AERO MODELLER

Vol. V No. 59
OCTOBER · 1940
EIGHTPENCE

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http://aerofred.com/index.php

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THE AERO-MODELLER

ALLEN HOUSE

NEWARKE STREET, LEICESTER, ENGLAND

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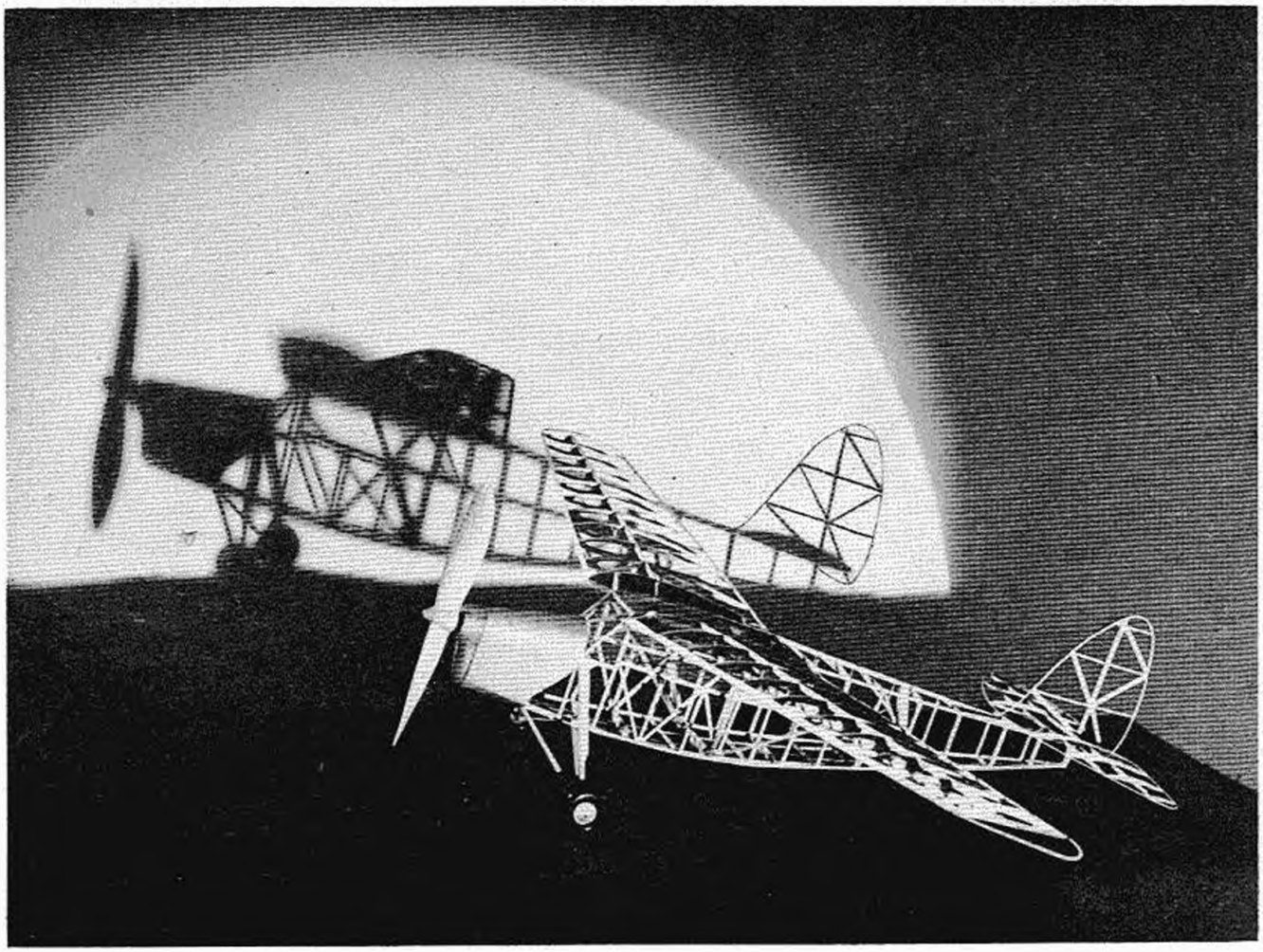


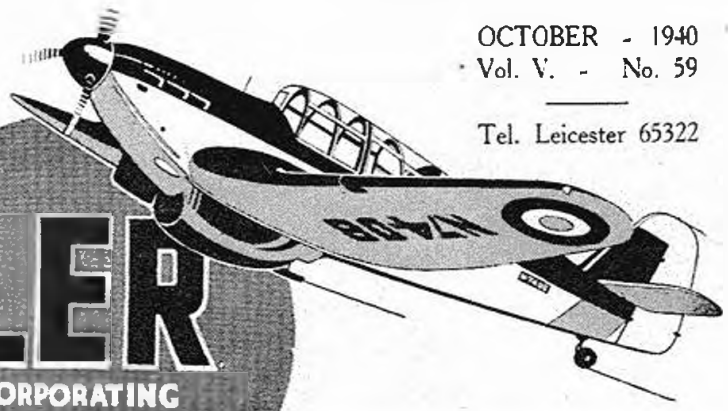
[Photograph by P. A. L. Brunney

The AERO MODELLER

INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR"

OCTOBER - 1940
Vol. V. - No. 59

Tel. Leicester 65322



Editorial

IT is possible that some of our readers more distant from Bedford and London may receive their copies of THE AERO-MODELLER two or three days late this month; for this we offer no apologies but the straightforward fact that the cause of any delay is not *our* fault!

Our Staff, our Printers, and our Distributors have many extra demands on their time, and with large-scale use of the railways by the Government authorities it is inevitable that delays may arise in certain districts; we feel sure that under these circumstances readers will accept any delays with a good spirit.

The S.M.A.E. Fighter Fund.

Considering the short time which has elapsed since the announcement of the inauguration of the S.M.A.E. Fighter Fund in our last issue, and our going to press for this one, the Fund has received a very encouraging start. Following is a list of contributions so far sent in:—

	£	s.	d.		£	s.	d.
S.M.A.E.	25	0	0	J. Morris		5	0
THE AERO-MODELLER...	15	15	0	Sykes Bros.		5	0
Atlanta Aero Model Co.	5	5	0	F. Forster		2	6
Kanga Aero Models...	3	3	0	P. W. Duxfield' ...		1	6
Leicester M.A.C. ...	1	13	0				
G. S. Kermack ...		12	6		£52	7	6
J. Swepstone		5	0				

Further contributions will be acknowledged next month.

Contributions can be sent to any of the following:—Hon. Treasurer of the S.M.A.E., Mr. L. J. Hawkins, The Dorchester Hotel, Torquay; Mrs. McQueen, c/o Kanga Aero Models, 1 Colonnade Passage, New Street, Birmingham 2; or Mr. C. S. Rushbrooke, Hon. Sec. of the Fund, at the offices of THE AERO-MODELLER, Allen House, Newarke Street, Leicester.

To make clear the objects of the Fund, and to put forward the various ways in which it may be supported, we print herewith copy of a letter which has been sent to all model aircraft clubs over the signature of Mr. E. F. H. Cosh, Hon. Sec. of the Society:—

"THE S.M.A.E. FIGHTER FUND.

DEAR SIR,

I wish to bring to your attention the above Fund, recently instituted by the Society of Model Aeronautical Engineers. Knowing, as we all do, that the R.A.F. is to-day truly our first line of defence—and ultimately offence—many groups are busily engaged in collecting funds to provide them with the weapons they need, and I feel sure you will agree that we—the aero-modelling fraternity—above all others, should be well in the van with such activities.

This Fund has been named the "Fighter Fund" rather than a "Spitfire Fund" purposely, as by the time the authorities receive your donations other and better craft may be in commission, and I am sure we wish any aero-modellers' sponsored machine to be the best type in use at any time.

The Committee feel that they do not need to solicit your aid, being sure that it only remains for them to organise the whole of the aero-modelling movement to make this fund an ensured success. We ask only that all clubs, whether affiliated to the Society or not, shall do all in their power to make this a bumper effort, and make the following suggestions to help individual organisations. (New ideas will be welcomed by the Secretary, and passed on to other enthusiasts).

Organise: Exhibitions of Models, Competitions, Collections, Jumble Sales, Whist Drives, Dances.

Make models for sale. (Scale types for aircraft recognition should find a ready sale to-day).

Institute collecting boxes in your club-rooms, and ask your local dealer to do likewise in his shop. The few coppers in change will soon mount into a tidy sum.

There is no closing date to this Fund, and donations will be acknowledged periodically through the Press. Please bring this matter immediately to the attention of your members, and buckle down to collecting for the first "S.M.A.E. Fighter Aircraft" in record time. Donations should be accompanied by the enclosed form.

Yours faithfully
E. F. H. COSH,
Hon. Sec. S.M.A.E.

The Air Cadet Challenge Trophy.

We promised to announce in this issue the results of this contest, a decentralised competition open to close on two hundred squadrons of the Air Defence Cadet Corps throughout the country.

Well, here *it* is! One entry and one winner!

To make the most of it we publish the report of No. 85 (Southgate) Squadron sent in by S. G. Rose, C. Flt. Lt. (Adjt.):—

Result of No. 85's team effort for THE AERO-MODELLER Annual Challenge Trophy, flown at Holly Hill Farm, The Ridgeway, Enfield, by arrangement with the Northern Heights Model Flying Club.

Sunday, August 11th, 1940, between 3 p.m.—7 p.m.

Weather was bright and sunny, but very gusty wind made operations difficult, especially for four out of the six in the team who were first year novices.

Timekeepers were Northern Heights Official S.M.A.E. "timers": C. A. Rippon, J. Disney, K. Ware.

The team and results were as follow:—

Name	*Flight*	1	2	3	*Aggreg.*
		sec.	*sec.*	*sec.*	*sec.*
Cadet Bithery ...	B	41·5	40	50	131·5
L/C. Baldock ...	C	25·5	59	42·5	127
L/C. Lenney ...		42	37	38	117
Cadet Shaw ...	C	37	42·5	25	104·5
L/C. Giles ...	D	24·5	21	55·5	101
Cadet Mitchell ...	C	28·2	37	35	100·2

Total aggregate 681·2 sec.

Reserves were Cadet R. Norris, Cadet Bonney, who were not called upon, but who took the greatest pains in preparing their models in readiness.

Certified correct competition in accordance with regulations.

(*Signed*) S. G. Rose. *C. Flt. Lt.* (*Adjt.*).
No. 85 (Southgate) Squadron A.D.C.C.

We suppose we should offer some comment on this, but for once we feel at a loss for the right thing to say! We understood that many Air Cadet Squadrons had organised classes on model aircraft construction, and certainly we received from headquarters a generous recognition of our offer to present this trophy for competition amongst squadrons of the Corps. Perhaps the not-too-good weather, and perhaps more so, the stirring times in which we are now living, account in part for no other squadron entering for this contest, but nevertheless we must say that we had looked forward to receiving at least a sufficient number of entries as to require a little sorting out!

However, there it is. No. 85 (Southgate) Squadron has won the trophy, and to the whole Squadron, and in particular the six members of its team, we offer our sincerest congratulations for having had the energy, persistence and, may be, courage, in entering for the contest. It is pleasing to note that the trophy goes to the Squadron which has been "fathered" by Mr. C. A. Rippon, who, of course, was the designer of the Air Cadet 'plane which had to be flown by entrants.

The N.G.A. Petrol 'Plane Insurance.

We give formal notice on behalf of the National Guild of Aero-modellists that, as and from the publication of the ban on the flying of petrol 'planes in this country, the N.G.A. insurance for petrol 'planes has been withdrawn. This withdrawal of insurance in no way affects petrol 'plane members of the N.G.A. Members should retain their membership cards and lapel badges, and transfers on their 'planes; but it must be understood that since the flying of petrol 'planes has definitely been prohibited, the N.G.A. is not prepared to condone the illegal flying of 'planes by continuing their insurance.

As and when this ban is lifted, members' insurance will be automatically reinstated for the unelapsed period of their insurance.

This withdrawal of insurance also applies to the flying of rubber-driven models and gliders over 7 ft. span; the conditions regarding reinstatement being as for petrol 'planes. All this simply means that full N.G.A. insurance is maintained for all types of aircraft which it is permissible to fly, but does not apply to those types of model aircraft the flying of which has now been banned.

Plagianism or No?

A considerable number of readers have drawn our attention to a short article, "Your First Propeller," published on page 525 of the September issue, and another article, "Monocoque Fuselages," published on page 528, both over the name of "A. Pegg."

All of our correspondents have pointed out that these two "articles" are word-for-word extracts from certain pages of Frank Zaic's 1938 Year Book.

Needless to say, when passing these short articles for publication, we had no idea that they were other than original. We immediately took the matter up with our contributor, Mr. Pegg, who has acknowledged that they were extracts from Zaic's book, and who offers his whole-hearted apologies. Mr. Pegg explains the incident in the following way:—

"I unfortunately have to bear the blame for this, what you may call 'theft,' although I was not the person to make the direct copy. As it happened I came across both the articles amongst a friend's manuscripts. I asked why he did not enter them for publication, but he had no wish to, so I took the opportunity to persuade him to let me do so. Thus I came to be the centre-point of this unfortunate affair."

We, of course, accept Mr. Pegg's explanation, as we trust our readers will, but we have thought it right to point out to our contributor that to send in matter that is not his own original work without making any reference to it, is unusual; and that we think also that his friend should have pointed out to him that the manuscripts were extracts from Frank Zaic's book.

Petrol 'Planes

We wish to make it clear that we do not consider that the present ban on the flying of petrol 'planes should in any way discourage the builders of this type of aircraft, it should be remembered that the ban is on the *flying* of petrol 'planes, and there are no restrictions on the designing and constructing of them.

Dr. Forster's very popular "Petrol Topics" will continue, and from time to time we shall publish further articles on petrol 'planes. The recent articles by Lt.-Col. Bowden have been very well received, likewise the attractive cover for our last issue, which no doubt many readers recognise as one of his latest models flying on the sands in front of the Rock of Gibraltar.

This painting was executed by Mr. C. Rupert Moore, A.R.C.A., well known as the designer of "Viper II" and other high-class semi-scale military type model aircraft. Mr. Moore has also painted the cover of this current issue, and is now busily engaged on our next cover, and a really original design for our Christmas issue.

Incidentally, we have just heard from Lt.-Col. Bowden that he is busily engaged on the construction of a rubber-driven model; and if that is not encouragement to petrol 'plane enthusiasts we don't know what is!

Competition for Replicas of Copland's 1940 Wakefield 'Plane.

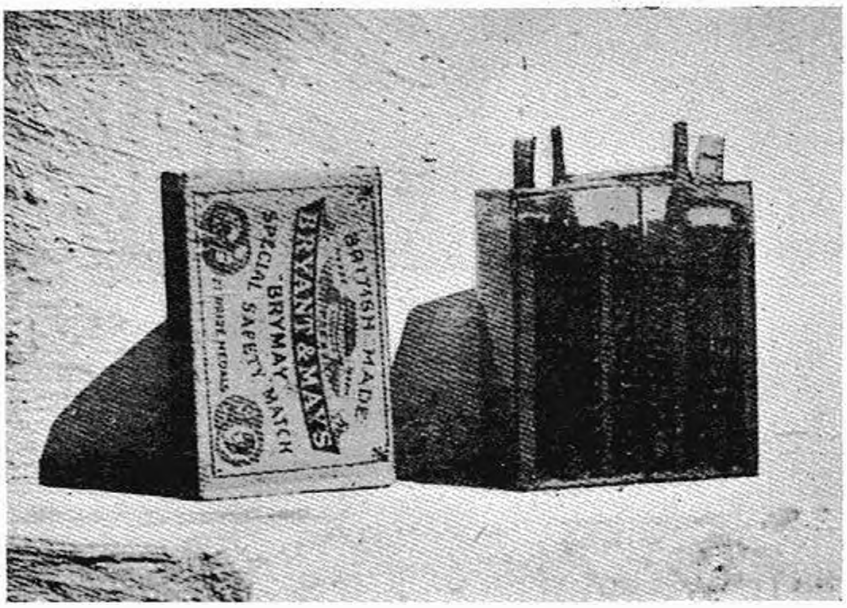
We have extended the closing date for entries to this competition until October 5th. Despite the fact that we have sold over 1,500 plans of this 'plane we have received very few entries, no doubt due to many readers having little spare time on their hands to get photos taken.

We *do* know that a considerable number of 'planes have been built, so trust that this extension of the closing date will encourage many more entries, so that we can have a really interesting gallery of prize-winning photographs to publish in our Chrisumas issue. D. A. R.

PETROL TOPICS

By Dr. J. F. P. FORSTER

Despite the ban on the flying of petrol 'planes for the duration of the war, we do not consider that there should be any less interest taken in petrol 'planes. Dr. Forster's popular feature and other articles on petrol 'planes will, therefore, continue.



WELL, at last the "blow has fallen." I had felt that it was inevitable sooner or later, especially when we heard that the flying of kites and toy balloons had been banned. For a time I comforted myself with the hope that whoever thought up *that* war-time restriction had never heard of model aeroplanes. I cannot understand the mentality of those "seekers after trouble" who deliberately drew the attention of the authorities to what is still an extraordinarily little known hobby to the average man-in-the-street by going out of their way to *ask* if there were any restrictions in force.

My own attitude was to keep quiet about it: try to use a modicum of common sense, and, as far as possible *volare cum cura*, as our N.G.A. motto reminds us. I must, however, admit that I live in what are probably exceptionally "unmilitary" surroundings, and furthermore our local Observer Corps fellows know me and my strange habits well by now, and their post is just three fields away from my usual flying ground. They have, in fact, often been the first to offer (usually incorrect!) suggestions as to the exact landfall of wayward models, and they never fail to chip me (and often quite undeservedly congratulate me) on their performance. The amusing part was that they only offered praise for flights which, if they only knew it, were quite unintentional cross-country mistakes, or ghastly exhibitions of what they took to be aerobatics. If I made a whole evening's consistent flights, all landing in my own small field, they would meet me the next day with remarks such as "Er bain't going very well last night, 'er got nowheres!"

Referring back to my very first article in this series, in the April issue, "faithful" readers will recall my experiments with a home-made miniature 4-volt accumulator, and my promise to report later on final results.

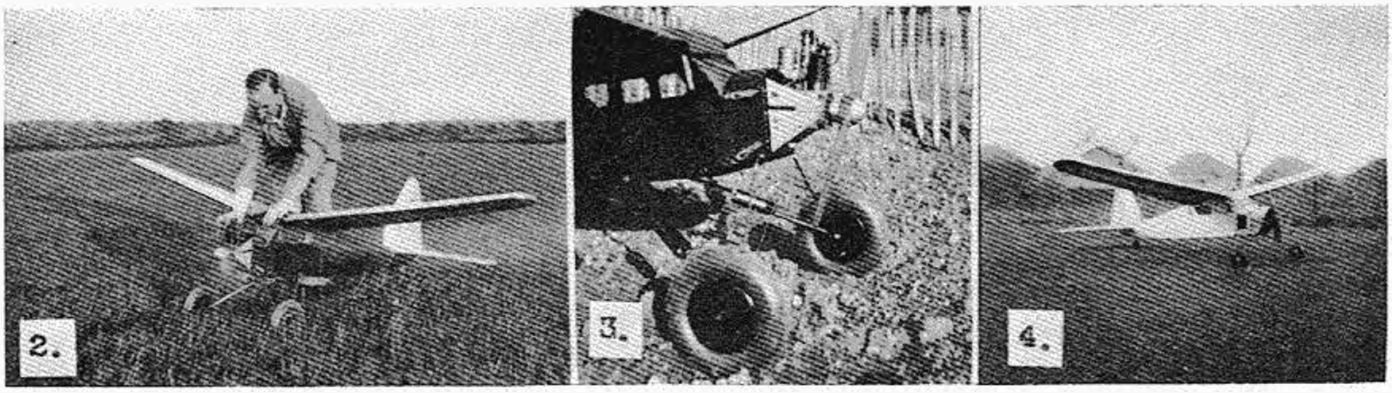
Well, I think I really have some good news: A radio engineer friend kindly got down to the job of building one of these for me to my own specifications, and readers will note the very neat little job he made of it (photo 1). As will be seen, it is almost the exact dimensions of a match-box, and when full of acid weighs just ¼ oz. more than a standard 4½-volt flashlamp battery (4 oz.).

Just before the flying ban was put on I gave this a fairly exhaustive series of tests under flying conditions, and it seems to me more than half the solution of faultless ignition. If well charged before an afternoon's flying it will continue to give an uninterrupted spark for anything up to a dozen one-minute flights without any recharging between flights. If given a two-minute charge from a 6-volt booster between flights it carries on perfectly O.K. for a whole afternoon of, say, twenty flights. On one occasion I did this, and after returning home to my workshop the tank was filled and the engine started on the little accumulator (with no intermediate recharge) and just left going until the tank ran dry. I refilled the tank three times and restarted without difficulty on all but the last occasion. Even then, once started on the booster, the engine continued to go on the little accumulator without a miss till even this tankful ran dry. Tests show that a tankful lasts between 4½ and 5 minutes.

I think you will agree that this should satisfy the most persistent flyer, and for anyone only wanting a dozen flights or so there is no need to take out a booster at all (provided the little battery is well charged at the start). To keep it up to scratch I now put it on charge the night before a proposed day's flying in series with a 2½-volt flashlight bulb. This reduces the charging rate very considerably, and is probably better for the plates, although I see no signs of their buckling or disintegrating after repeated charging direct across the 6-volt booster accumulator.

More recently still, after charging one night, intending to fly the next day, I was prevented from doing so by the complete "wrecking" of my one and only flying ground by our ardent L.D.V.'s, who have carried their instructions for the prevention of "Naarsty" landings to ridiculous extremes. This was about a month ago (at the time of writing), and to-day I have had a look at the little accumulator to see how she has retained that charge. I connected it up to P.8, filled up the tank, and the engine started third kick after lying idle all that while, and she ran off a tankful non-stop, lasting 4¾ minutes. Just to convince myself that this wasn't a flash in the pan I refilled yet again, and again the engine started (*second kick this time*).

Regarding the production and sale of accumulators of this type, I am assured that there are no difficulties whatever. Mine is not entirely unspillable, but this can quite easily be remedied in production models, and if produced in any sort of quantity could well sell at around the 5s. mark. No terminals are required; in fact, they are a disadvantage.



All we require are a couple of lead tags to be gripped by crocodile clips. I hope some enterprising model supply firm gets down to this little matter immediately after the war. (*Advertisers, please note*).

A very interesting letter comes to hand from C. R. Jeffries, of Arnold Grove, Shirley, near Birmingham. To give an idea of what it is all about I cannot do better than quote his letter, which he concludes by saying: "When the war is over there is no doubt the entire future of at least power-driven aircraft will be concentrated on radio control. After one has had a model flying overhead and been able to steer it at will, to shut the engine down and watch it motor in; and, when everybody expects her to touch down, to open up the throttle and do another circuit, *it is the biggest thrill yet*, and makes ordinary models seem as tame as kites."

