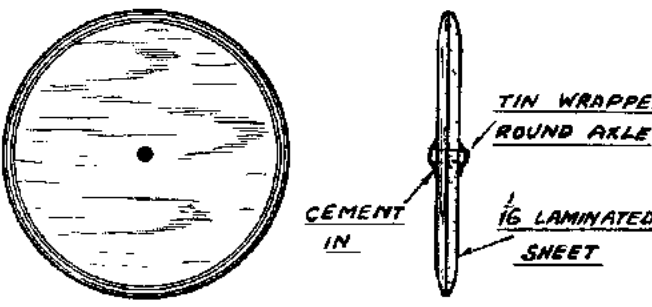
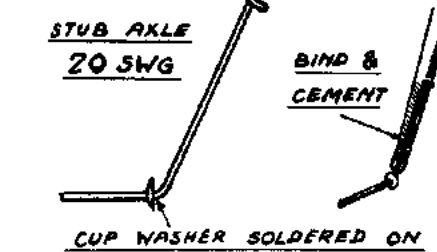
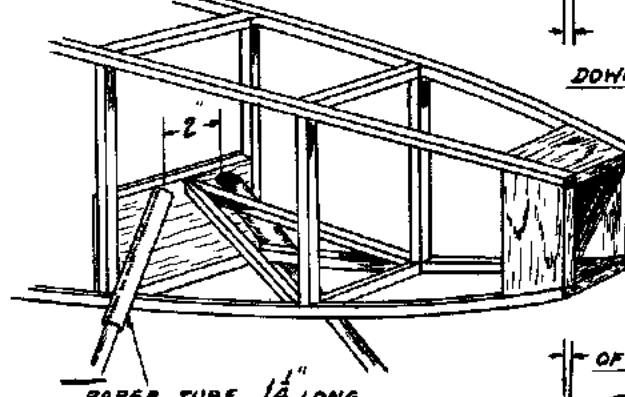
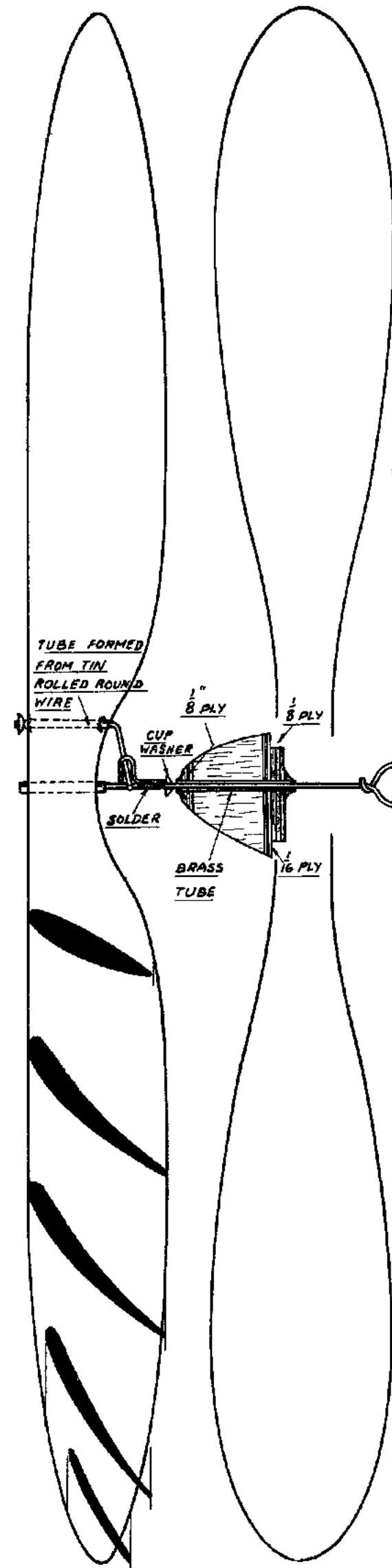
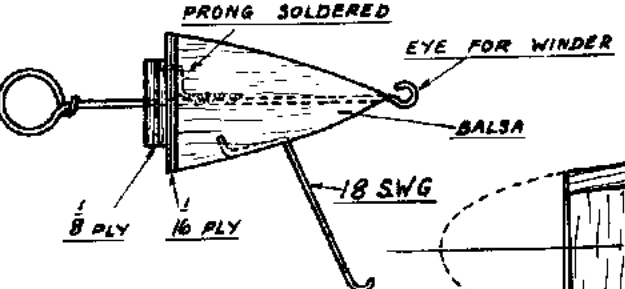
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