The following extracts from his letter give us some idea of his very definite achievement: His model (photo 2) was originally built in '36-'37 for a Comet 18 cc., and was subsequently modified to take a Brown 9 cc. by "clipping 6" off the rear end of the fuselage. The original weight was 8½ lb. with the Comet, which literally wore out without damage to the airframe, but in spite of moving all equipment well forward she was still very tail-heavy with the Brown: hence the shortening of the fuselage. In this form, the machine became well known, making hundreds of flights without damage, and placing third in the Bowden and ninth in the Shelley in 1938, and third in the Flight Trophy in the following year.

"The next step," he continues, "was to load her with a radio set and control gear, and though the weight went up to 11½ lb., she stayed in the air, but the Brown proved too small to give her any climb." He found that what little height she had she lost as soon as he gave her any turn. "I therefore went to the other extreme and fitted an engine really excessively powerful—a really *hot* 30 cc. O.H.V. four-stroke originally designed for a model racing hydroplane." This engine's thrust races were suitably modified, as were the cam profiles, to cope with the new conditions, which include a reduction of revs from some 10,000 to around 4,500, at which speed it now turns a propeller of 22 in. diameter by 12 in. pitch. This engine has proved a consistently easy starter, and there is not the slightest falter on "opening up the taps" after ticking over, which must be a very important point in a radio-controlled job. The secret of this is probably the motor-cycle type carburetter. He also remarks that, in spite of its being a four-stroke, the engine is even smoother than was the Brown, and considerably smoother running than the Comet.

In this connection I am prompted to endorse a suggestion in one of numerous letters received from our old friend, A. Speirs-Purdon, of West Hartlepool, of "Flying Power house" fame: He suggests as a remedy for not-too-smooth engines the lightening of the propeller retaining washer by drilling holes in one side and placing the heavy side at bottom dead centre (i.e. the same side as the crankshaft counterbalance weight). I have tried this myself on one of my own engines falling into this category, and it works like a charm. An alternative and equally effective method is to carve the propeller with one blade a fraction heavier than the other, but this has the disadvantage of having to be repeated for every propeller used.

To return to C. R. Jeffries' 'plane, the span is 8 ft. 2 in., with a mean chord of 15 in., which at her present weight of 15 lb. gives a wing load of over 30 oz./sq. ft. "Naturally she is fast both under power and on the glide, but for the loading the latter is remarkably flat; "with 10 in. diam. wheels and a stiff undercart she lands nicely." The model takes off in about two or three lengths, and has a steady climb.

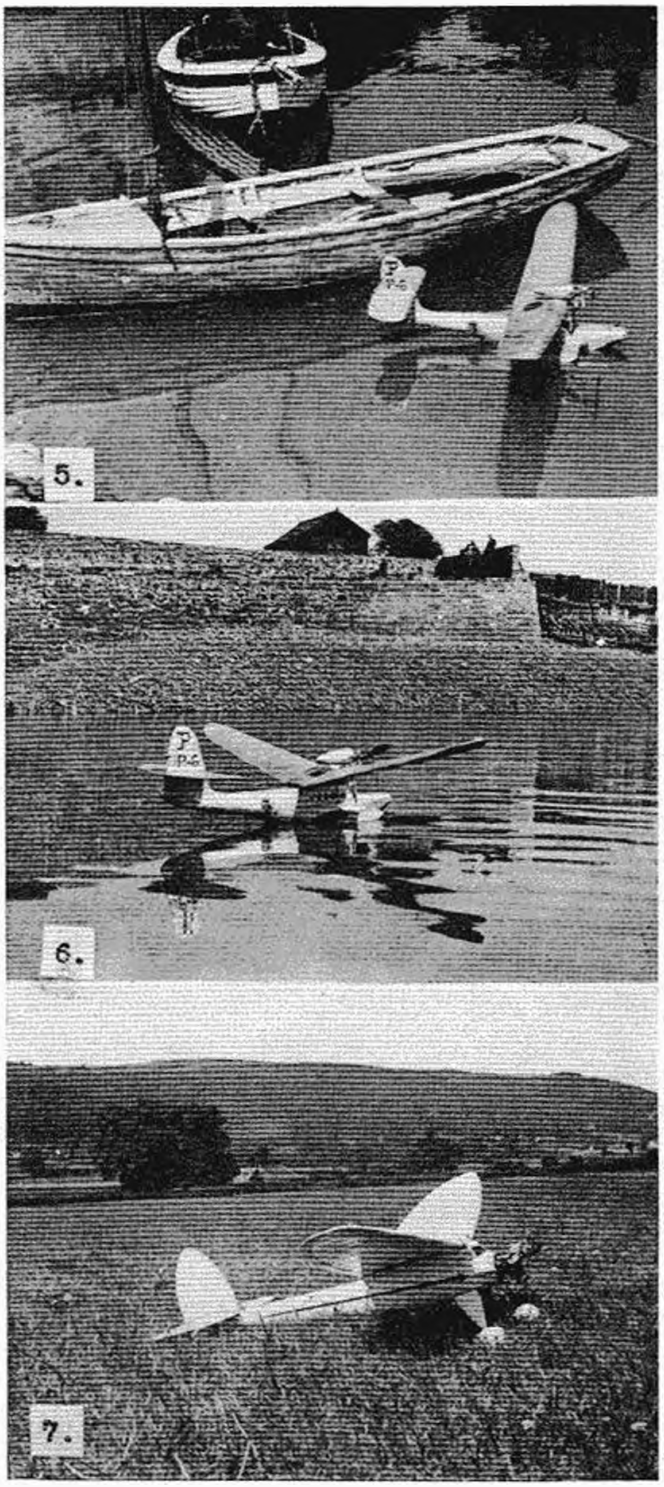
Mr. Jeffries promises us more "dope" about the radio gear "one day." I gather he has developed this himself, but for the time being we must be satisfied with his assertion that it works reliably over several miles, giving instant selection of left, zero or right rudder, and also throttles the engine up or down at will. The 'plane itself has made "thousands of flights without damage," which speaks well for its design. Let us take a look at this (photos 2 and 3). It appears to embody *all* the crash-proof features discussed in September "Topics," including detachable engine-mounting, split wing held by rubber bands, as are also the tail surfaces, and last but not least, large wheels on a *stiffish undercart* provided with *backward shock travel*. Photo 4 shows the machine in its original form.

Achievements of this sort must surely stimulate us all, and believe it or not, our old friend from Markinch, Fife, whose leg I so unmercifully pulled in June "Topics," comes up for more, like the true Scotsman that he is. He has taken my words of encouragement literally, and in spite of his "once per annum" complex, now wants to get in touch with radio control enthusiasts. Well, if this doesn't beat all records for "wishful thinking." Now come clean, Mr. B. *Have* you, or have you *not* had your 1940 flight yet? The way this fellow comes up for more! I just can't resist it. His letter shows that like all good Scotsmen he can enjoy a joke against himself, and here's wishing him luck with radio control. When he reports that he has averaged even one radio-controlled flight per annum the laugh will be on me, and I hope to take it in as good part as he has. In the meantime, I need hardly point out that any experiments with the radio side are completely "banned for the duration" without special permission from various authorities, including the Air Ministry, and unless an experimenter is already a recognised "expert" the chances of obtaining such a permit are negligible.

I have received many kind letters these last few months, which I have been unable to acknowledge in my "Topics" ration. I would take this opportunity of thanking their senders and all those who have helped to "make" Petrol Topics. Several promised further letters, including snaps, "as soon as the job in hand was finished." Reference to these was consequently held over, and I would remind them that I am still waiting to receive those snaps. Several others come from chaps in H.M. Forces, showing that to these fellows petrol articles are like a breath of fresh air, and are a considerable consolation to them in their inability to pursue their hobby as of yore. The interest is there, as keen or even keener than ever, and if we are not to let it flag during the war, we must at least give these boys something to read. So now you laggards who promised me photos of your creations, what about it? And to all you others who have been lucky enough to go on flying for the first eleven months of the war, what about *your* 1940 photos? You may be bored with them yourselves, but not others. If I don't receive more of *your* photos soon I shall have to inflict more of my own on readers, which is not what I originally intended in "Petrol Topics."

As you see, I am taking the liberty of including in "Topics" two photos of my original 1939 flying boat P.6 for the benefit of several correspondents on this subject (photos 5 and 6). Believe it or not, C.E.B. has at last "gone all looks." Photo 7 is of his latest elliptical wing baby "Monocoque Midget," powered on that particular day by an inverted Ohlsson 22, which, although I took it myself, I claim to be a much more flattering photograph than that which illustrated his article in the August issue. I can assure readers that it is the prettiest flyer, as well as looker, he has yet produced down here for my benefit. Though he may not like the compliment, a photograph of a model of the "G.O.M. of Petroleering" (as he is bound to become one day) is long overdue in "Petrol Topics."

Many of us, I am sure, are not going to be beaten by (?) small things like the latest restriction, and it's going to be a lot of fun seeing how some of our fuselages stand up to rubber motors developing up to 1/6 h.p. Our models can well do with heavy gauge gearing up in their sadly empty noses, and with multiple skeins we should be able to avoid excessive motor torque strains. Meanwhile it will do a lot of those engines good (especially the ones which *sometimes* start easily) to come out of those fuselages, and I hope



5.

6.

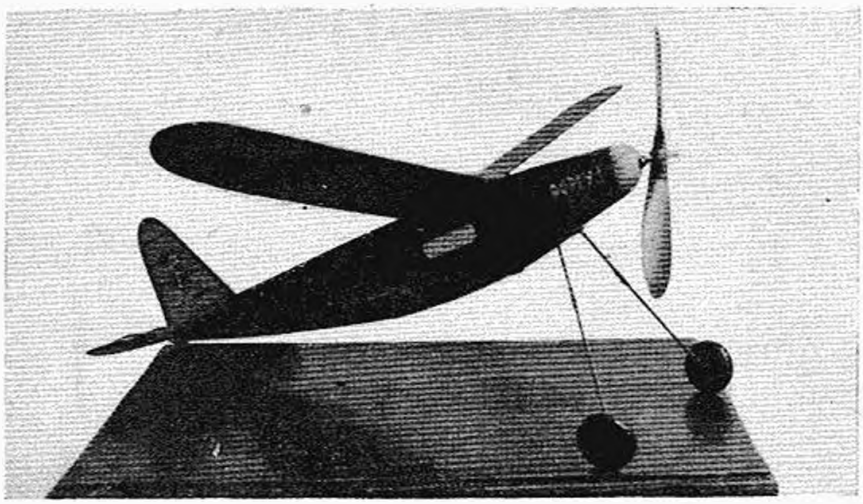
7.

when they go back after the war, after complete overhauls and plenty of bench testing, they will all go back on detachable mountings. Large rubber-driven models have not been much in evidence of recent years, and I am assured by "old hands" of pre-'14-'18 war days that they are a whole heap of fun. It will probably do many of us good to get that engine noise out of our ears, and may make some of us careless streamliners sit up when we hear what a racket our inducer drags kick up. I fear we may come to be dubbed the "rubber-ears." Anyway, here's to us!

DOPEY I—A 30 in. span Duration 'Plane

Designed by J. LONDON

One-third and full-size scale plans for building this interesting duration model are given on pages 584-5 of this issue. The author points out that the undercarriage on the model shown in the photograph is slightly longer than that shown on the drawing; this was for experimental purposes. Readers should build the undercarriage of their models to the dimensions shown on page 584.



Fuselage.

THE two side frames are firstly constructed, the longerons being $\frac{1}{8}$ in. square balsa and the uprights $\frac{1}{8}$ in. × $\frac{1}{16}$ in. balsa, except where noted on the plan. These frames are then placed vertically on the plan and the cross-pieces cemented in (as most modellers seem to have different methods of assembly at this point, I leave it to your discretion as to which is the most convenient and practicable way) and then, of course, the remaining things such as the nose fairing are built on. The construction of the nose fairing is quite straightforward and should present no difficulty if the plan and descriptive sketches are followed with care.

Wing.

We now come to the wing which, for the sake of simplicity, has been made in one piece. Commence with the ribs, which are cut out of $\frac{1}{16}$ in. sheet balsa after a template has been made from the full-size section given. The three centre-section ribs, however, have a different section which incorporates the necessary amount of incidence (3°).

The leading edge of $\frac{3}{16}$ in. sq. balsa is cut to length, allowing a good margin towards the centre-section, and the trailing edge of $\frac{1}{4}$ in. × $\frac{3}{8}$ in. balsa is also cut to length, notched $\frac{1}{8}$ in. × $\frac{1}{16}$ in. to receive the ribs and tapered in section to conform to the wing section. After all this has been done the two wing halves are assembled on the plan view. The main spar of $\frac{3}{8}$ in. × $\frac{1}{16}$ in. *hard* balsa is first placed in its allotted position, being held in a vertical position by means of pins placed at various intervals on either side. The ribs are then slotted into their respective positions (the centre-section is not made until the two wing halves are inclined to the dihedral). Next the leading edge is let into the diagonal recess in the ribs and held there by means of pins. The trailing edge has the ribs slotted into it and is also held in place by pins. Every joint, of course, so far is well cemented with a good cellulose cement. The tips are then cut out of $\frac{1}{16}$ in. sheet balsa, taking note of the way of the grain, as shown on the plan. Then the two halves of the wing are inclined to the given dihedral and the centre-section is constructed. The protruding main spar on each half-wing is bevelled to fit dihedral and then "sandwiched" between two $\frac{1}{16}$ in. sheet balsa spars of dimensions given. (The diagrammatic sketch should make this part of the construction quite clear).

Tail Surfaces.

These comprise rudder and tail-plane. The latter is of the "Lifting Type" and the construction is similar to that of the wing. As before, a full-size section template is made and the required number of ribs are cut out of $\frac{1}{32}$ in. sheet balsa. The leading edge is let in and the trailing edge notched, as in the case of the wing and the tips are formed out of $\frac{1}{16}$ in. square birch, which is quite easily steamed to shape.

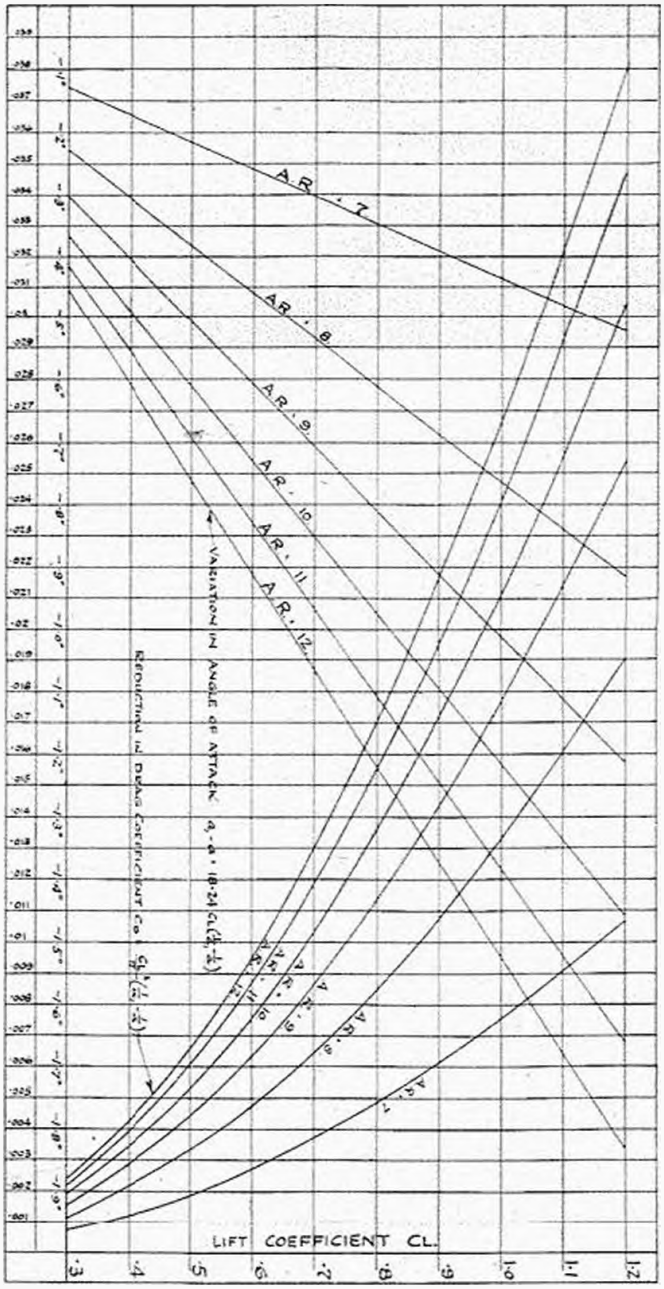
The rudder is of flat section and is quite easily constructed out of $\frac{1}{4}$ in. square balsa with a $\frac{1}{16}$ in. sheet balsa tip. The wire saddle which holds the rudder vertical on the fuselage is worked out of 24 s.w.g. piano wire, as shown, and the hook at the rear of the fin is formed out of an ordinary pin. Both are well cemented and strip tissue bound around them and again cemented.

Sundries.

Having finished the main construction we now turn to the various smaller items. The undercarriage is of the usual wire-sprung variety and needs no explaining if carefully followed on the plan. Next the nose block is carved roughly out of *hard* block balsa and cemented temporarily on the nose of the fuselage, where it is finished off. This method gives a good hand-grip and also ensures that the nose block conforms to the streamlining of the fuselage. The nose plug is then cemented to the rear of the block, making sure that it is an exact fit with the nose opening in the fuselage. Then the hole for the brass bushing is drilled with the appropriate down and side-thrust, as shown, and fitted with a 16 s.w.g. brass-screwed bush: the whole is then assembled and fitted with clutch and tensioner. The rear motor fixing is a $\frac{1}{4}$ in. diameter dowel let into laminated sheet balsa bearings built in the side frame. The whole of the model is now covered with superfine Japanese tissue which is sprayed with water, allowed to dry and then given two coats of clear dope. After all excess tissue has been

ASPECT RATIO CORRECTION

By A. H. SMITH



FOR any airfoil at a determined lift value an increase of aspect ratio results in a reduced value of drag, as can be seen from the formula

$$CDi = \frac{C_L^2}{\pi A}$$

where A = Aspect ratio.

A reduction in the angle of attack is also obtained, being equal to the difference between the induced angles for the two aspect ratios. The change in angle of attack for an increase of aspect ratio, in order to *retain the same lift value*, is

$$a_1 - a = 18{\cdot}24\ C_L \left(\frac{1}{A_1} - \frac{1}{A}\right)$$

where A = Aspect ratio of airfoil test
and A_1 = Aspect ratio to be used.

Results for these corrections are shown graphically in Fig. 1.

An example of the use of the graph is given in Fig. 2 for aspect ratios 9 and 12.

Assuming the airfoil R.A.F. 32, to be chosen, and that the design calls for a C_L value of ·80, from standard graph at aspect ratio 6 other values are tabulated in column 1, reductions from Fig. 1 are shown in column 2, and corrected values for the new aspect ratio in column 3.

The corrections in Fig. 1 can be applied to any airfoil where the test aspect ratio is 6, and should be applied to the lift coefficient C_L, which corresponds to the designed flying speed.

FIGURE 2.

Column 1.

From standard graph of R.A.F. 32.

Aspect ratio.	Angle of attack.	C_L	C_D	L./D
6	3·35°	·80	·048	16·7

Column 2.

From Figure 1.

Aspect ratio.	Reduction in angle of attack.	Reduction in C_D
9	− ·81°	·0114
12	− 1·22°	·017

Column 3.

Corrected values.

Angle of attack.	C_D	L./D
2·54°	·0366	21·8
2·13°	·031	25·8

"DOPEY I." *Continued.*

trimmed with a razor the "ragged" ends are all doped flat. There are two alternate power units for this model: one comprised eight strands of ¼ in. elastic, which is good for dull and unfavourable weather conditions, and the other, six strands of ¼ in. elastic, is very suitable for good weather conditions.

Both these motors are 36 in. long.

The propeller is 13 in. diameter and may either be bought or made. If it is bought try to get one which has a pitch of 1¼ times the diameter, but if you wish to carve it yourself the dimensions of the block are given on the plan. Carve with a considerable amount of undercamber on the blades, and when finished cover it all with tissue doped on, and keep adding coats of dope until a good polished surface is obtained.

STABILITY IN FLIGHT

By T. A. BROWN

THERE are three main directions in which an aeroplane can rotate, the imaginary lines around which this rotation takes place being known as " axes."

The " longitudinal " axis or line around which the model rolls is the horizontal centre line passing through the centre of gravity of the aircraft and running in the same direction as the fuselage. If the machine rotates around this axis it is said to be " rolling," or, in other words, one wing-tip rises and the other falls. Should any undesired rolling take place the machine is said to be " laterally " unstable.

The lateral axis passes through the centre of gravity of the machine and runs in the direction from wing-tip to wing-tip. Any movement around this axis being known as " pitching," which, if it is not desired, is caused by the aircraft being " longitudinally " unstable.

The " normal " axis passes through the centre of gravity and is an imaginary line around which the aircraft would turn if the rudder was applied. This would be termed " yawing," and if any undesired " yawing " took place the machine would be " directionally " unstable.

An aeroplane which, if flying along and meeting air currents tending to turn it around one or more of the axes previously described, tends to return to the flying attitude it was holding before rotational movement took place, is said to be " inherently " stable.

Should the aircraft show a tendency to keep rotating, it is said to be " unstable." There is a third condition in which the machine stays in the altitude to which the disturbing force has taken it and shows no tendency to return. This is known as " neutral " stability.

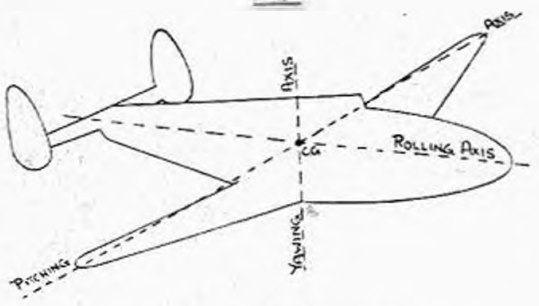
Lateral Stability.

Should an aircraft roll it will be seen that since one wing rises and the other falls there will be an increase in effective angle of attack on the down-going wing because of its downwards velocity through the air and a decrease of effective angle of attack on the up-going wing due to its upward velocity. Thus the up-going wing will generate less lift than the down-going one and rotation movement will cease. Once that occurs, however, both wings will generate equal amounts of lift, and as a result the machine will stay in that attitude and would not tend to return: unless, of course, it came under the influence of some other disturbing force. This is " neutral " stability.

However, when the model rolls into a banked position there is a tendency to sideslip in the lowered wing direction, thus producing a side pressure on the machine due to its sidewards velocity. Therefore, if the centre of side pressure or the centre of area of all side surfaces of the machine is above the centre of gravity the machine would tend to return to its original altitude, due to this side force: but this would only give a returning moment as long as the side pressure centre is above the centre of gravity.

Lateral stability can be achieved in numerous ways, one being to place the wing high above the fuselage, giving a high side pressure centre, since the direction of sideslip is not directly down the axis of the wing, as shown in Fig. 2, so that we get a side pressure on the wing surface. This is what is sometimes falsely called " pendulum " effect, falsely since without side pressure there would be no return to the original position. The high side pressure centre may also be obtained by having large span fins.

FIG 1.



MAIN AXES OF ROTATION

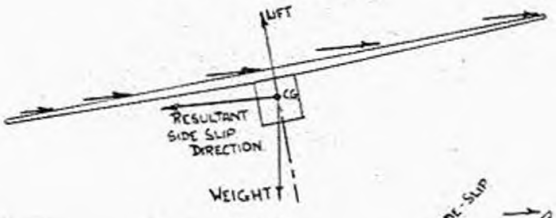


FIG 2

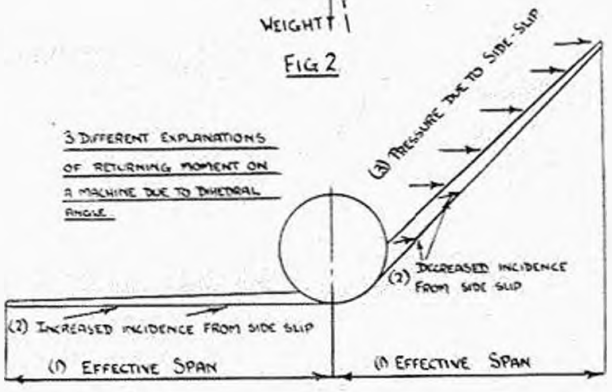


FIG 3.

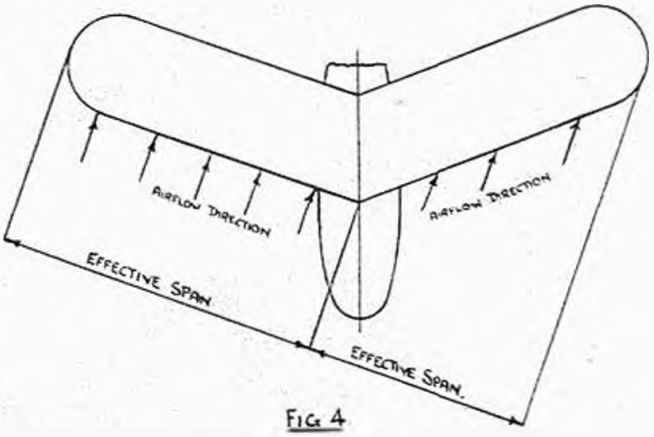


FIG 4

Dihedral angle or sweep up of the wings towards the tip also increases lateral stability, and this can be explained in numerous ways, either as side pressure on the wing during sideslip or an increase in effective span or one which seems to be more popular, as a decrease of effective incidence on the up-going wing, and an increase on the down-going wing. These are all shown in Fig. 3, and all give returning moments.

Sweepback also changes the effective spans and areas during sideslip, as seen in Fig. 4, whilst, in addition, the up-going wing will be masked by the fuselage to some extent, thus reducing lift on that side and so assisting to produce a righting moment. It has been found, however, as regards lateral stability, that 1 degree of dihedral has the same effect as 10 degrees of sweepback, so that it can be seen that sweepback is an effective increase of dihedral whilst sweepforward has the opposite effect. Also, since the side pressure centre of the fuselage and fin is behind the aircraft centre of gravity, there is a tendency for the nose of the machine to drop towards the lowered wing. This can, of course, be offset by using dihedral, since the centre of side pressure on the wing is in front of the centre of gravity, this moment tending to neutralise the other. This would, however, tend to make the machine directionally unstable, as we shall see later.

Longitudinal Stability.

This deals with the tendency of the aircraft towards undesired "pitching" or the ability to remain on a straight path horizontally or inclined to the ground. This can be achieved by careful tail-plane design. The tail-plane sections and setting should be closer, so that if there is an undesired change in angle of attack there is a returning tendency to the original position: or, in other words, the tail-plane should be closer, and set so that if there is a decrease in angle of attack from the desired angle, the lift of the main-plane times its distance from the C.G. of the aircraft should be greater than the lift of the tail-unit times its distance from the C.G. The opposite, of course, is desired should there be an increase in angle of attack, the distance from the C.G. being in that case measured along the flight path of the aeroplane. Care should be taken when setting the tail-plane to allow for the down-wash of the air from the main-plane. This at the tail-plane is approximately $E^{\circ} = \frac{35\ C_L}{A}$ where E = down-wash in degrees and A = aspect ratio. From this we can see that the tail-plane is set at (the desired angle + down-wash angle) to the flight path.

Sweepback of the wings also increases longitudinal stability at coarse angles if combined with wash-out or decrease in incidence towards the wing-tip, since the inner part of the wings will stall before the tips, and there is a rearward movement of the centre of lift of the main-plane, so causing a diving moment which removes the stalling danger.

Directional Stability.

A machine is directionally stable if it tends to keep on a straight course when a disturbance is encountered. This can be achieved by having the centre of area of all side surfaces of the aircraft with the exception of the fin at or slightly behind the C.G. This, of course, gives a returning moment when the machine tends to "yaw," since when the side pressure on the fin is taken into account there is a large returning moment.

We have only dealt up to the present moment with "static" stability, which is referred to when a disturbing force produces a righting effect. However, if this righting effect causes the machine to swing in the opposite direction to a greater extent than the first deviation, it is said to be dynamically unstable. Fortunately, however, most orthodox aeroplanes are dynamically stable, at least when not in a stalled condition.

DANGER, DISRUPTORS! — By J. TOWNSEND

FLASH! Here, folks, we give you details of some experiments with one of the most startling discoveries of this decade, to wit the Mattioli-Randisi Disruptor.

The theory of this little anti-stalling device was fully dealt with in the February issue of THE AERO-MODELLER, and will not be repeated here. (Hands up those who said they couldn't understand it!)

This device consists of a piece of wire, reed cane, bamboo, or similar material, about $\frac{1}{16}$ in. in diameter, placed just in front of the leading edge of the wing, along the outer third of the span. This tends to keep the air flowing smoothly over the airfoil at large angles of incidence, thus delaying the stall, giving the stabilising forces more time to act.

The device was fitted on to a 9 oz. slab-sided Wakefield model, and the effect was immediately obvious. Some considerable trouble had been encountered in trimming this model, the glide invariably developing into a series of stalls; the disruptor cured this immediately. If the model was launched too fast, and upwards, the resulting stall was almost eliminated, the tail coming up with a jerk. The model could be trimmed to glide into perfect three-point landings without any suggestion of a stall. Some alterations were made to the model, and on retesting, it was found that after the propeller folded a perfect glide was obtained for a short time, but then a series of alarming stalls ensued. After sundry repairs had been carried out the disruptors were removed and the model retrimmed. A startling discovery was made. The wing position was *one inch* too far forward in relation to the C.G. The disruptors had obviously kept the machine from stalling until a vigorous disturbing force was encountered which had upset the longitudinal stability with a bump. The disruptors could then no longer prevent stalling, but reduced the degree considerably.

Another Wakefield model of the fully streamlined variety was equipped with disruptors, and deliberately induced stalls were turned into gentle zooms, the tail coming up beautifully every time.

There is one dangerous point about the disruptor, however, which may mislead some modellers. A model may be fitted with them from "birth," and during trimming, a slight stall, which would become dangerous should the disruptor be removed or detached in a crash, might be masked, convincing the modeller that his machine was properly trimmed. So always trim the model before fitting your disruptors.

"Aha!" says a voice, "why fit them at all?" Fit disruptors to a model to stabilise it in an emergency, many of which are encountered in our temperamental climate.

Cut a piece of wire, bamboo or reed cane about $\frac{1}{16}$ in. in diameter and sand to a round or slightly streamlined shape if wood is used. Push a pin through from the front near each end, and insert pins into the leading edge, holding the disruptor $\frac{3}{16}$ in. away from the L.E. on the outer third of a semi-span. Add spots of cement to strengthen. Make a similar disruptor for the other wing, and mount in the same way. One last word of warning. Be careful to have the rods exactly parallel to the leading edge or the effect will be spoilt.

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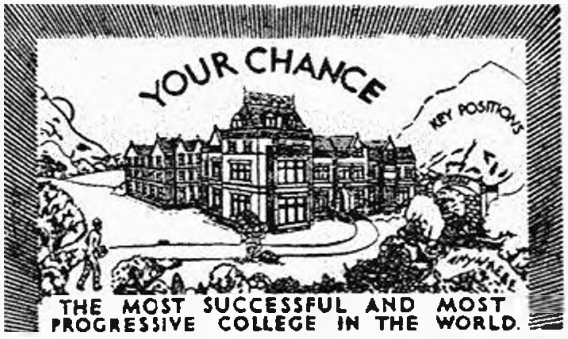

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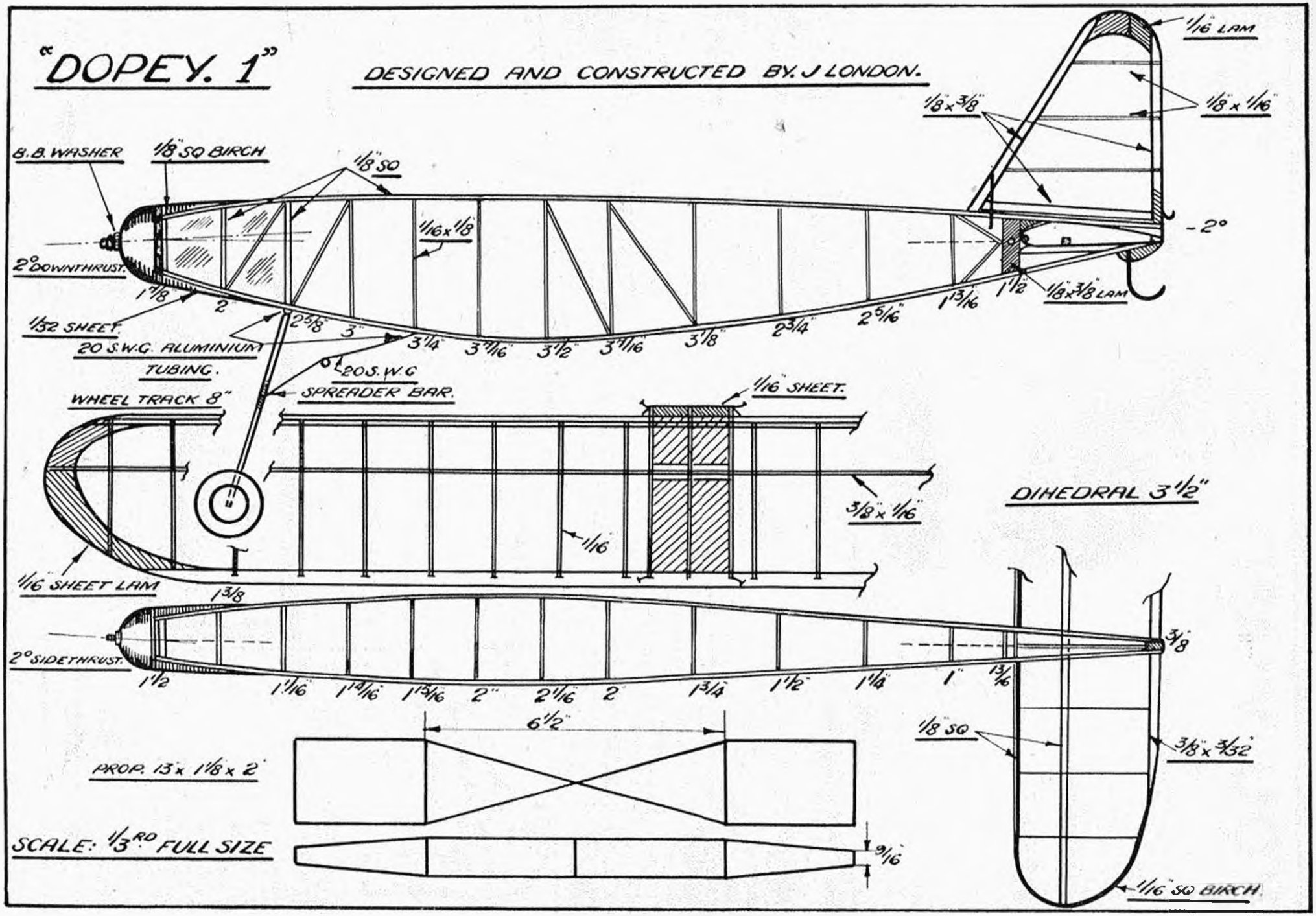
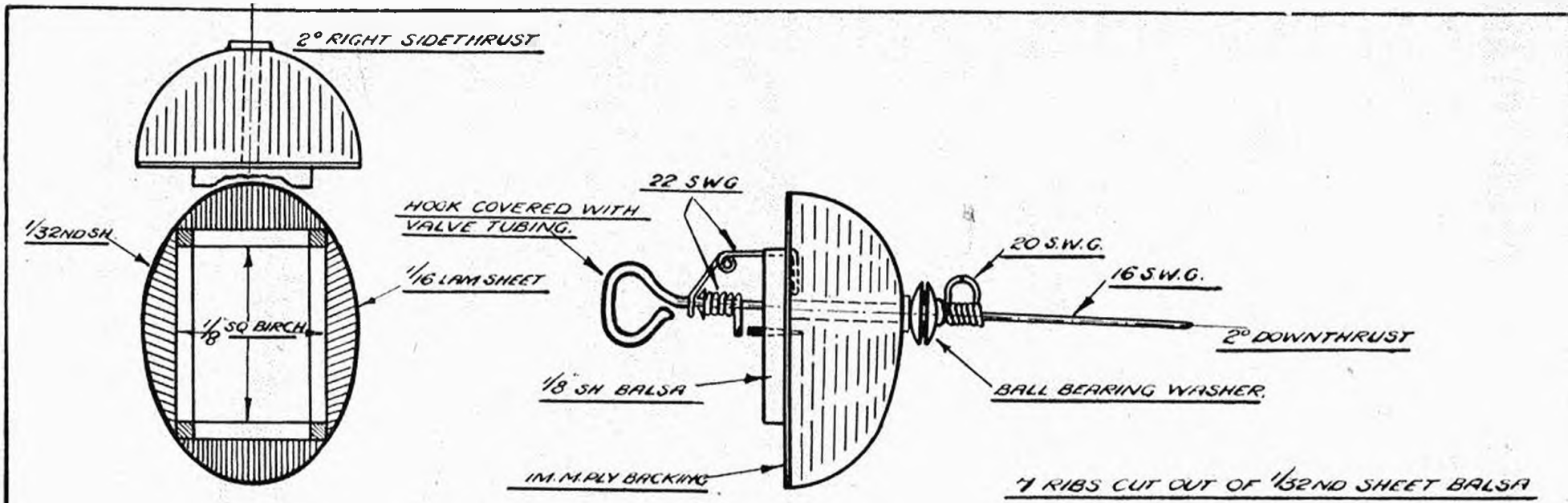
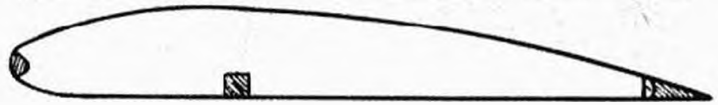

"DOPEY. 1"
DESIGNED AND CONSTRUCTED BY. J LONDON.
1/16" LAM
1/8" x 3/8"
1/8" x 1/16"
B.B. WASHER
1/8" SQ BIRCH
1/8" SQ
1/16 x 1/8
- 2°
2° DOWNTHRUST
1 1/8
2
1/32 SHEET
2 5/8
3"
3 1/4
3 11/16
3 1/2
3 11/16
3 1/8
2 3/4
2 5/16
1 13/16
1 1/2
1/8" x 3/8" LAM
20 S.W.G. ALUMINIUM TUBING.
20 S.W.G.
SPREADER BAR.
WHEEL TRACK 8"
1/16" SHEET.
3/8" x 1/16"
1/16
1/16" SHEET LAM
1 3/8
DIHEDRAL 3 1/2"
2° SIDETHRUST
1 1/2
1 1/16
1 4/16
1 5/16
2"
2 1/16
2
1 3/4
1 1/2
1 1/4
1"
13/16
3/8
6 1/2"
PROP. 13" x 1 1/8" x 2"
9/16
1/8" SQ
3/8" x 3/32"
1/16" SQ BIRCH
SCALE: 1/3RD FULL SIZE

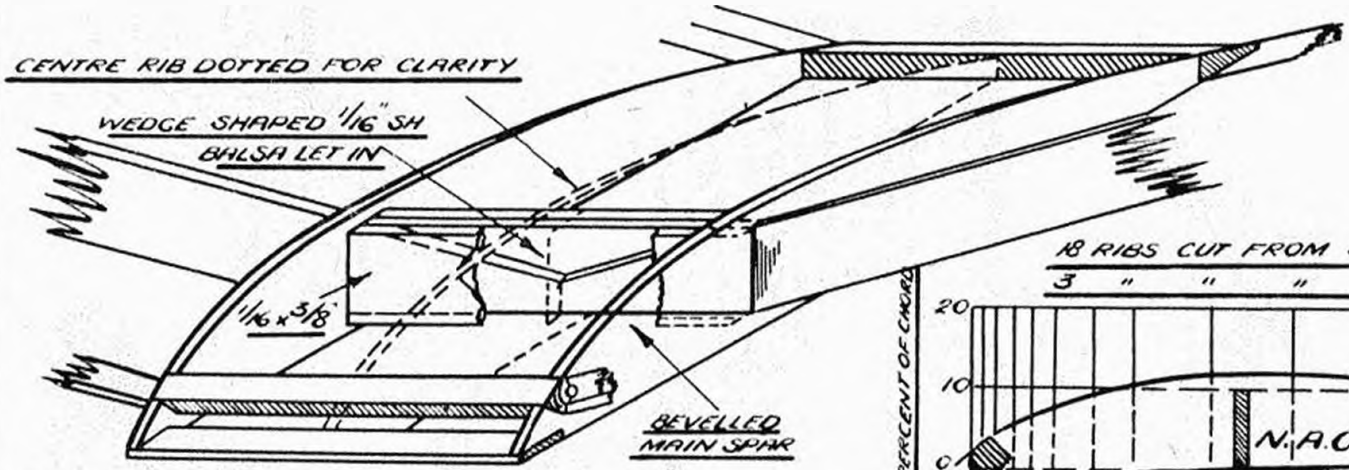


FULL SIZE - NOSE BLOCK.

7 RIBS CUT OUT OF 1/32ND SHEET BALSA



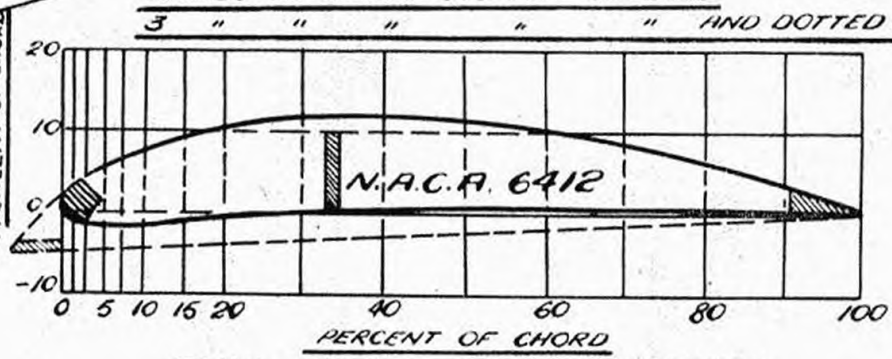
FULL SIZE TAIL SECTION.



CENTRE SECTION SHEETED OVER WITH 1/32ND SHEET BALSA

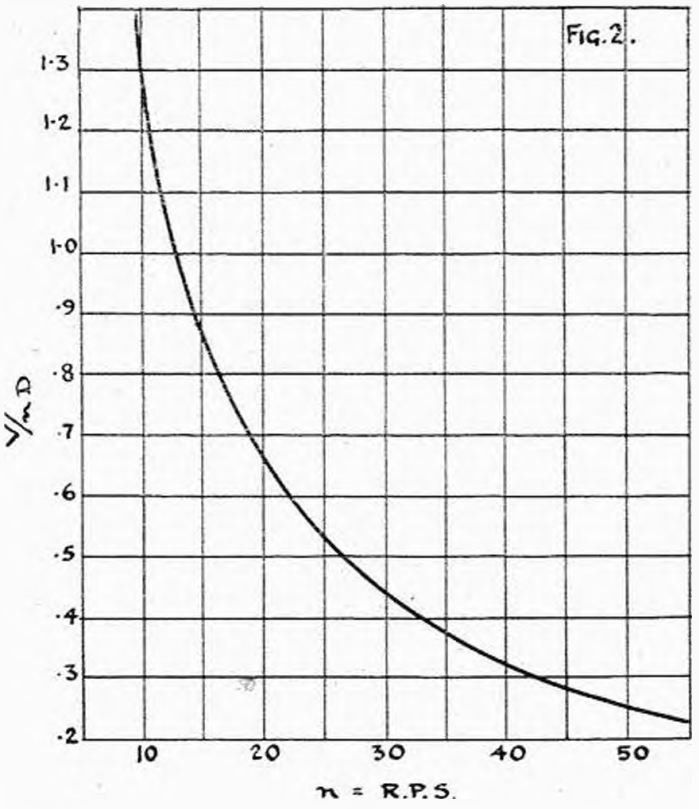
FULL SIZE ISOMETRIC VIEW OF CENTRE SECTION.

18 RIBS CUT FROM SECTION OUTLINE
3 " " " " " AND DOTTED SECTION



FULL SIZE. - WING SECTION.

DESIGNING YOUR 'PLANE



IN the September issue of THE AERO-MODELLER the excellent article on the behaviour of different brands of rubber contributed by Messrs. MacBean and Powdrill throws some interesting light on the difference which can exist between different commercial examples of this important aero-modelling commodity.

Those who have experimented with rubber will already be familiar with the characteristic shape of these torque-turn curves, but few appreciate the full significance of the form which they take.

In the first place, it is important to note the tremendous variation in the torque figures between maximum turns and zero turns, which confirms what we can easily gather from normal observations while model flying, namely, that we have considerably more power at our disposal at the beginning of a flight than is actually necessary for level flight, while towards the end of the flight our power falls to zero.

Now there are two essential elements to our model power plant: (1) the rubber motor, and (2) the propeller, and if these two elements are not designed in proper relation to each other we are not likely to attain maximum results. Let us, then, consider the problem with which we are faced.

Firstly, the curves illustrated in last month's AERO-MODELLER, while conveying an excellent idea of the variation existing between different makes of rubber, do not exactly represent the actual working results under flying conditions.

An attempt to produce curves which would give a very close approximation to working conditions was made by the members of the 1939 Wakefield Cup team on the way to America, in order to settle a small argument which arose over the respective merits of rubber obtained from different sources.

In spite of restrictions imposed on work of this nature from the fact of being aboard ship, some very useful results were obtained by reproducing the conditions which one finds in the average Wakefield model as closely as possible, using an actual Wakefield model propeller to absorb the power of the motor, and building up torque-duration curves from the results of the tests. These bear a strong family resemblance to the curves produced by Messrs. MacBean and Powdrill, and confirm the results they obtained, but they enable us to get a better picture of what is actually happening during the power run of a normal Wakefield model.

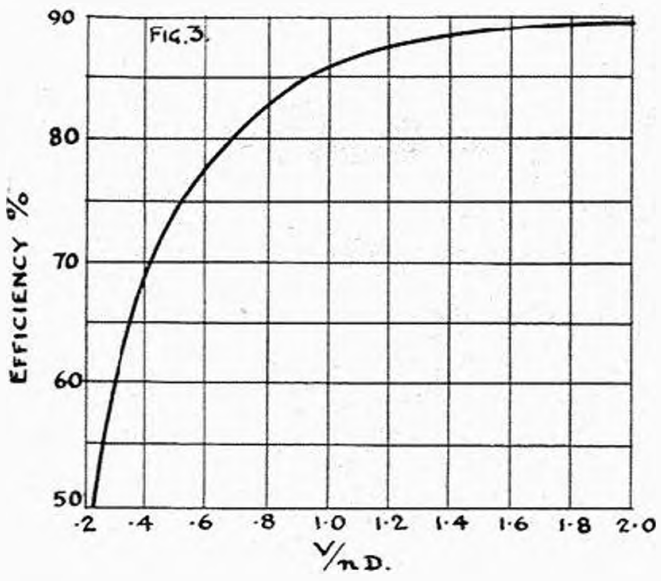
Reference to these curves shows clearly that there are two distinct types of rubber, one giving a high initial torque which falls off continuously and rapidly during the entire power run, and the other giving a lower initial torque which does not drop off nearly so rapidly, maintaining a fairly constant torque over a considerable portion of the motor run, although at a somewhat lower general level.

Using the well-known method of measuring the included area below the curves (described in the last issue) to obtain the total energy stored in the rubber, we find that we can store more power in the rubber which gives the high initial torque figures.

At first sight this would lead one to believe that this rubber would give better performances in a model than would be given by the rubber with the lower initial torque, but before we can definitely decide this it is necessary to study the fundamental requirements of the other half of our power plant—namely, the propeller.

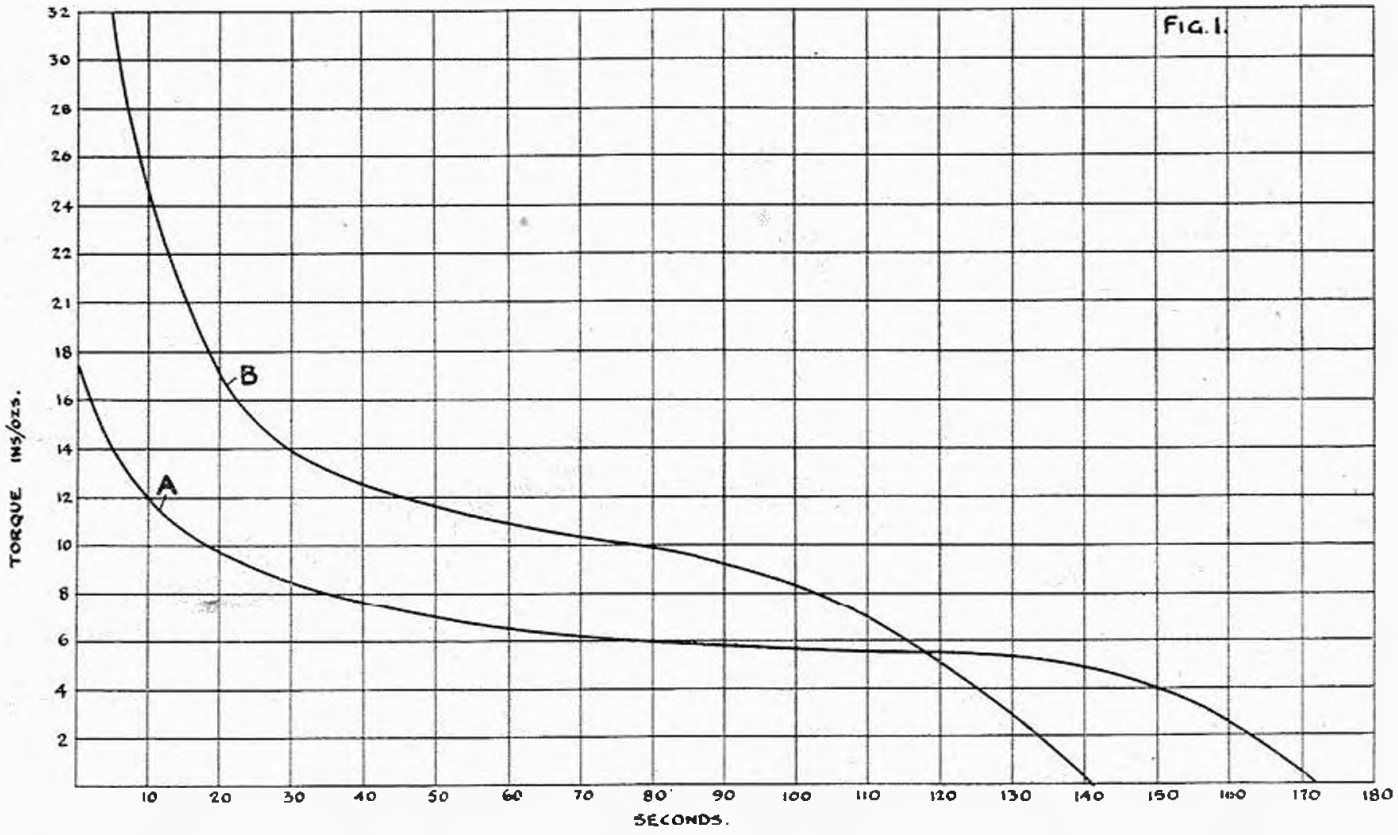
Just as the performance of a wing is dependent upon the angle of incidence, so the performance of the propeller is dependent upon the angle of attack of its blades. The path of the airscrew blades is, of course, the result of motion in two directions—a forward motion due to the speed of the machine and a rotational motion around the propeller axis. As a result, the performance of the propeller is dependent on the forward velocity V, the rotational speed N, and the effective diameter D, expressed as V/ND.

Now as we have no movable elevators on our models to alter their trim while in flight, they are to all intents and purposes *constant speed flying machines*, and the average Wakefield model can be taken to fly at a steady speed in the neighbourhood of 14 m.p.h.



TO SUIT THE POWER PLANT

By A. F. HOULBERG



Since we have not yet developed the use of variable diameter propellers, we are also operating with " D " at a constant figure. The rotational speed of the propeller " N " is, however, by no means fixed. As we have just seen, our rubber motor applies to this element of the power unit a torque of greatly varying intensity, resulting in wide variations of rotational speed " N."

The curve illustrated in Fig. 2 shows how the value of V/ND varies with changes of the rotational speed " N " over the range encountered under normal conditions with a Wakefield model having a propeller 18 in. diameter. From this it will clearly be seen that the value of V/ND falls rapidly with increases in the rotational speed " N."

In order to realise the effect which this change in value of V/ND has over the results obtained from the propeller we must refer to a curve of propeller efficiency plotted against values of V/ND. Such a curve is shown in Fig. 3.

From an examination of this it will at once be seen that the propeller efficiency falls rapidly with reductions in the value of V/ND, particularly when the value falls below ·6; in short, our propeller efficiency falls off very rapidly with increases in the rotational speed beyond that required for normal level flight.

To take an example: If our model requires a propeller speed of 10 r.p.s. per sec. to maintain level flight, we see from Fig. 2 that it will be working at a value of V/ND of 1·33, and on looking at Fig. 3 we see that its efficiency, if properly designed to work efficiently at this speed, will be in the neighbourhood of 88 per cent.

If the rotational speed is increased to 30 r.p.s., as it may well be with the first burst of power, we see from Fig. 2 that the value of V/ND falls to ·44, giving us, on reference to Fig. 3, a propeller efficiency of only 72 per cent—a drop of no less than 16 per cent.

There is no doubt from this that to obtain the maximum possible results from the energy stored in the rubber it is essential for it to be imparted to the propeller at a steady rate, and, furthermore, for the propeller to be designed to absorb this power output efficiently. Unfortunately, this ideal condition is not realised in practice, since all rubber motors give a wide torque variation as they unwind.

It will, however, be realised on reference to Curve " A " in Fig. 1 that the ideal condition can be closely approached over a period of approximately 100 sec. with this type of rubber, whereas a similar steadiness of output is only achieved for a period of 50 sec. in the case of the rubber represented by Curve " B."

This raises the important question as to whether it is advisable to use rubber " A " and design for long, steady climbs with our power unit working at maximum efficiency through the greater part of the flight, or to use rubber " B " and make as much use of the high initial torque available as we can with a view to attaining our initial height quickly at the sacrifice of a certain amount of overall efficiency.

The first is the typical English method used by the majority of British aero-modellists, who have achieved success in recent years; the second is the method which has found favour amongst American aero-modellists for some time.

The first method leads to consistently long flights (in the region of 3 min.) in all sorts of weather, whereas the second

(*Concluded at bottom of page* 388).

THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

Notes on a meeting of the Emergency Committee held at the Royal Aero Club, Piccadilly, W.1, on Sunday, September 1st, 1940.

There were present at the meeting Messrs. Houlberg, Cosh, York, Rushbrooke, Gutteridge and Bell.

This was by no means a full meeting, but those present decided to carry on the business of the Society.

The minutes of the previous Emergency Committee Meeting were read and confirmed.

The Committee then discussed the S.M.A.E. Fighter Fund. A sub-committee consisting of Mrs. McQueen, Messrs. Rippon, Rushbrooke, Smith and York was elected to deal with this matter. Mr. Rushbrooke was appointed Secretary of the Fund. The Committee have much pleasure in announcing that at this inaugural meeting donations totalling £50 were promised. The Fighter Fund Committee decided to circularise all clubs, both affiliated and unaffiliated, asking them not only to subscribe themselves, but to raise money locally. Donations may be sent to the honorary treasurer of the S.M.A.E., Mr. L. J. Hawkins, Dorchester Hotel, Torquay, Devon. Cheques and postal orders should be crossed "Fighter Fund."

Arising out of the recent ban on flying certain types of model aircraft, Mr. Houlberg showed the Emergency Committee printer's proofs of a card which will be issued to all model flyers. This card gives an extract from the order and also general advice to model flyers should they be requested to cease flying by the authorities.

The Emergency Committee then dealt with a recent complaint from the authorities regarding a model flying during an air raid. There were apparently four clubs concerned. Mr. Cosh had received statements on the matter from two of them. Mr. Cosh was requested to communicate with the other two clubs concerned in order that the Emergency Committee could deal with the matter. The Committee strongly desires that all persons interested in flying model aircraft should understand that where they are requested to cease flying, and fail to do so, or where the recent ban is infringed, the S.M.A.E. will not assist either individuals or clubs in any dealings with the authorities. Model flyers should therefore be fully conversant with the recent ban and also immediately cease flying should they be so requested.

A letter of appreciation had been received from the Northern Heights Club thanking the S.M.A.E., and Mr. Cosh in particular, for the action taken over the recent ban. This letter will be reproduced in the S.M.A.E. *Journal*.

A letter was read from Mr. Wade, of the High Wycombe Club, suggesting that the flying of small petrol models should be permitted, or, alternatively, all models should be banned. Mr. Cosh stated that he did not think this attitude was really the opinion of Mr. Wade. Mr. Cosh's reply was endorsed by the Committee.

A letter was read from Mr. F. J. Camm, in which he offered his services to the S.M.A.E. as timekeeper. Mr. Camm is one of the founder members of the S.M.A.E., and he had heard of the recent difficulties with timekeepers. The Committee pointed out that these difficulties were in connection with timekeeping at decentralised competitions. The Committee asked Mr. Cosh to write to Mr. Camm, informing him that the S.M.A.E. would be only too pleased to utilise his services, as they have done in the past, as soon as centralised competitions are held again.

Members of the Committee were then handed information relating to the storing of the S.M.A.E. cups. This was so that the cups might be retrieved with the minimum of delay at the cessation of hostilities. Mr. Houlberg recalled that after the last war it was well over nine months before all the cups could be collected, one having got so far afield as South Africa.

Mr. Cosh then announced that he would most probably be called during the next fortnight for service in the Air Force. He requested that somebody should be appointed to take over his duties. Both Mr. Bell and Mr. York expressed their willingness to do this, but neither considered that editing the *Journal*, selling timekeepers' arm-bands and transfers, etc., was the work of a secretary. Mr. York agreed that, if necessary, he would carry on the secretary's duties until the next delegate council meeting, which will be held on October 6th.

The Committee, in Mr. Rippon's absence, recommended that he should be appointed Editor of the *Journal*. To this recommendation Mr. Rippon has since agreed.

The meeting closed at 6.45 p.m. with a vote of thanks to Mr. Houlberg, who had occupied the chair.

H. York.
Hon. Press Secretary.

THE S.M.A.E. FIGHTER FUND

Contributions to this Fund may be sent to the Fund Treasurer, Mr. C. S. RUSHBROOKE, Editor, *The Aero Modeller*, Allen House, Newarke Street, Leicester, or to Mrs. MACQUEEN, care of Kanga Aero Models, 1 Colonnade Passage, Birmingham.

All contributions will be acknowledged in *The Aero Modeller*. The first list of contributions is published in the Club Report section of this issue.

Designing Your Flane.—*Continued from page* 587.

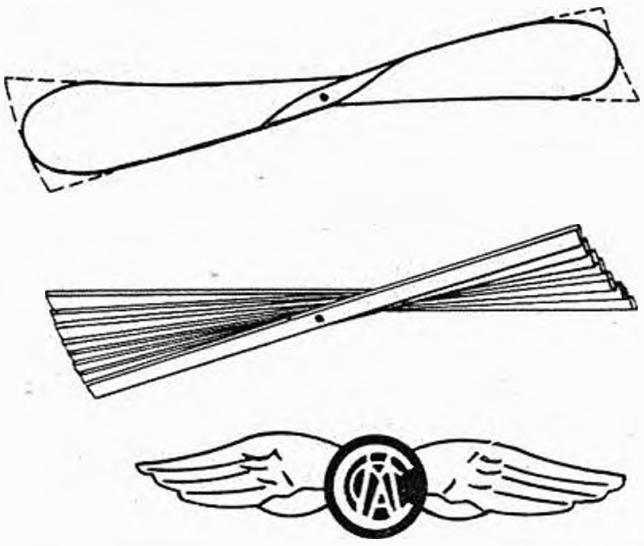
method, while admittedly producing an occasional brilliant flight, generally results in flights of lower average duration.

It must also be remembered that the heavy initial burst of power given by the rubber represented by Curve "B" produces a serious change in the trim of the machine, which must be counteracted by the judicious use of downthrust. Downthrust, however, causes a further reduction in the efficiency of our power unit, although not of a serious nature so long as it does not exceed 2°.

Obviously, we cannot disclose the origin of the two types of rubber motor which we have had under discussion in this article, but I do not think we shall be treading on any trade corns if we point out that torque curves of type "A" are, generally speaking, produced by rubbers of the "Brown" type, while curves of type "B" are generally characteristic of the "Black" varieties.

It is for your to choose which type of rubber you will employ, but, having chosen, test it carefully and make sure that you are using it to the best advantage. What is really wanted is a rubber having the power-storing ability of Rubber "B" with the steadiness of torque exhibited by Rubber "A."

While this is an ideal at the moment, we all hope that the time is not too far distant when such a rubber will be available.



GADGET REVIEW

With this review we revive Mr. Pollitt's popular feature on "Gadgets." All gadgets submitted which are published are paid for. Contributions should be addressed to Mr. C. A. H. Pollitt, care of THE AERO-MODELLER Offices. Another review will appear in our next issue.

Figs. 1 and 4.

I AM starting this new "Gadget Review" series with quite a varied and miscellaneous collection of ideas, some of them quite unique and interesting, as, for example, the idea shown in Fig. 1, which is a suggestion from Mr. G. Heath, of Meller, near Stockport.

This is quite a good idea for making a 6 in. diameter propeller from eight strips of $\frac{1}{8}$ in. × $\frac{1}{16}$ in. balsa. The strips are secured together one on top of another by means of a pin through their centres. They are then spread out fanwise, the "steps" sandpapered down and the edges rounded, and there's the propeller!

Eric Hayes, of Heckmondwike, Yorks., has sent me particulars of a gadget he has been using on one of his Wakefield models. This idea concerns cantilever tail-units and is an arrangement whereby the fins can be folded flat to facilitate packing. When the model is being flown the fin are kept in the vertical plane by means of bracing thread or rubber bands attached to the elevator as shown in Fig. 2.

Mr. E. Richards, of Tipton, South Staffs, has evolved a rather neat arrangement for a sliding cockpit roof, suitable for either solid or scale flying models. From his sketch, which I reproduce herewith (Fig. 3) he appears to have fitted the idea to a model "Hurricane." The hood itself

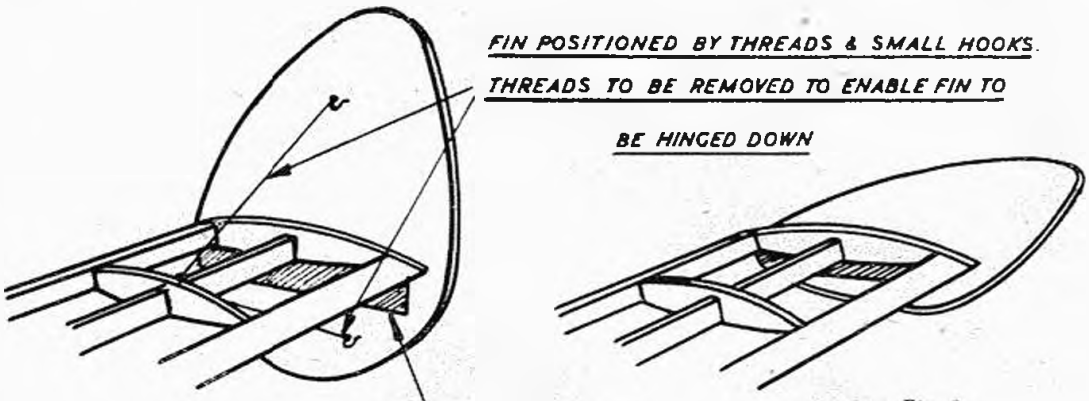


Fig. 3.

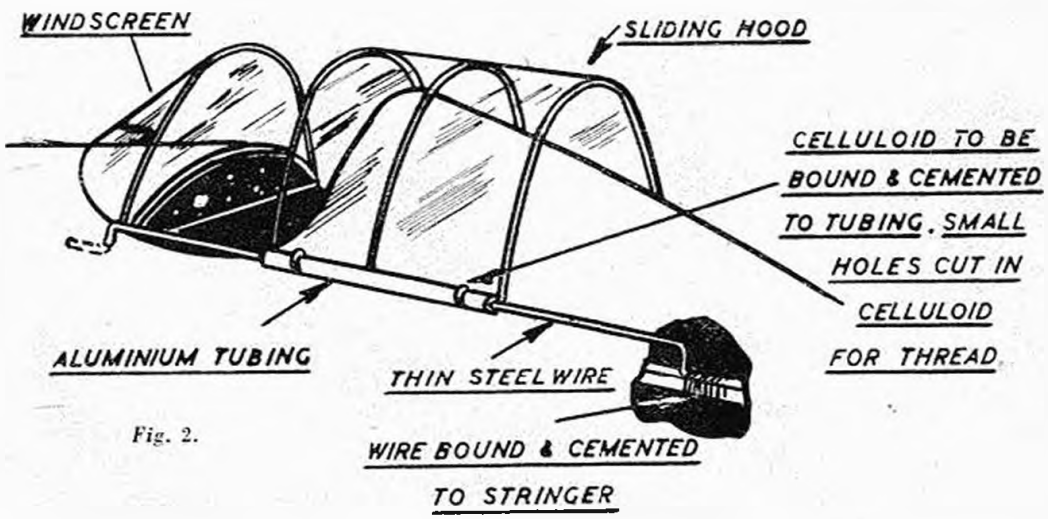


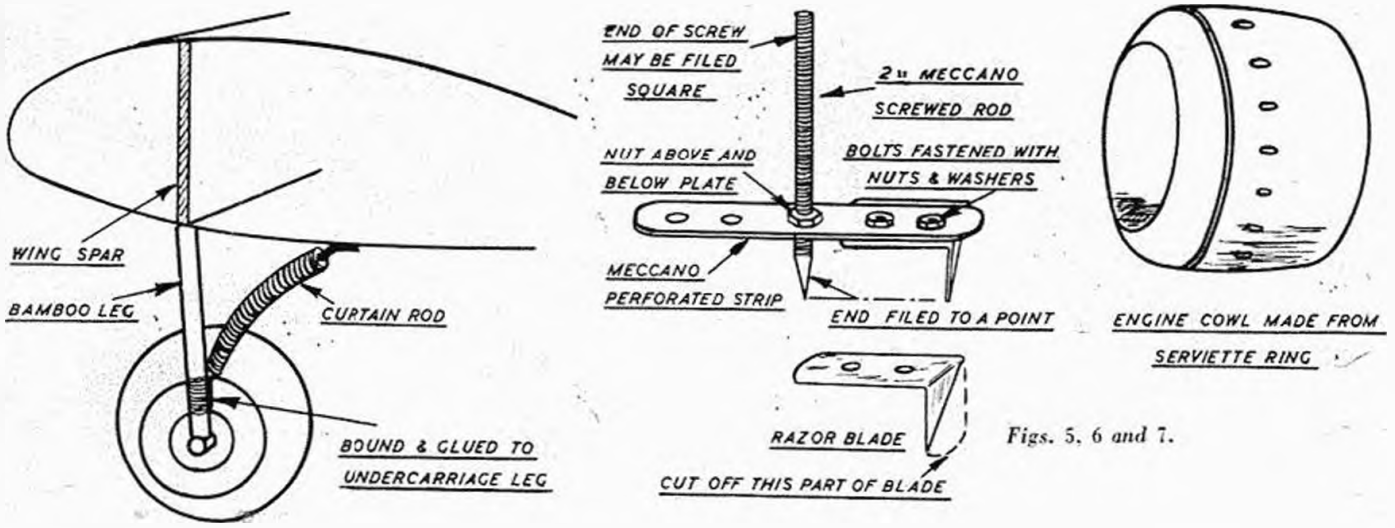
Fig. 2.

is, of course, made of celluloid, and may be fitted with wire formers to preserve the correct shape. If it is made of a rather thick celluloid however, the hood will have a tendency to spring outwards at its lower edges which will prevent it moving while the model is in flight.

Fig. 4 is an approximate reproduction of the badge of the Clacton Model Aero Club, and is the subject of a letter I have had from Mr D. Hobbs, who is a member of the club.

As is pointed out, an insignia is something that most

Conducted and Illustrated by **C. A. H. POLLITT**



Figs. 5, 6 and 7.

clubs possess, though the costly expense of transfers rather restricts their more widespread use. To overcome this difficulty it is possible to produce home-made stamps of any desired pattern by the simple expedient of drawing the required design on a piece of cork lino and cutting away the lino between the design by use of the Studiette balsa tool, or even proper lino cutting tools. If the finished stamp is glued to a piece of ½ in. deal it may be used in just the same manner as the ordinary commercial pattern stamp. An inked pad is, of course, required.

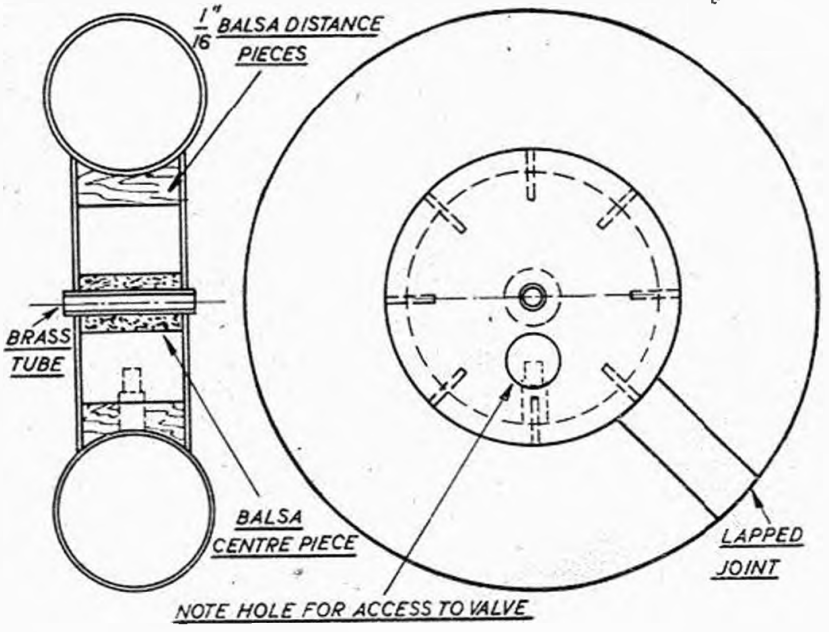
By far the greater number of gadgets I receive are for undercarriages, and it is frankly surprising to know of the many different ways whereby an undercarriage may be retracted! Shock arbsorber undercarriages are equally numerous, and Fig. 5 shows one of the most recent ideas. A Bexley Heath reader, Mr. C. W. Ames, is responsible for the idea, which incorporates a hinged bamboo undercarriage leg, sprung by means of a short length of expanding curtain rod. Although no side bracing members or wires are shown, I rather think they would be necessary.

Balsa cutting tools are also in the ascendancy, though the one sent in by Mr. M. L. Benson, of Liverpool, is unusual in that it is particularly suited to cutting wheels or other circular shapes. With the exception of the razor blade, all the items used are Meccano parts. Fig. 6 illustrates the idea, and also shows how, after tempering, the razor blade is bent to the required shape.

Fig. 7 is perhaps the most simple and straightforward idea imaginable for making engine cowls or Townend rings for solid models of such machines as the Gloster "Gauntlet" or the Fairy "Swordfish." A cheap pattern serviette ring, such as may be had anywhere for a few coppers, is all that is required, and according to Mr. J. T. Clarke, of Ruislip, very effective results can be obtained. The blisters may be added finally.

A method of making pneumatic-tyred wheels is shown in Fig. 8, sent in by Mr. E. Mackay, of Orpington, Kent. I think the construction of the hub of the wheel is fairly clear from the drawing. The tyre is made from an old cycle inner tube, and a length should be cut ½ in. longer than the circumference of the hub of the wheel, to allow of the ends being lapped one over the other. If too heavy, the cycle valve may be removed and replaced by a piece of rubber tube cemented in its place: the tyre can then be inflated by a football pump adapter on the cycle pump.

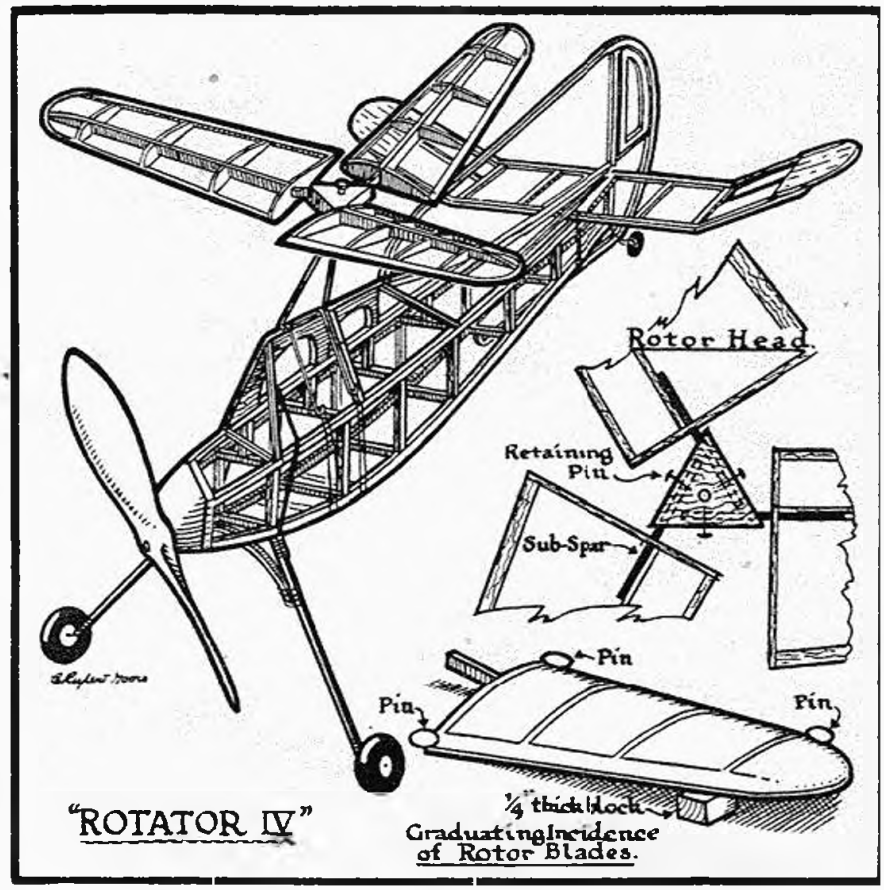
Fig. 8.



ROTATOR IV

By L. B. MAWBY

Full-size scale plans of this model are printed in the centre pages of this issue. 10s. 6d. will be paid for the photo of the best looking 'plane built to these plans which is received at our Leicester offices not later than October 31st.



The Rotor.

THIS is, of course, the most important part of the whole machine. Before starting the construction it should be noted that the drawing shows the view from beneath in plan view and from root end in end view. The rotor rotates clockwise when viewed from above (the construction is clearly shown in the drawing). The sub-spars, which are glued to spars of blade, are inserted in the slots in rotor head, and small pins retain blades, preventing them from flying out when rotating.

The easiest method of putting wash-out into blades is to build flat, cover with tissue, dope underside, pin down with drawing pins at corners A, B, and C before dope has tightened, push a piece of balsa $\frac{1}{16}$ in. thick under corner D, then dope top and leave to thoroughly tighten. When dry it will be found that wash-out is right.

Fuselage.

This is built in the usual manner. First make two flat sides. Build up by glueing in nose former and sternpost first, then the longest top and bottom struts; all the other struts can then be glued in. Top stringer is next. On to this is glued the $\frac{1}{8}$ in. decking piece and the slanting decking struts.

Fin.

Steam to shape $\frac{1}{16}$ in. square birch. Push front top end into decking piece and glue. Glue to sternpost and appropriate bottom strut. The $\frac{1}{32}$ in. sheet rudder is then fixed with passe-partout binding to sternpost.

Cover fuselage and fin with tissue. Fin is covered on one side only and *not doped*. Dope fuselage and cover cabin with cellophane.

Tail-plane.

This drawing is self-explanatory. Trimming tabs of $\frac{1}{32}$ in sheet are hinged the same way as rudder. Cover one sid only. Do not dope.

Assembling and Testing.

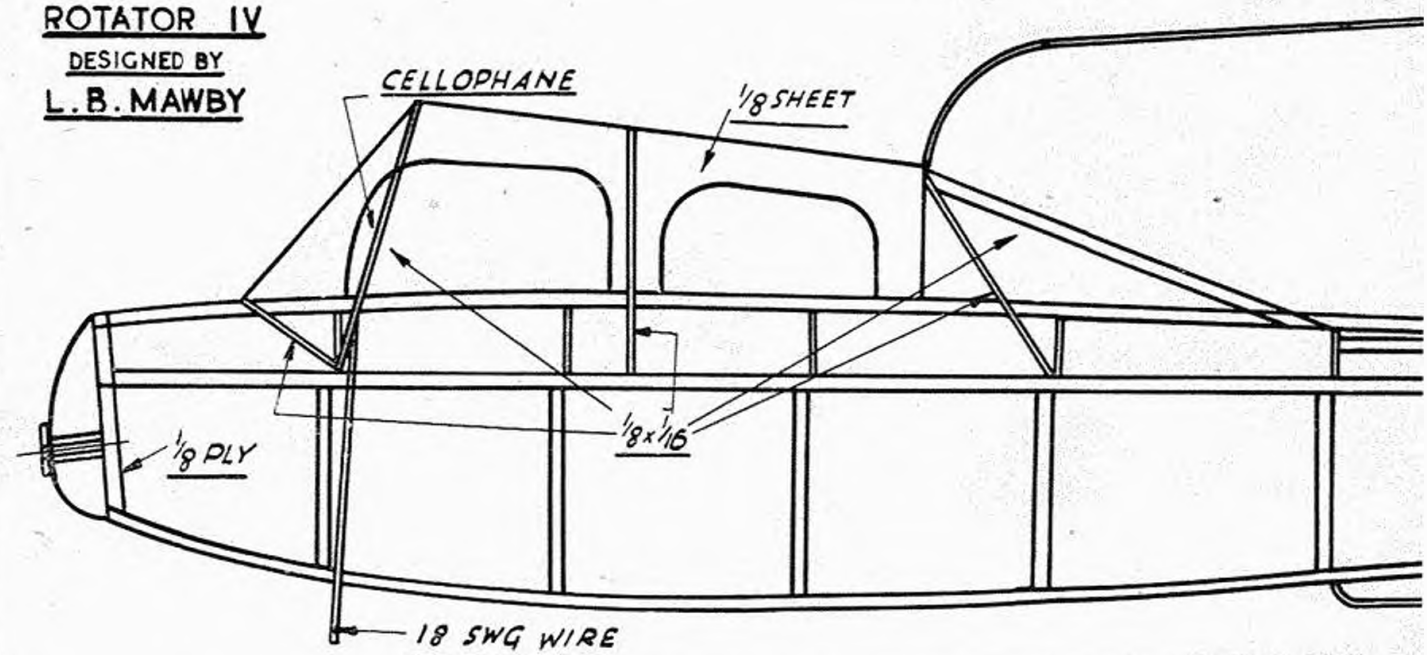
Slip rotor head on to pylon, solder on cup washer to kee on. Insert sub-spars in rotor head and fix in pins. Plac pylon over fuselage; put rubber bands over hooks on on side; draw under fuselage and loop over hooks on opposit side. Slip tail-plane through the opening on fuselage an fix with rubber bands. Push tubes on top of chassis on t protruding ends of wire chassis saddle at bottom of fuselage Insert motor and fix nose-piece and propeller. Wind u motor about 200 turns. Stick a large pin in nose-block t prevent propeller turning. Tie a piece of thread to top o pylon and support machine by thread. Supported like this it should hang nose down to the same amount as there is bac tilt to rotor. That is, the rotor (not the machine) shoul balance even. When it does so, remove pin from nose-piec and, holding propeller with one hand, hold up machine int wind until rotor is revolving, then release propeller an launch (gently or sharply according to strength of wind Machine should fly forward and downward on even kee If it does so, gradually increase turns to maximum.

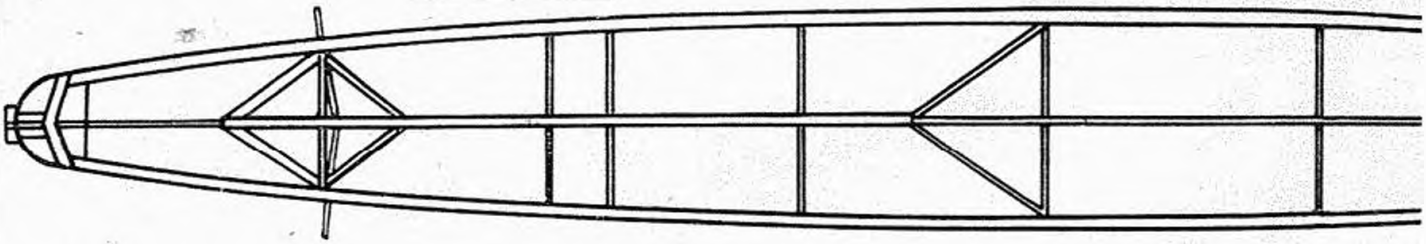
NOTE.—This machine *does not* twirl around at the en of flight.

ROTATOR IV

DESIGNED BY

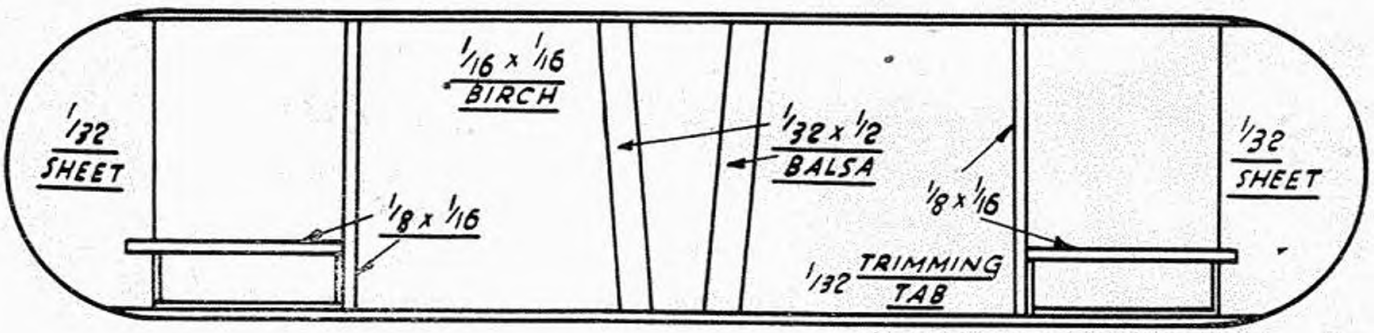
L. B. MAWBY





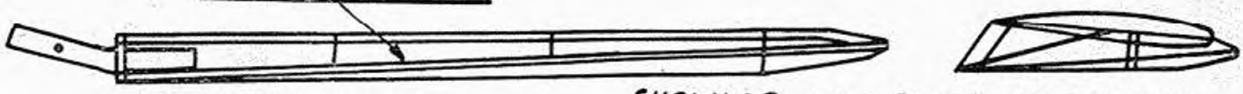
FUSELAGE

TAILPLANE



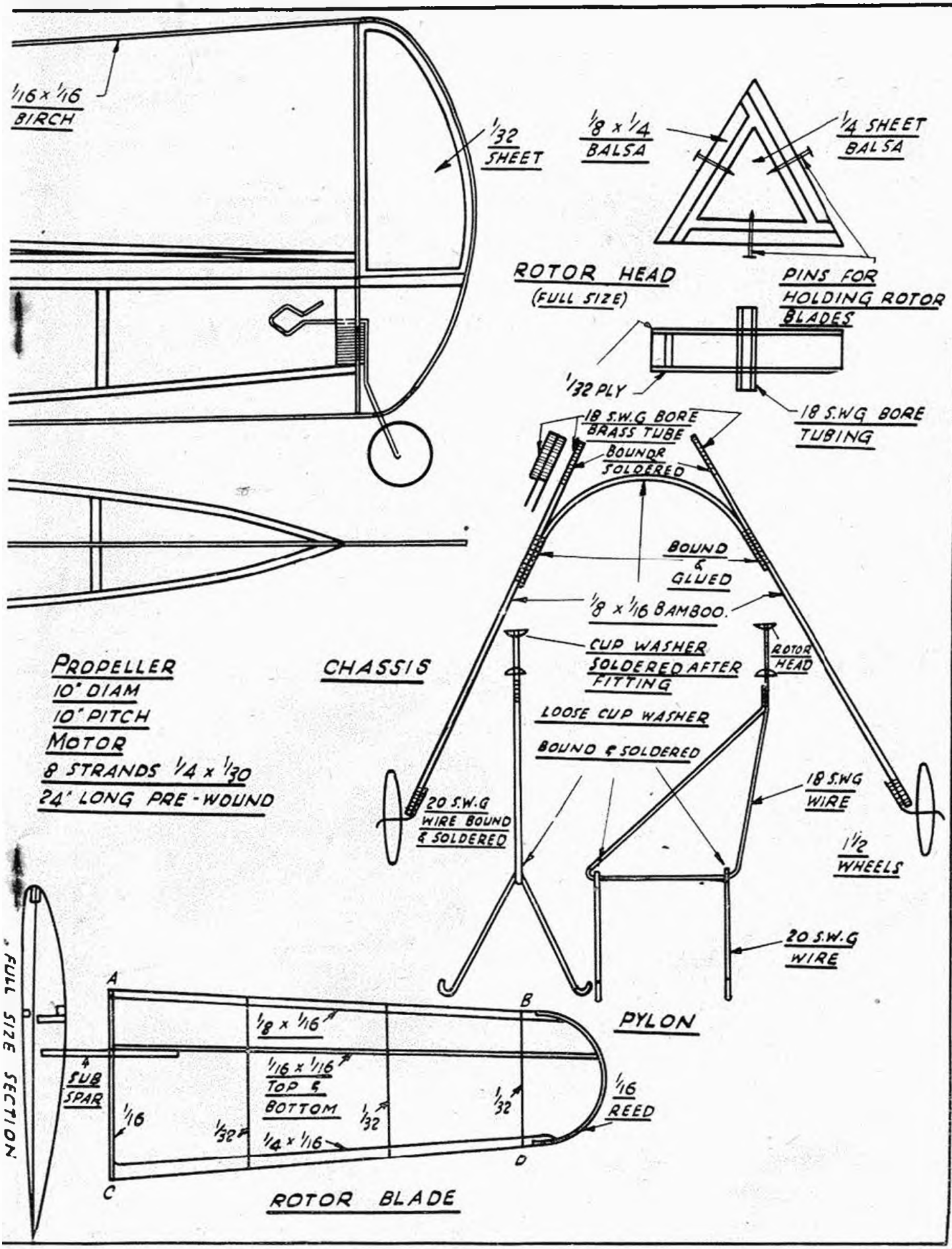
1/16 PLY SUB SPAR
MAKE 3 FULL SIZE

THIS SPACE FILLED IN WITH 1/16 SHEET



SUB SPAR GLUED TO BACK

SHOWING HOW BLADE IS TWISTED FROM 2° + AT ROOT TO 2° − AT TIP


1/16 x 1/16 BIRCH
1/32 SHEET
1/8 x 1/4 BALSA
1/4 SHEET BALSA
ROTOR HEAD (FULL SIZE)
PINS FOR HOLDING ROTOR BLADES
1/32 PLY
18 S.W.G BORE BRASS TUBE
18 S.W.G BORE TUBING
BOUND & SOLDERED
BOUND & GLUED
1/8 x 1/16 BAMBOO.
CUP WASHER SOLDERED AFTER FITTING
ROTOR HEAD
LOOSE CUP WASHER
BOUND & SOLDERED
20 S.W.G WIRE BOUND & SOLDERED
18 S.W.G WIRE
1 1/2 WHEELS
20 S.W.G WIRE
PROPELLER
10" DIAM
10" PITCH
MOTOR
8 STRANDS 1/4 x 1/30
24" LONG PRE-WOUND
CHASSIS
PYLON
FULL SIZE SECTION
A
B
C
D
1/8 x 1/16
1/16 x 1/16 TOP & BOTTOM
4 SUB SPAR
1/16
1/32
1/4 x 1/16
1/32
1/32
1/16 REED
ROTOR BLADE

DESIGNS FOR THE SCALE MODEL BUILDER—IX

By **PETER GARROD CHINN**

QUITE a bit of history has been made since I wrote the last article in this series. Italy is in the war and France is out. Interest in the *Armee de l'Air* has dwindled, and people are wondering—or, rather, have been wondering—what sort of a show the *Regia Aeronautica* can put up. I say " have been " because I think that it is now clear to most of us that the Italians, after having decided that the war was safe enough to enter, are discovering that their somewhat feeble air actions so far have not claimed much attention.

The Italian Air Force is inferior to the R.A.F. both in numerical strength and in the quality of its equipment. The Italian fighters are comparatively slow, and are inadequately armed, although they are fairly manœuvrable and have good climbing powers. Bombers have reasonably good speeds and ranges, but again are poorly armed for defence.

The fastest single-seater fighter in the *Regia Aeronautica* is the Macchi C.200. Its armament consists of two Breda-SAFAT 12·7 mm. machine-guns synchronised to fire through the propeller. It is smaller than our own fighters, spanning 34 ft. 8 in., with a wing-area of 180 sq. ft. and a gross weight of 4,840 lb., giving a wing-loading of approximately 27 lb. per sq. ft. Its rate of climb is very good, much better than British fighters, in fact, since it is said to be capable of reaching 20,000 feet in less than seven minutes. Its maximum speed, however, is only 313 m.p.h.

The Fiat G.50 is another Italian monoplane fighter. It is slower than the C.200, having a top speed of 298 m.p.h., but it is in service in larger numbers. The Fiat C.R.42 biplane is also a standard fighter, and is a development of the C.R.32 as used in Spain. A Fiat A 74 RC 38, fourteen cylinder radial is used in place of the liquid-cooled motor used on the C.R.32, and gives the machine a top speed of 272 m.p.h. This Fiat motor, by the way, is also used on the Macchi C.200 and Fiat G.50.

The small Breda 88 twin-engined bomber is the fastest machine in the Italian Air Force. It may also be employed for ground attack duties and as an escort-fighter, and has a top speed of 321 m.p.h. This performance is accounted for by the use of a very high power-loading.

Italy's standard big bombers are the Savoia-Marchetti S.M.79 and S.M.81 and the Fiat B.R.20. The S.M.79 and 81 are three-motored bombers capable of 270 m.p.h. and 210 m.p.h. respectively. The B.R.20 is a twin-engined bomber with a maximum speed of 268 m.p.h.

The Italian Naval Air Service uses the Cant Z.506B twin-float seaplane as a standard type, which, like many other large Italian aircraft, is a three-engined machine. It has a top speed of 242 m.p.h.

Other aircraft in service include the Breda 65, a single-motor fighter-attack-bomber with a speed of 265 m.p.h., the Caproni C.A.135 big twin-engined bomber (273 m.p.h.), the Piaggio P.32 twin-motor bomber (264 m.p.h.), and Caproni (Bergamaschi) C.A.310 twin-engined light-reconnaissance machine (218 m.p.h.). There are also several other types in service in limited numbers and a variety of obsolescent machines.

Thus the machines in service, or likely to be in service within the next few months, with the *Regio Aeronautica* do not compare well with current British or American, or even German, types. Italian development during the past four or five years does not seem to have progressed at the same rate as the other big powers. However, quite a number of the single-engined machines should make suitable model designs. Unfortunately, detailed drawings of *most* of these are not available, although three-view drawings of the Fiat G.50 have been published, and models of this machine have already been turned out. I am therefore including a description of the full-size machine.

The Fiat G.50 (the G stands for Gabrielli, its designer) is a cantilever low-wing fighter. Unlike many Italian designs, which are of composite wood and metal construction, the G.50 is constructed of metal frames, and, apart from the tail-unit and control surfaces (which have a fabric covering) is entirely covered with a metal stressed-skin. Ailerons and flaps, incidentally, have the unusual feature of being inter-connected, so that the aileron surface may be used to supplement flap area.

The undercarriage is retractable, hydraulically operated, and closes inwards into the centre-section. The A 74 RC 38 motor develops 840 h.p. and drives a Fiat (American Hamilton built by Fiat under licence) three-bladed constant-speed metal airscrew. From behind the motor cowling the fuselage is " humped " upwards to the cockpit, so that the pilot is seated fairly high in the machine and has fairly good visibility all round.

Two Breda-SAFAT 12·7 mm. machine-guns are mounted in the fuselage, just behind the engine, and fire through troughs in the top of the cowling. Provision is made for two additional guns of 7·7 mm. calibre to be mounted in the wings, firing outside the propeller arc.

The G.50 has a wing-span of 35 ft. 2 in., a length of 25 ft. 6 in., and weighs 5,135 lb. loaded. Wing-area is 197 sq. ft., which gives a loading of approximately 26 lb. per sq. ft. As already stated, maximum speed is 298 m.p.h.

With the capitulation of France, all her orders for American warplanes were automatically transferred to Great Britain, so that with the orders already placed by this country we should be seeing plenty of U.S. aircraft over here soon. It is rather interesting to note, incidentally, that before France's surrender the German propagandists were continually making derisive remarks about Allied purchases of American aircraft. " Germany would not buy foreign aircraft even if she needed them, because," they told us, " foreign aircraft are not good enough for the *Luftwaffe*." Yet within a few days of the French demobilisation the Germans had grabbed American Vought-Sikorsky V-156 dive-bombers of the French Naval Air Service and were sending them out to raid our convoys! They grabbed other French warplanes too, and, apparently anxious to have fighters that would put up a better show than their Messerschmitts and Heinkels, the Nazis also quickly put captured American Curtiss Hawk 75A's into service with the *Luftwaffe!*

The Vought-Sikorsky V-156 is more or less in the same class as our Blackburn " Skua " and the German Junkers Ju.87, although it is slightly smaller and has a better performance than either of these types. Fitted with a Pratt & Whitney " Twin-Wasp Junior " 750 h.p. motor driving a two-bladed Hamilton constant-speed airscrew, it has a maximum speed of 257 m.p.h., a cruising speed of 227 m.p.h. and a climbing speed of 1,545 f.p.m.

Unfortunately for the Germans, the Voughts will not remain in service for long. Only forty of these machines were ordered for the French Naval Air Service. Just how many were turned over to the *Luftwaffe* is not clear, but several have been lost since, and, of course, no replacements or servicing equipment are available for machines damaged. The same is true of the Curtiss, Martin, and in fact most of the French 'planes captured. However, it is quite possible that German pilots flying Curtiss Hawk 75As will meet Hawk 75As flown by R.A.F. pilots, in which case a good opportunity should be afforded to prove, once and for all, the superiority of our pilots.

The R.A.F. Curtiss Hawks are probably being built with Wright " Cyclone " G-200 motors, which are about 200 h.p. more powerful than the 900 h.p. P. & W. " Twin-Wasps " fitted to the French Hawks, and which should increase performance considerably.

The improved version of the Brewster fleet-fighter (also for the R.A.F.) is also fitted with the G-200 " Cyclone," which should give a substantial improvement in performance over the earlier 800 h.p. " Cyclone " powered model.

Among other fighter aircraft announced to be on order for the R.A.F. are the Grumman G.36, an efficient fleet-fighter somewhat similar in appearance to the Brewster, the fast ten-gun Vultee " Vanguard," the Curtiss P.40D and the 400 plus m.p.h. Bell " Airacobra."

Boeing " Flying Fortress " four-engined bombers are also reported to be on order, the latest version of which is believed to be capable of close on 330 m.p.h.; and, of course, the French order for 110 Consolidated Model 32 (U.S. Army designation B.24) four-engined bombers, said to be faster than the Boeing, has been transferred to Britain.

However, it is rumoured that practically every current type of military aircraft built in the United States is on order for this country, and that the U.S. Air Forces will not take delivery of types needed by Britain. It is quite possible, of course, that some of the airframes of certain types—perhaps the Curtiss P.40D and Bell " Airacobra " —will be delivered, and British Rolls-Royce " Merlin " motors installed over here, since production of the Allison V-12 in-line liquid-cooled motor used in the Bell " Airacobra," Bell " Airacuda," Curtis P.40 and Lockheed P.38 is not yet fast enough to cope with the requirements of the manufacturers of these four machines. The " Merlin " should be easily adaptable to these American fighters, since, although slightly less powerful, it is more compact than the standard 1,000 h.p. Allison. The production rate of high-powered radials in the United States is, of course, very high with the Pratt & Whitney and Wright concerns, so no hold-up for engines for other types is likely to be experienced.

A new liquid-cooled engine has recently been brought out by the Lycoming Division of the Aviation Manufacturing Corporation. This is a horizontally-opposed engine of twelve cylinders and was specially developed for wing installation. It is a very efficient motor, for, although only of 20·6 litres capacity (the Merlin is 27 litres, Allison 28 litres, and Daimler-Benz 34 litres) it has an output of 1,200 h.p. It is claimed that an increase of 10 per cent to the maximum speed will be gained by the installation of the new Lycoming in place of an equal powered radial, due to the reduction in drag.

The " Merlin " is also to be built in America by the Packard Motor Car Company, pioneer manufacturers of some of the world's finest cars. The Packard Co., however, is not exactly new to the high-powered motor field. They have built aero-engines before, are the manufacturers of high-powered marine engines for American motor torpedo boats, and were responsible for the engines used in Commodore Gar Wood's " Miss America," which held the water speed record for some years. The Merlins turned out by this company, therefore, may be expected to be of the highest quality.

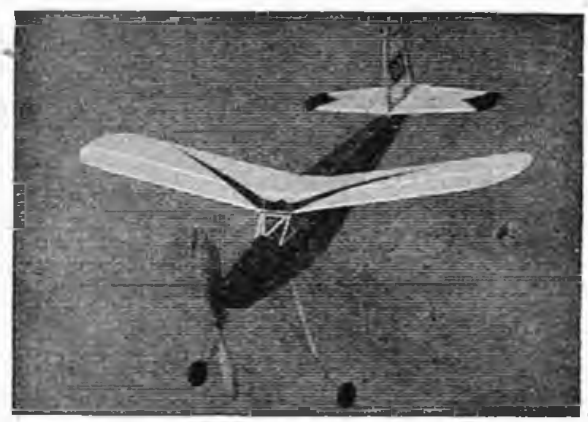
The Blackburn " Skua " fleet-fighter-dive-bomber has been selected as this month's model drawing. The full-size machine was described in our July article, and its design is well suited to model work.

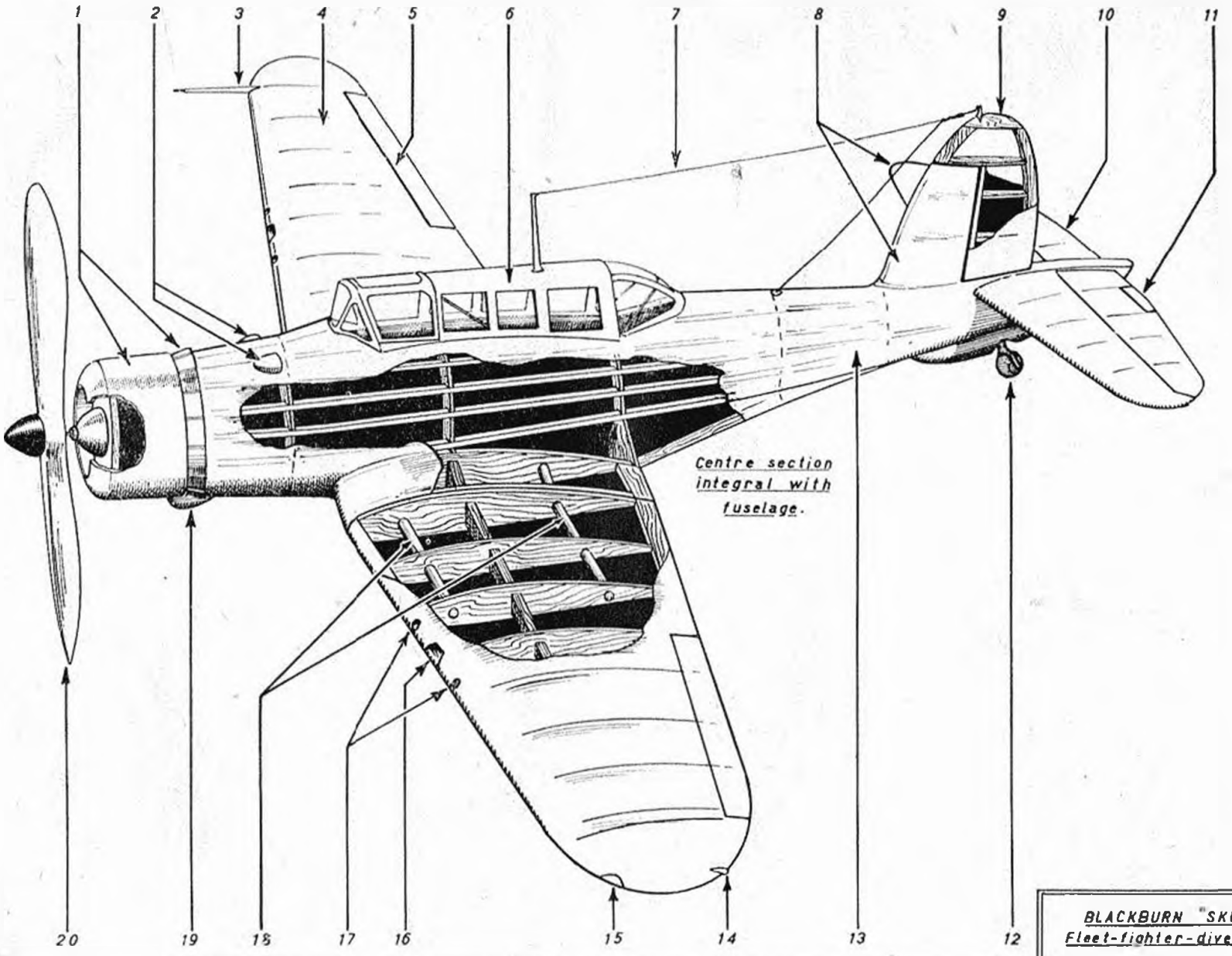
The model suggested in the sketch is to a scale of $\frac{1}{2}$ in. to 1 ft., giving a span of 23 in. and a wing area of 78 sq. in. The tail-plane has been slightly enlarged to give better longitudinal stability. The fin and rudder areas are also increased, in this case to offset the extra area of the large flying type propeller and preserve directional stability.

The centre-section is built into the fuselage and carries the landing gear. The wings may be made detachable from the centre-section with plugs and sockets. To decrease weight, ribs may be perforated and the centre-spar built up from $\frac{1}{32}$ in. sheet. A dummy Bristol Perseus motor may be fitted in the cowling to give an extra touch of realism. The cooling-gills should be of thin sheet balsa or card.

Movable rudder, flaps, ailerons, elevators and trim-tabs, sliding cockpit hood, landing and navigation lights, and such-like fittings could all be incorporated in a model of this size, although not without loss of performance, of course. The weight of the model should not exceed $1\frac{1}{2}$ oz. to 2 oz. if a reasonably good performance (of which a well-built " Skua " model is capable) is desired.

Details as to the various colour schemes, markings, etc., of prototype and production " Skuas " are given in " Scale Plans of Military Aircraft," the publishers of which have kindly allowed the two appropriate pages to be reprinted in this issue of THE AERO-MODELLER on pages 610/611.





1. Radial cowling and cooling-gills.
2. Dummy air-outlets (from oil-cooler).
3. Dummy pitot-tube.
4. Wing panel, detachable.*
5. Movable aileron.*
6. Cockpit canopy.
7. Aerial.
8. Enlarged tail-surfaces.
9. Movable rudder.*
10. Movable elevator.*
11. Movable trim-tab.*
12. Tail-wheel.
13. Fuselage structure: formers, stringers, and tissue covering.
14. Dummy formation light.*
15. Dummy navigation light.*
16. Dummy landing light.*
17. Dummy wing gun ports.
18. Wing attachment spars.
19. Dummy carburetter air intake.
20. Flying type airscrew.

* Denotes optional.

AT BUTTERCUP UPTON

IT was the day of our Centralised Model Aeroplane Rally. Models and model men from every town and hamlet were expected to appear on that stretch of moors where the dying heather makes comfortable cradles for nose-diving models.

Of course, Job Wood, my friend and our club's own humorist, intended to be there. One could hardly term the affair a rally if he hadn't. Job had gone down to Buttercup Upton, the village that lies at the edge of the moors, the day before the event. He had slept the night in a tent, or at least that had been his ambition about a week previously.

I had not seen him since, but here I was on the great day, within a mile of the village. It was hot. I had cycled twenty miles over the dusty roads. I dismounted in order to walk with enjoyment down the sweet-scented lane that leads to the Hare and Hounds. I had visions of a drink between those ancient stone cold walls. Here it was that I expected to meet Job.

As I rounded the corner at the bottom of the lane I could see the old Hare and Hounds sleeping peacefully in the sun. Bright Michaelmas daisies and asters, enmeshed in September gossamer, glistened with all the colours of the rainbow. Not a soul was to be seen. I halted, and drew in a breath of ecstasy at the sight of the peaceful scene.

Then, as I leaned on my cycle, I became aware of a music that was akin to the bees that sang under the drowsy sun. It got steadily louder. Then at last it appeared: a petrol model, flying along the lane towards me and about twenty feet above the ground. Suddenly, the engine cut out. It came down.

At the same moment a portly gentleman in gaiters burst through a gap in the hedge. He was the owner of the petrol model. There was no mistaking that fact, for as the aeroplane hit the ground with one wheel and then capsized, right in front of the Hare and Hounds, the portly gentleman stood on one leg. A clenched fist went momentarily to his mouth. He did a little hop, skip and jump of intense agitation.

He ran towards the aeroplane. I left my cycle against the bank, and did the same. I was stiff from riding. The stranger, as I say, was fat. It took us half-a-minute to cover the few yards to the model. When I got near enough I could see that it was quite unharmed. Then I became aware of something else.

The gentleman was standing on my left. From my right, somewhere behind one of the bushes that flanked the lane, there had come a strange sound. It was an angry sound. Then it came out and stood with little red angry eyes and waving tail. It was a bull. Fore-feet planted firmly, back arched and head lowered, he took his stance between us and the petrol model.

"Shoo!" said the strange man, a little nervously.

"Meh-errrrr!" rumbled the bull.

We both backed slowly. The bull lowered his head further, and moved it slowly from side to side. Then, without warning, he charged.

There was a telephone kiosk at my elbow. I pulled the door open, thrust the gentleman inwards, and followed him with about five seconds to spare. The bull came straight at the kiosk, and went backwards shaking his head with pain and indignation. That box was made of concrete.

"Well, I'm bub-blessed," said the old gentleman.

"Yes," I said, "and I was looking forward to a drink. We look like being in here for a bit. There's nobody in sight."

The man clutched at my shoulder. "Look," he said.

I looked. The bull had begun to tear at the stones with hoofs and horns. He was turning in circles. That charge at the concrete kiosk had maddened him.

"There's one or two people over there, behind that hedge," said the stranger. "I wonder if they would get my aeroplane out of harm's way. It cost me fifteen guineas."

He began to open the door gingerly, and slammed it again quickly. The bull had seen him and had made another threatening move in the direction of our shelter.

"The Hare and Hounds appears to be on the 'phone," I said, pointing to the telephone wires that came from that building, standing still and solemn and apparently untenanted.

"Good! We'll ring 'em." I put the pennies in.

"Hurry," groaned the portly gentleman. "The bull's walking towards my aeroplane."

My call through, I informed the person who answered me from across those few feet of roadway, the facts of our depressing case.

"The bull?" came the reply. "Why we do know about he. He got out of the field, and he's very dangerous. We've rung up the farmer, and he'll be along in about twenty minutes with his men. He do live a long

By ARTHUR MOUNTSTEPHENS

way from here. But you step inside that there kissock while you'm safe."

"But," I said, "there's an expensive model aeroplane out there. Could you send two or three men out to get it?"

"There's only two of us in 'ere, there be, an' I wouldn't trust me neck out there for a blooming hairship. Why only last week that there bull attacked a man and . . . "

I had a sudden idea. "Who is the other man in there with you?" I asked. For a moment I thought that perhaps the hand of fate might have been kind. It might be Job. Where else in this lonely wilderness should I find him? "Is he rather big, with a large nose and glasses?" I added.

"Why no," came the reply. "The bull chased him in 'ere about half-hour ago. He's small, and he don't wear glasses."

"Oh!" I said.

"You stop in that there kissock till the farmer do come." The receiver clicked. He had gone.

"Look!" said the portly gentleman.

What I saw reminded me of a game that used to be played by a woman of my boyhood days. It was called "Dancing over the Candle." She used to stand over a lighted candle and dance.

The bull was doing the same, only instead of a candle, it was an aeroplane. The model was beneath him. He went round and round. His hoofs were knocking on the stony lane in a series of raps. As yet he had not touched the aeroplane. As yet . . . .

The stranger groaned. Unable to stand the strain any longer he pushed the kiosk door open, went outside, shouted "Boo!" and waved his arms.

The bull gave one look, stopped dancing, and came charging once more for the kiosk. The man hopped inside in a flash.

But the bull had had enough of charging concrete buildings. Once more he returned purposefully to the aeroplane. He meant to have revenge for the knock on the head, or something. He put one horn tip beneath a wing and lifted. The model toppled. Then he stamped once more on the stones, and emitted a harsh bellow.

"Look!" said the portly gentleman once more. He was pointing towards the hedge on the opposite side of the road. The two people who stood behind it were waving sticks, as if trying to attract the attention of someone in that part of the lane obscured from our view. At the same moment a head appeared from the upstairs window of the Hare and Hounds. The head shouted at someone down the lane.

"I do believe there's somebody coming along the lane," breathed the gentleman, hoarsely. "I hope, whoever it is, will pick up my model."

"I hope," I said earnestly. "Whoever it is'll see the bull in time, and not get gored to death. They're still waving to him."

We waited tensely. We could do nothing. The bull was tearing more stones from the lane.

Oblivious of the danger that lay but a few yards ahead of him, there appeared a man. His body was slightly bent, as if the concentration of reading and walking along the lane was a little too much for him. Even at this distance I could see, from the covers of his book, that it was a well-known model aeroplane manual.

Voices shouted. Hands waved. The bull stamped. But still that pensive figure came on. Then, quite unexpectedly, he dropped his book. His face was revealed. It was Job Wood.

Job came slowly on. Apparently he had not seen the bull, or if he had, he certainly didn't care. There was an expression of complete repose on his face. Perhaps he had just tumbled to some obsure fact of aerodynamics. He smiled slightly. Perhaps the thought of a pint in the Hare and Hounds . . . .

The mode of Job's approach, his complete sangfroid, seemed to have unsettled the bull a little. For the last hour or so, he had terrorised this peaceful place, driving people into pubs, fields and kiosks. Here was somebody different. Even the bull could see that. He retreated slowly before Job's solemn gaze.

Job stooped and picked up the aeroplane. He actually opened his manual and compared something inside with his find. He began to twidle the propeller. I was transfixed: speechless.

At the same moment the bull recovered from the shock, emitted a snort, and made towards Job. This time it looked really dangerous.

Suddenly, the engine of the model burst into a roar; a roar that was superior to anything that bull could offer. Job held the model in front of him. The bull turned, and lumbered away down the lane. Job followed with the engine roaring and the propeller whizzing. A few yards down the lane the animal turned into a field. Job slammed the gate behind him.

He came past the telephone kiosk once more. A seraphic smile was across his face. The quickest move he had made during the whole episode was when he disappeared into the porch of the Hare and Hounds.

You may wonder why we were still in the kiosk. Well, the portly gentleman was quite overcome: what with the heat and the tension and the relief. When at last he released me, by heaving his great weight from the door, he disappeared behind the hotel.

"See you inside in a minute," he waved.

Inside the snug room I found Job seated at a table. His model aeroplane book lay unheeded before him. He was drinking his modest pint slowly.

"Sit down," he said cheerily when he saw me. He appeared to go off into a trance. Then he continued to talk dreamily. "Do you know," he said, "I believe I understand now why the coefficient . . . "

I couldn't tell you the rest of that point of mechanics that Job had just grasped. The further he got into it, and the deeper down that tankard he went, the more obscure became the problem.

"Coefficients be blowed," I said. "Do you know that you've just saved a man from having an apoplectic fit? Do you know that you've saved a fifteen guineas petrol model from annihilation?"

But Job still appeared to be dreaming over coefficients.

"And at the danger of your own life?" I added, hoping that this might turn him. But he did not hear me. He smiled

"Do you know?" he said, "I've just had the funniest little adventure with a *cow*."

LETTERS TO THE EDITOR

DEAR SIR,

Reading through the September " A.M." which I bought to-day, I came across " Your First Propeller," by A. Pegg, which did not arouse much interest, as it seemed to be similar to Frank Zaic's instructions on propeller carving in his last " Year Book." However, my suspicions were fully aroused when I discovered " Monocoque Fuselages," by the same author, in which article I actually recognised some of Zaic's phrases. This had to be looked into, so, with the 1938 *Model Aeronautics Year Book* in one hand and the " A.M." in the other, I started to check up. And what did I find? A. Pegg, the bounder, has cribbed Zaic's writings word for word, not even attempting to camouflage his crime! Check up for yourself. " Propellers "—1938 Year Book, page 41. " Monocoque Fuselages," bottom of page 161.

I respectfully suggest that you take Pegg (unless he happens to be Zaic in disguise, which seems unlikely), lead him out and gently drown him in a barrel of rubber lube!

The other articles in this issue seem to be pretty good. I am especially interested in Powdrill and MacBean's latest, as I have done a bit of rubber testing (article on rubber motors in March issue), and am even now constructing a torque testing machine. This machine is a bit more elaborate than P. and MacB.'s apparatus. It is based on a sketch sent to me by Wilbur Tyler of the machine they use in Boston, which is, I think, the same as used by J. P. Glass, whose priceless articles on rubber have appeared in several of Zaic's Year Books. However, when I get some results from this machine you will certainly hear from me.

One mistake which P. and MacB. did make was to use R. M. Glass's formula for the maximum turns. I don't know how Glass got that formula, but the results it gives are very wide of the mark, as P. and MacB. found themselves.

A slight misprint occurs in my letter to the Editor on page 554. The sixth line should read

L/D A 8·7/1 B 8/1

instead of

L/D A 8·7/1 B 8·7/1

However, I think that anyone who has followed the reasoning will realise that the second 8·7/1 is a mistake.

I rather like the letter by D. Hinchcliffe which follows mine on page 554. Quite a remarkable lad this. By folding the propeller and halving the undercart he can make a model fly *slower*. Perhaps if he cut off the wing and reduced the tail the model would hardly move at all. But no, I mustn't get sarcastic. Still, his 16 to 1 gliding angle seems a bit far-fetched. If he gets half that he will be lucky.

Yours truly,
J. H. MAXWELL.

We greatly regret the plagiarism to which Mr. Maxwell refers. We also thank a considerable number of other readers who have drawn our attention to the same incident. The matter is fully dealt with on the editorial pages.—ED.

DEAR SIR,

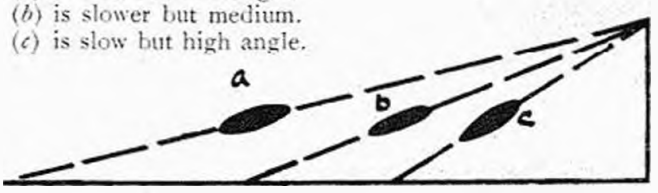
In your August issue you published a small article of mine in which I advocated the use of " high " angles of incidence for a streamlined model. To be exact, six degrees. In the September issue there was a letter printed which all but called me a crank, a leader-astray-of-all-right-minded-aero-modellers! I should like to reply to my critic, Mr. Maxwell—probably one of myriads.

Before the reader whose interest has been aroused by this encounter goes on I should like all to re-read my article, Mr. Maxwell's letter, and this reply.

Mr. Maxwell, although interim secretary of the Glasgow M.A.C. Research Station, is not so technical, I find. He appears to want the better angle of glide of an R.A.F. 32 model at three degrees, and yet to ignore the slower speed of the six-degree model—" negligible," I believe, was the word—and the advantages ensuing from this slower speed.

I have seen produced in many a book the following diagram:

(*a*) is fast, but low angle.
(*b*) is slower but medium.
(*c*) is slow but high angle.



The above seems to have been accepted, almost without question, as applying also to the whole aircraft. I contend this. It is true, but only when one considers the wing *alone*. If, however, you take the whole aircraft, the answer in some cases is a definite query, but in most—a downright NO!

I would like to remind readers of a few figures (Mr. Maxwell's were correct).

	A.	B.
Angle of incidence	3·00	6°
C_L	0·84	0·96
C_D	0·067	0·086
L/D (Wing)	12·50	11·10
Flying speed, f.p.s.	19·00	17·80
Drag wing, oz.	0·64	·072

I here wish to correct but one figure in Mr. M.'s list. We must not, as Mr. M. has done, forget that drag varies as velocity^2. If, then, a model has 28/100 oz. drag at 17·8 f.p.s. (not including wing), then at 19 f.p.s. it will have ·336 oz. drag.—Work it out for yourselves.

Inserting this value in the tables, we obtain the results as under.

	A.	B.
Total drag oz.	0·976	1·00
L./D *for 'plane*	8·19/1	8·0/1
Speed, f.p.s.	19·00	17·8
Sinking speed, f.p.s.	2·31	2·31

For Mr. Maxwell's benefit, I repeat,

(*a*) a very low forward speed.
(*b*) a high L/D Ratio for whole aircraft, and
(*c*) an *extremely* low sinking speed.

Well, I reckon that a little reorganisation in the country's resources, as far as research goes, is needed!

Yours faithfully,
G. W. JONES, A.M.A.A.

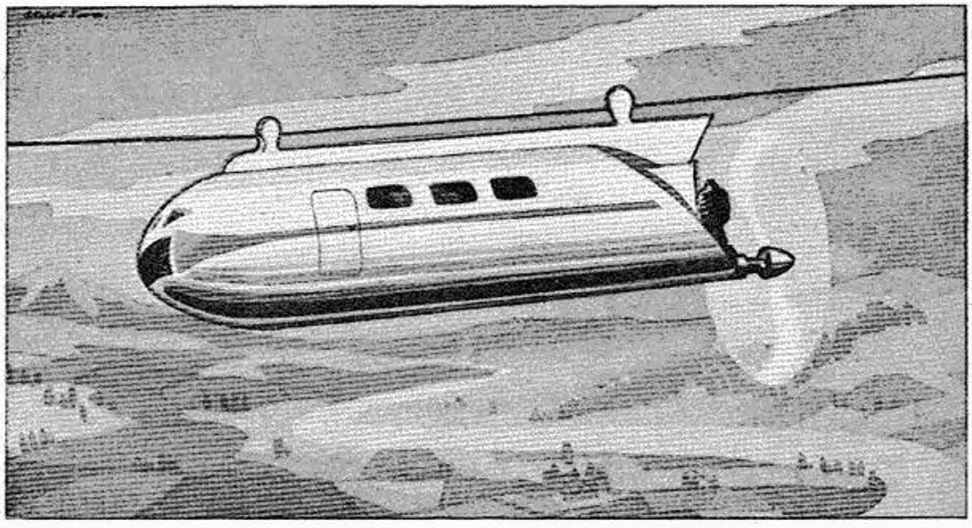
(P.S.—Dear Ed.—We'll be hearing more of this, I'll wager).

DEAR SIR,

I think the following account may interest you, and some of your readers who have petrol engines lying in the workshop idle may like to try the experiment.

Before I was called up about three months ago I was actively engaged in aero-modelling. I was mostly interested in the rubber duration type, my latest model being the well-known "Flying Minutes."

I also have a "Mighty Midget" petrol engine, but, due to one of those most unfortunate circumstances, where the 'plane suddenly takes a dislike to soaring high up in the sky and makes a power dive for "terra firma," I had no 'plane for it.



A few weeks before I left home I decided to make use of the old power plant in an effort to get some high speed flights without any danger of crashes.

So, abiding by that motto, "Safety Fast," I managed by the end of the week to turn out "The Cable Buggy" at the total expense of half-a-crown. The Cable Buggy did not fly in the true sense of the word, as it merely ran along a length of cord by means of pulleys.

It consisted of a streamlined car with the engine and a pusher airscrew in the rear and a pair of pulleys bolted to the roof.

I found that a thick, coarse type of string was quite strong enough for the purpose, and had the advantage of being cheap.

The pulleys were merely a pair of threepenny galvanised washing line pulleys, and were far from being precision jobs. I cut slots in the sides of them to facilitate removing and placing the car on the string.

The engine itself was screwed on to a main-base of $\frac{3}{8}$ in. plywood, which was cut away and lightened as much as possible. The rest of the car was built round the main base, and consisted of $\frac{3}{16}$ in. and $\frac{1}{32}$ in. plywood. The pulleys were bolted to a keel of $\frac{3}{16}$ in. plywood, which projected a short distance above the top of the car. By placing a good-sized battery in the nose of the car, and thus evenly distributing the weight between the two pulleys, all tendency to jump off the line was prevented. As an extra precaution, however, I set the engine at a slight negative thrust angle by having the front pulley $\frac{1}{4}$ in. farther from the main base than the rear pulley.

An air scoop was made by having a large tube made from $\frac{1}{32}$ in. plywood, running from the front, where it was covered with gauze, back to the engine. This, of course, prevented the engine from overheating.

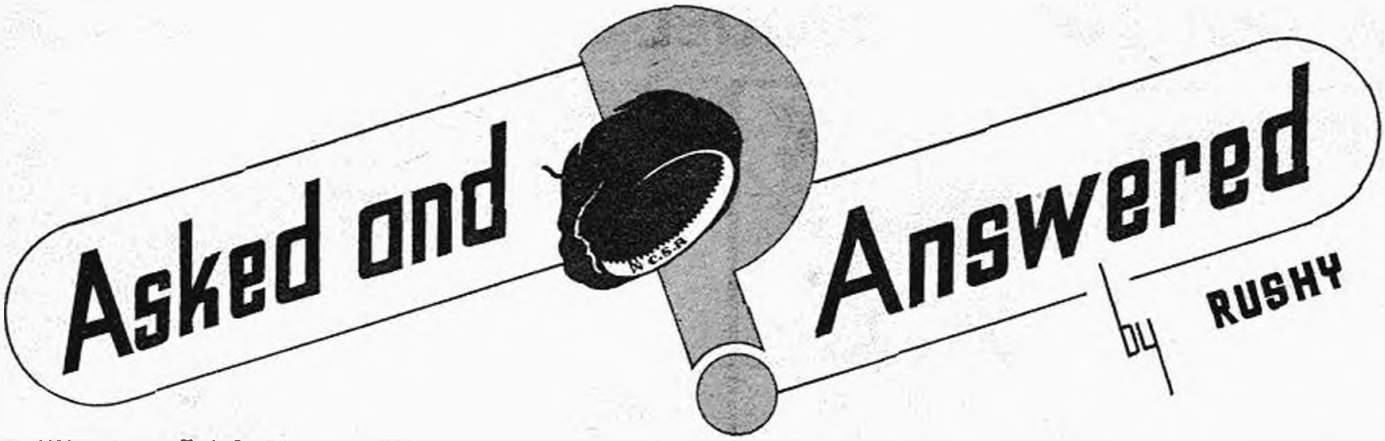
I found that knots in the string in no way impeded travel, so I built up a very long length of string and stretched it from a tree on one side of a ravine to a fence on the other side. Of course, it sagged quite an appreciable amount, but that made no difference to the performance.

When I let "The Cable Buggy" go on one side of the ravine it shot down the slope, swaying with the wind, and building up speed until, by the time it reached the bottom of the sag, it was doing sixty m.p.h. flat out. It roared up the other side like a rocket until it reached the peak of the climb, where a friend of mine stopped it while it was still moving at a fair speed, turned it round and sent it back to me.

I found that from a standing start it would crawl up a slope of one in two at about four m.p.h.

I wish I had some photographs of it to show you, but unfortunately I was called up before I had a chance to take any. The diagrams will give you some idea of what it looks like. It only needs a little imagination to design one of these speedsters.

Yours truly,
F. C. NEVILLE.



Q. *What is an F.A.I. Licence. What is its purpose, and what are the activities of the organisation?*

A. An F.A.I. Licence is necessary for participation in any International event, and is essential before any claim for a world record can be considered. The Federation Aeronautique Internationale is composed of delegates from all countries in the world, who meet periodically to formulate and amend the rules and regulations governing the sport of aero-modelling. Application forms can be obtained from the Secretary of the Society of Model Aeronautical Engineers, Mr. E. F. H. Cosh, 35 Maple Crescent, Sidcup, Kent, and cost 1s. each. Applications must be accompanied by two passport type photos of the applicant.

Q. *What is meant by the "plus and minus tolerance" mentioned in the specifications for the Wakefield model?*

A. The actual explanation of the formula is that the wing area can be between 190 and 210 square inches, but it must be remembered that the tail-plane area must be not more than 33 per cent of the *actual wing area used*, and not, as some builders have done, use a tail area of 33 per cent of the maximum wing area allowable with a minimum area wing!

Q. *What is the specification for the* 1940 *Wakefield model?*

A. Realising that the maximum efficiency of the current specification had not been reached, the S.M.A.E. decided that the 1939 rules should obtain for this type of model for 1940. Full specification is as follows:

Total area of main-plane (main-planes to be 200 square inches, with a plus or minus tolerance of 10 square inches.

Area of the tail-plane shall not exceed 33 per cent of the main-plane(s).

Models must have a minimum weight of 8 ounces.

Models must conform to the S.M.A.E. fuselage formula.

Models, including airscrew, wheels, and (if used) gear-boxes must be constructed by the entrant.

Q. *What is meant by the S.M.A.E. Fuselage Formula?*

A. The formulæ, introduced with a view to keeping the model aircraft looking something like the real thing, is as follows:

$$\frac{(\text{Overall length of model})^2}{100} = \text{Minimum area of maximum cross section}$$

For example: A model with a total overall length of 30 inches would require a minimum cross section of 9 square inches, e.g.,

$$30 \times 30 = 900. \quad \frac{900}{100} = 9 \text{ sq. in.}$$

Q. *Can you advise me on radio-controlled model aeroplanes, equipment, etc.?*

A. For the duration of the war, radio experimentation is under a Government ban and details cannot be given.

Q. *Must I have a licence for flying my petrol model?*

A. Licences, as such, are not issued for the flying of petrol-driven models, but it is strongly recommended that all such models are covered by a third-party insurance policy and registered with the S.M.A.E. While so far this has not been compulsory, the recommendations were introduced with a view to preventing any enforcement of regulations through official channels. (With the recent banning of this type of model, this matter does not arise under current requirements, but it is well to remember the efforts made in the past to regularise this section.)

Q. *What is meant by A/R?*

A. The symbol A/R is the abbreviation for Aspect Ratio. This term is used to denote the figure obtained by dividing the mean chord into the span of wing or tail-plane. Example: If the mean chord (e.g. average chord) of a wing is 4 inches, and the tip-to-tip span is 40 inches, then the Aspect Ratio is 10—1.

Q. *What is the difference between "Airfoil" and "Aerofoil," and what do the terms mean?*

A. Airfoil is the increasingly used "Americanised" spelling of the French "Aerofoil," and denotes the profile or shape obtained by a cross section of a wing or similar component, taken from leading to trailing edge.

Q. *I am not a member of a club, but would like to compete in the Decentralised Competition arranged by the S.M.A.E. Can you tell me how to go about this?*

A. The S.M.A.E. events are open to non-affiliated club members, but a special fee of 3s. 6d. is required. Affiliated club members pay 1s. (Juniors 3d.). It is necessary for a non-member to make arrangements to have his flights timed by official timekeepers of an affiliated club, and his entry is entered on the official entry form provided by the S.M.A.E.

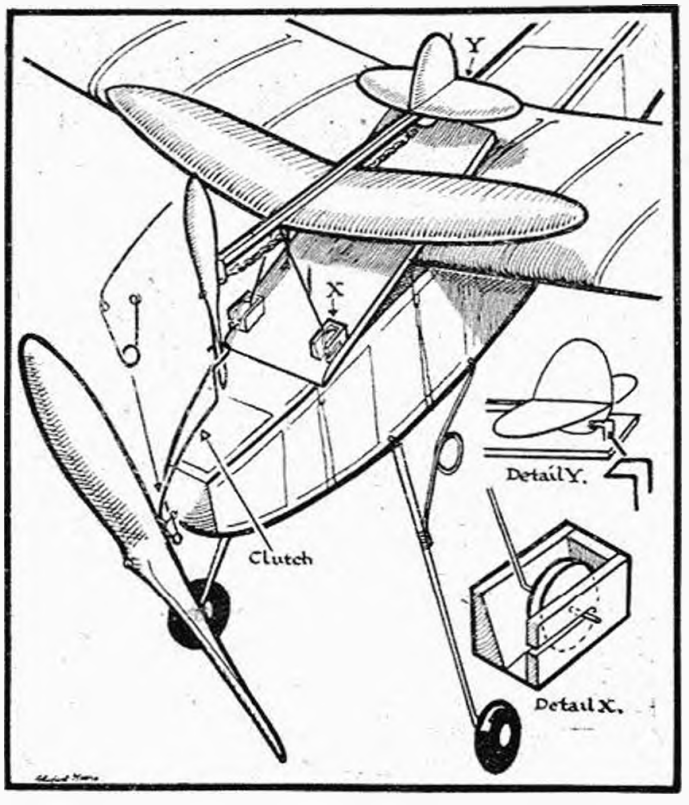
Q. *I am unable, through geographical situation, to belong to a club. Am I able to become an affiliated member of the S.M.A.E.?*

A. Individual membership of the S.M.A.E. is catered for by Patron Membership, at a fee of 10s. 6d. for London residents and 6s. for country residents, e.g. those living over 25 miles from London. Application must be made in writing to the secretary, and where possible arrangements made for nomination at a general meeting.

Q. *Must my Wakefield model be of my own design for entry in the events for this class of model?*

A COMPOSITE MODEL

By GORDON ALLEN



SINCE the advent of the Maia composite aircraft, numerous aero-modellists have focused their attention on such an idea for model aircraft. The writer is no exception, and here is *his* idea for the release of a small model from a parent machine.

Frequent reference to the accompanying drawing makes the unit simple to construct.

The actual mechanism consists of a small spring between the nose-block and the airscrew, to the front leg of which is soldered a fine wire clutch, "crooked" at the end as shown. Incidentally, the spring can serve a double purpose —that of working in unison with the free-wheel or rubber tensioner of the model, and also the release mechanism.

The platform on which the "Mercury" of the unit is stationed is made from $\frac{1}{16}$ in. sheet balsa and sloped towards one of its ends. To the face of this two wheel chocks "X" are cemented, after being made to the shape shown in the detail. Note here that the outside walls of these are slotted to take the protruding ends of the axles of the smaller aeroplane.

After fixing these to the platform at their correct distance apart, i.e. the wheel track of the "Mercury," a small wire saddle is cemented to the rear end of the platform, the shape of which is shown in detail "Y." This engages with a slot in the vertical fin of the model. The chocks and the saddle serve to check the model from lifting immediately the larger 'plane is released.

The platform is smoothed and is attached to the large machine by the hook and rubber band method.

Operation.

When the larger machine is wound, the spring is compressed and the clutch moves backwards. The small model is then wound and fitted in place in the chocks, with the "crook" end of the clutch *behind* the propeller. This stops the airscrew from revolving. When the large machine is released and the motor runs out, the clutch moves forward, pulling the light-weight with it (by means of the propeller). It then becomes detached from the chocks and saddle, and the model then runs down the platform slope and is off to a flying start.

NOTE.—The small machine can be made to any design desired, but a very light stick model is recommended.

No dimensions have been given, as these will depend on the model concerned, but the platform is kept as near to the C.G. as possible.

ASKED AND ANSWERED.—(*Continued from page* 605).

A. No, it is not essential that the design should be that of the owner, and in fact any proprietary make can be used, providing the general rules are followed regarding the complete building of the model, and not incorporating ready-made propellers, wheels, etc.

Q. *What is meant by N.A.C.A., R.A.F., Gottingen, etc., when talking about airfoils?*

A. The prefixes denote the various countries in which the particular airfoil was developed, the figures following the prefix being the series number of that section. N.A.C.A. sections are developed in America, R.A.F. in England, Gottingen in Germany, Eiffel in France, etc. Example: R.A.F. 32 is an airfoil section produced at the experimental laboratories of the Royal Air Force.

Q. *Can you give me the main dimensions of the Fokker D.VII. Where are the exhausts situated, and what was the armament of this machine?*

A. Main dimensions are: Span, 29 ft. 3½ in. Length, 22 ft. 11½ in. Height, 9 ft. 2½ in. Chord (top plane), 5 ft. 2½ in. Chord (lower plane), 3 ft. 11¼ in. Gap, 4 ft. 2 in. Stagger, 1 ft. 11½ in. Track, 5 ft. 10½ in. Span of tail-plane, 6 ft. One exhaust pipe is fitted on the starboard side of the nose, about 2 ft. from the airscrew and 1 ft. from the top of the cowling, and is very short. Twin spandaus were fitted.

Q. *Are hollow spars permissible on an indoor microfilm model?*

A. I presume you mean the main fuselage spar on a stick model. At present there are no regulations or restrictions in English indoor events, and hollow members as above are permitted. These are usually constructed from light balsa sheet, either 1/64 in. or $\frac{1}{32}$ in. thick, steamed round a former to a tear-drop section, and the seam cemented after the former is removed. I heard that restrictions had been placed on competition models in the U.S.A., but have no confirmation of this item. Perhaps this accounts for your query!

Q. *Is there any charge made for having questions answered in this feature?*

A. No, this new service is free to all readers of THE AERO-MODELLER.

The questions and answers here printed are only a few of the many which are dealt with every month. Our staff is well organised to deal with enquiries relating to all types of model and full-size aircraft, and whilst no charge is made for this service, we *do* ask for a stamped addressed envelope to be included with each enquiry.

AT THE SIGN OF THE WINDSOCK

NOW that the dark nights are coming along, most people will be looking for an interesting and profitable hobby, and what better could they do than build model aircraft? These would make ideal Christmas gifts, and in these times of intense interest in everything to do with the air, would delight any lucky recipient of such a present.

Messrs. Model Aircraft Stores (Bournemouth) Ltd., 127b Hankinson Road, Bournemouth, are marketing a series of kits that are ideal for the job, known as the " Truscale " Series. Of exceptional quality, these kits include turned wheels and cowlings. All shapes are cut to outline, and complete materials are supplied of insignia, cement, full-size plans, etc. The propellers of these kits are a special feature, being of nickel-plated brass, with the correct pitch and camber.

Besides being an interesting present, these models are of a high educational value, and we feel that the more models built the more the general public will be educated to recognise the different types of machine in use to-day.

* * * *

Ranging from coloured dopes to rubber lubricant, Messrs. Slick Brands Ltd., of Waddon, Croydon, market an enormous range of materials for the model builder. Just a few of the very helpful aids to the modeller to-day are " Slick Balsa Plastic Wood " for filling up imperfections and making good false cuts; " Camouflage Dope " which is quick drying with a mat finish, and comes in true R.A.F. colours; and " Slick High Gloss Waterproof and Finishing Dope," which does not peel or crack and is completely transparent. Good-bye to that sagging tissue and wrinkled look! We should mention also the special " Balsa Wood Field Cement," which is a very handy material to have along when on the flying ground.

* * * *

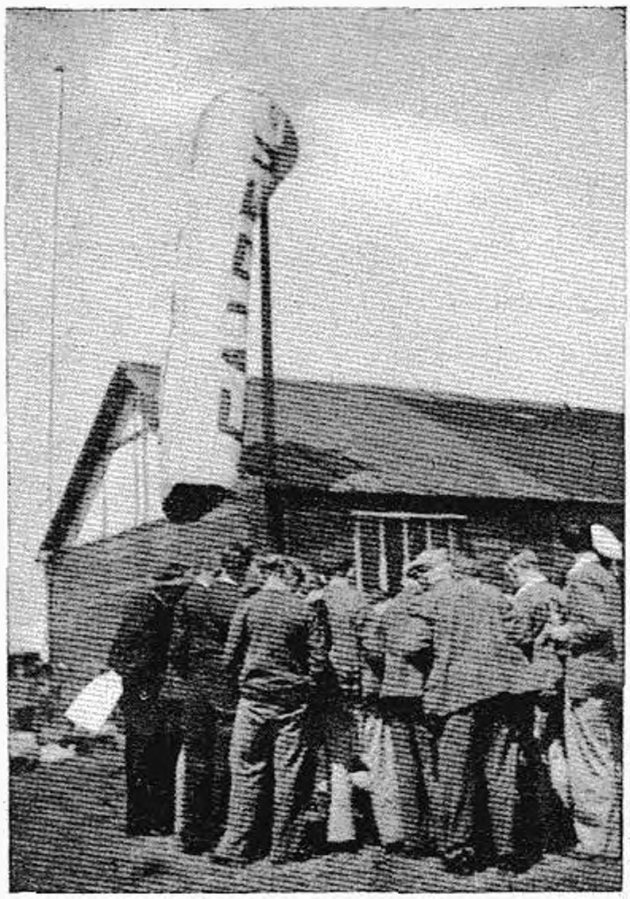
Experience of the industry counts for a great deal, and it is a pleasure to welcome the advent of Messrs. E. Keil and Co. Ltd., of 195 Hackney Road, London, E.2, to the supplies side of the movement. Long known as balsa cutters of high standard, they have been connected with the trade for a considerable time, and their new range of kits reflects their knowledge of the requirements of the enthusiastic modeller. The " Keil-Craft " kits include two duration type models, the Achilles at 2s. 6d. and the Ajax at 3s. 6d., both models complying with the S.M.A.E. fuselage formula.

Full-size plan and a very complete list of materials are included, while the wing ribs are ready cut out.

Mention must also be made of the extensive range of flying scale models, among which are the Spitfire, Hurricane, Messerschmitt B.F.109 and Fairey Battle. Of 24-inch span, these kits retail at 4s. each, and are complete to the last detail.

* * * *

Messrs. F. P. Sweeten Ltd., of 38 Bank Hey Street, Blackpool, announce their new model of the Blackburn Skua. This is truly a fully detailed model and incorporates such refinements as retractable undercarriage, all



controls movable, ailerons, elevators and diving flaps. A ready-turned cowl encloses a detailed Perseus engine, while the tail-wheel is of swivelling type. Built to a scale of 7/16

in. to the foot, the span is 20½ inches and overall length 16 inches. One of the Tower Kit series, this model should suit admirably all those who desire plenty of detail, and the well-known quality of this firm's products ensures a good job.

* * * *

The Bennett College Ltd., of Sheffield, is too well known for us to elaborate, but it is worth mentioning that it is this college that has trained over 10,000 Air Wardens, Firemen, Police, etc., in Air Raid Precaution work free of charge. A point of special importance to aero-modellers is that the Bennett College has trained some thousands of wireless operators, now acting as such on ships, and they have now originated a department and prepared a course to teach aviation wireless. The course is specially prepared either

for young people who know nothing about electricity or wireless, or for those who are already advanced and wish to refresh their knowledge on the latest developments.

* * * *

The "Lynx," marketed by Messrs. Model Supply Stores, of 17 Brasennose Street, Manchester, is well known among modellers, and the designer of this successful machine has followed up with a new model that comes within the new formula event instituted this year, namely, the 5 oz. model. With a wing area of 144 sq. in., this model flies exceptionally well on 1 oz. of rubber, and has won the first two competitions it was entered for. Designed by Mr. A. Tindal, the well-known Northern aero-modellist, this unorthodox design incorporates a diamond fuselage, mid wing and a single leg undercarriage, and is of quite novel appearance. Known as the "Panda," this model will soon be available as a complete kit, but meanwhile full-size working drawings and sheets of printed balsa can be obtained for 3s.

* * * *

The latest addition to the popular "Skybirds" model series is the Hawker "Henley," a two-seater light bomber. This kit is supplied complete with details of construction, performance, etc., also scale plan drawings, and is excellent value at 3s. 6d. We understand that the Boulton and Paul "Defiant" is now in production and will be ready almost at once.

Several new features in the "Skybird" series of scale model accessories include anti-aircraft guns, searchlights, sound-locators, Bren guns, figures; also a 6 in. field howitzer with Scamell gun tender.

Readers may obtain free of charge a complete price-list on application to "Skybirds," 3 Aldermanbury Avenue, London, E.C.2. (Please enclose 1½d. stamp for postage).

* * * *

Model Aero Supplies, Halifax, report record sales in spite of the unfortunate circumstances.

A new balsa cement plant is now installed, and dealers are requested to write for free samples of "Halfax" quick-drying balsa cement, which is a speciality of the firm.

The claims of "Flying Minutes" to being Britain's No. 1 are certainly reflected in a glance at its growing list of performances. Customers are advised to buy now, as the rise in prices of commodities will result in a higher priced kit.

Another speciality is "Halfax" power-plus propellers. These are all hand carved and are as aerodynamically perfect as model research methods can make them.

* * * *

The Dewfly (Model) Aircraft Co., of Battersea, Barking and Mitcham, are selling two fine blue-prints of the "Dewfly" and "Falcon," priced at 2s. and 3s. 6d. respectively. Both of duration type models, the drawings are clear to follow and should be an asset to any enthusiast's collection. Samples of rubber submitted by this firm for test are of good quality and sell at 1s. for a dozen yards, both ⅛ in. and $\frac{3}{16}$ in., while ¼ in. is 1s. 6d. for the same quantity.

* * * *

Mr. E. Snape, who is now manager to the Northern Model Aircraft Co., of 25 Lower Mosley Street, Manchester, will be pleased to meet old and new friends. The "Westland Lysander" kit produced by this company is complete in every detail and makes an exact replica of the prototype. Incorporating all the latest gadgets, such as guns, sights, bomb racks, landing lights, etc., a model of this kit won a recent hotly contested concours d'elegance event at the Lancashire M.A.S. open meeting. Material quality of this kit is of a very high standard.

* * * *

Super Scale Kits, Uppingham, Rutland, advertise on page 596 a half-inch scale kit of the Heinkel H.E.112. This firm is well known for the accuracy of its designs and the quality of the contents of its kits. This is a popular model and should be of interest to many of our readers.

* * * *

On pages 610, 611 are reproduced two pages from Pollitt's "Scale Plans of Military Aircraft." The 'plane described is the Blackburn "Skua." These two pages will convey to our readers very clearly the excellent make-up of this book. Altogether thirty-nine 'planes are illustrated, twelve of which are large double-page plans. The price of this book is 3s. 6d., or 3s. 10½d. post free, from the Harborough Publishing Co., Ltd., Allen House, Newarke Street, Leicester.

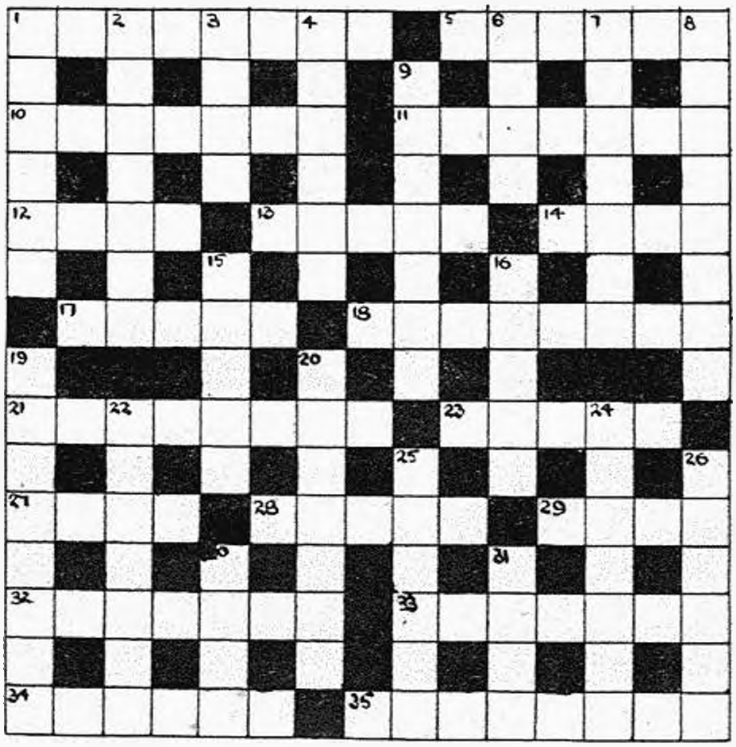
* * * *

The Model Shop, 2 College Road, Barras Bridge, Newcastle-on-Tyne, report record sales of their "Albatross" glider kit, and numerous letters have been received from satisfied customers, many of whom have lost their models made from this kit.

* * * *

The well-known products of the Turnbridge Manufacturing and Supply Co. Ltd., of 52a/62a Longley Road, London, S.W.17, are proving of considerable assistance to the aero-modeller, their well established range of dopes, etc., being well recommended by the experienced modeller.

THE AERO-MODELLERS' X-WORD



ACROSS.

1. Part of main body made of base lids (8).
5. Hook for aeroplane? (6).
10. If I joined the joiners there would be more under arms (7).
11. Place for most 'planes (7).
12. Did Dr. Arne? (4).
13. Foundation of an art (5).
14. Cut the spin (4).
17. Fish for degrees (5).
18. The unwanted (8).
21. Complaint which must not be heard in *this* war (2 words, 2 and 5).
23. Much in the steamer would assist 27 (5).
28 and 29. Disrespectful title of useful gear (5 and 4).
32. Apparently to give back sleep to crude metal (7).
33. A power in the hand of an aero-modellist (7).
34. Is but one (6).
35. Varied, or stalls of many kinds (two words 3, hyphen 4).

DOWN.

1. Resist her charms (6).
2. Control is not well to start (7).
3. Don't this a tear in this (4).
4. The Bard is to disqualify (6).
6. Dismembered animals' deeds (4).
7. One animal did as is traditional in the northern county (7).
8. Send out again apparently left at sea in the end (8).
9. Permission (7).
15. Insects or a 'plane (5).
16. Material tool (5).
19. Same dresses (8).
20. Strips well laid on (7).
22. Used to stabilise in water (7).
24. A farmer's screw? (7).
25. Show about the meat (6).
26. Punishment of old for holding them (6).
30. Razor blade?
31. ——and means this Committee (4).

10s. 6d. will be paid to the sender of the first correct solution to this crossword puzzle received at our Leicester offices. Entries should be marked "Crossword" on the top left-hand corner of the envelope.

REPRINTED FROM "SCALE PLANS OF MILITARY AIRCRAFT"

THE BLACKBURN "SKUA" (British)

The "Skua" is a two-seat naval fighter-dive-bomber, and is the first monoplane produced for operation from aircraft-carriers.

It incorporates all the necessary features and equipment to suit it to over-sea flying.

Bristol "Perseus" nine-cylinder sleeve-valve radial air-cooled engine, with long-chord cowling and three-bladed D.H. controllable-pitch airscrew.

Performance as a two-seat fighter: Maximum speed at 6,500 ft., 225 m.p.h. Landing speed, 75 m.p.h. Service ceiling, 20,200 ft.

Span, 46 ft. 2 in. Length, 35 ft. 7 in. Height, 14 ft. 2 in.

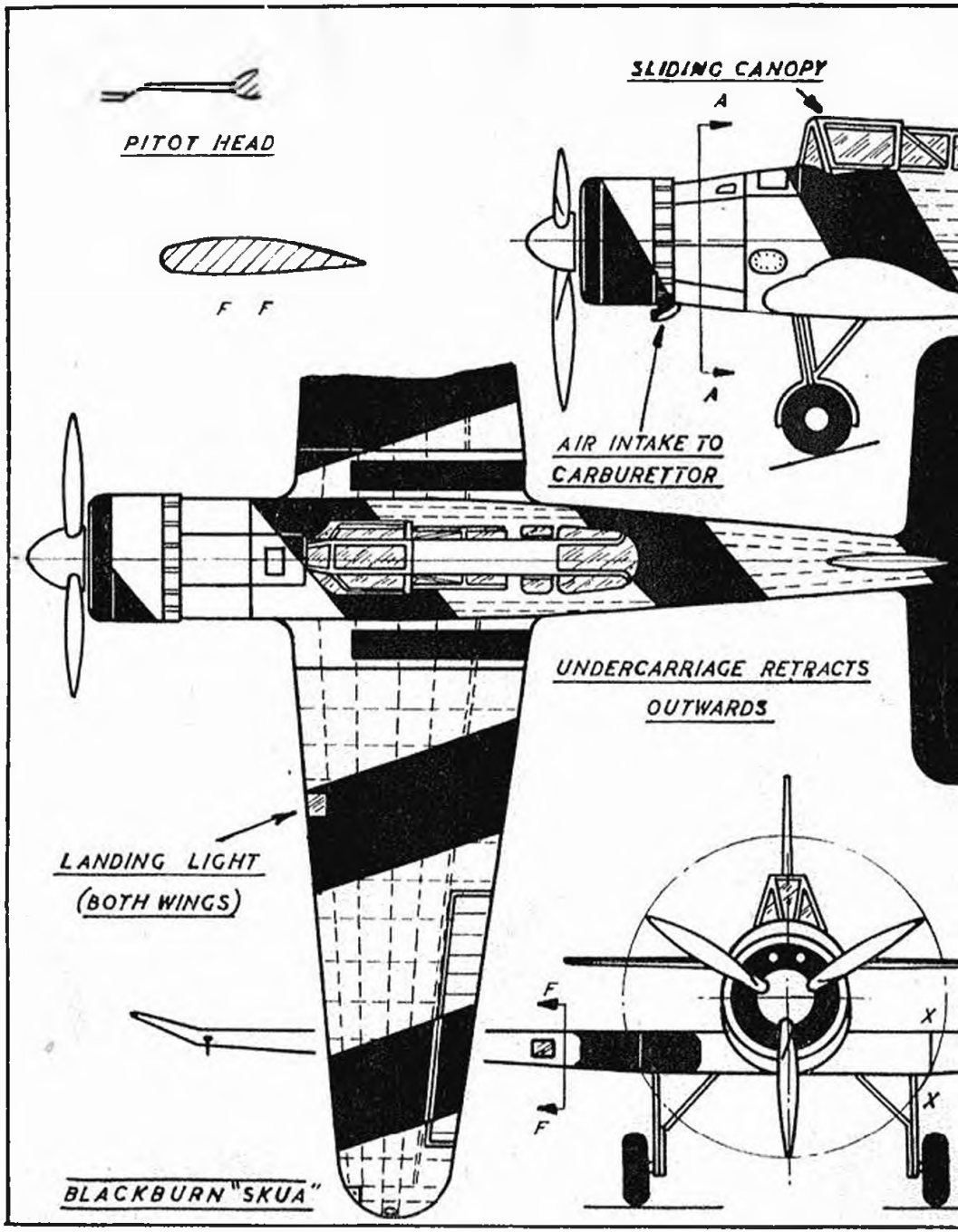
Armament details unknown.

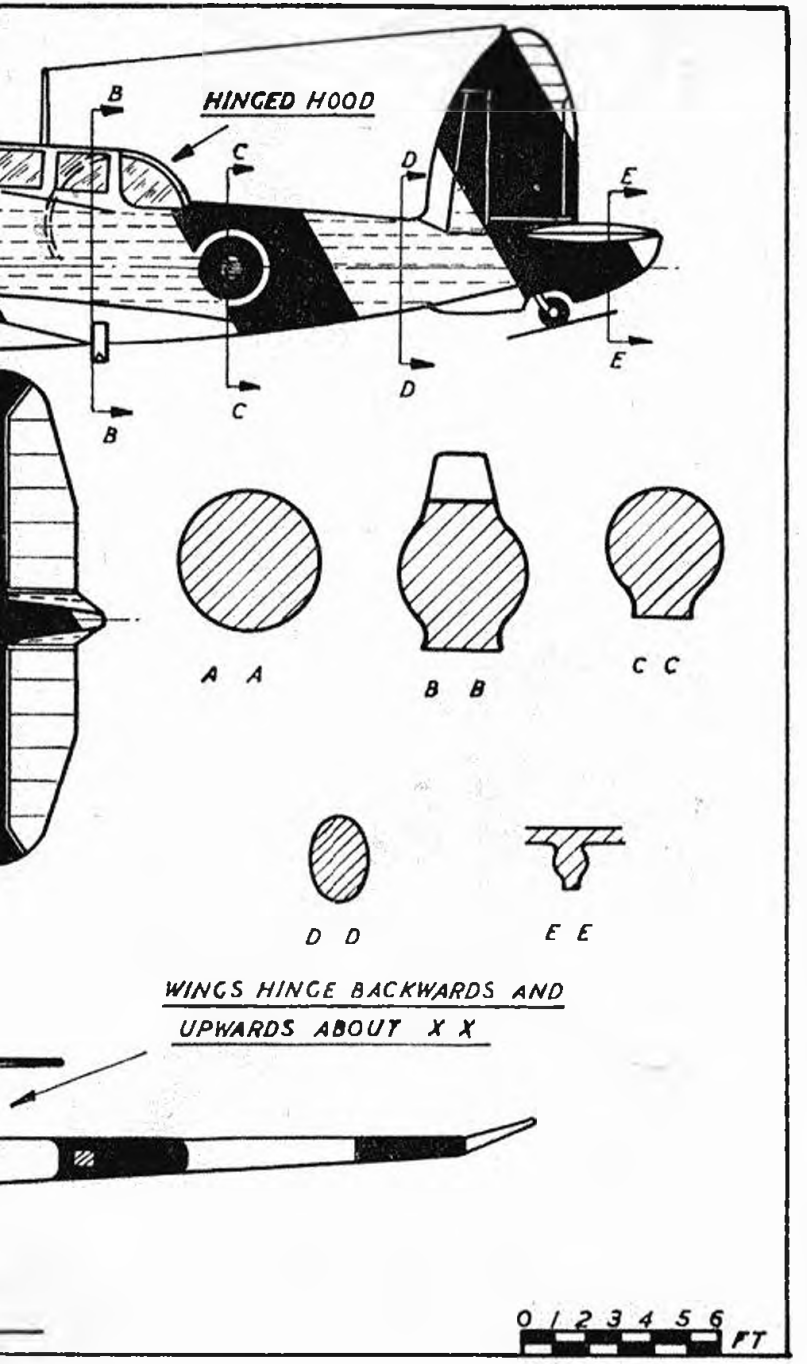
The two original Skuas, with the Mercury motors, were painted according to standard Fleet Air Arm practice. The wings were all-silver, above and below, and the fuselage was battleship grey. Normal red, white and blue cockades were carried on fuselage and above and below wing-tips. Top side of tail-plane was silver, while the fin of the second prototype, K.5179, was all-grey, rudder silver. In the case of the first prototype, K.5178, the fin and rudder were completely silver.

Production Skuas, with the Perseus motor, went into service on the carriers completely silver. No. 800 Squadron was one of the first to receive the Skua, and machines of this squadron could be recognised by the horizontal stripes on the fin. They were alternate strips of white and the flight colour (red "A," yellow "B," and blue "C.")

Another squadron of Skuas carried three coloured bands round the fuselage just below the observer's cockpit. Superimposed on these bands (original Fleet Air Arm practice) are the letters and numbers A7-G—the latter letter being the plane-in squadron marking and varying with each machine. These letters and numbers are painted in white. No cockades are carried on the fuselage when the aforementioned stripes are carried. An authentic serial number, in black on fuselage, forward of tail-plane, and beneath wings, would be L.2889. A special point to notice is that all serial numbers beneath the wings of Skuas are painted parallel to the trailing edge. They should not overlap the Zapp diving flaps.

One Skua was the subject of a rather unusual scheme of sea-camouflage. Unlike shadow-shading on land-planes, which employs irregular lines, this system made use of sharp, clearly defined divisions between the two colours. Bands of sea-green were painted on a background of battleship grey, both above and below the aircraft. The whole of the tail-plane was sea-green, and the elevators were grey. The concentric rings on the fuselage, and on top of the wings, were red and blue only. The circles beneath each wing-tip were normal red, white and blue. The serial number of this aeroplane was L.3007.


PITOT HEAD
F F
SLIDING CANOPY
A
A
AIR INTAKE TO CARBURETTOR
UNDERCARRIAGE RETRACTS OUTWARDS
LANDING LIGHT (BOTH WINGS)
F
F
X
X
BLACKBURN "SKUA"


HINGED HOOD
B
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A A
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WINGS HINGE BACKWARDS AND
UPWARDS ABOUT X X
0 1 2 3 4 5 6 FT

I'M afraid I have to talk in rather a serious strain this month for a start, as there is at least one very important issue which affects aero-modellers as a whole and the clubmen in particular. This, of course, is the restriction recently placed on the flying of model aircraft by the Air Ministry. This, as you will have read in last month's issue, consists of a total ban on the flying of petrol models, and eliminates all gliders and rubber-driven jobs of 7 ft. or over in wing span. Whilst unfortunate, I think you will agree with me that we could have come off much worse, and our thanks are due mainly to the hon. secretary of the S.M.A.E., Mr. Cosh, whose prompt action in immediately tackling the Ministry concerned softened what might have been a very hard blow. I can tell you straight—and this is right from the horse's mouth—that if it had not been for his prompt action and tact we should have had a lot more to grumble at than we have at the moment.

Whilst I was not able to speak on this matter last month, as my report had already been written before the ban was imposed, this talk comes a bit late; it nevertheless comes at a time when we have had a chance to look round a bit and see some of the repercussions from these restrictions.

For a start let us consider the restrictions singly. Obviously, the ones to suffer most are the petrol fiends, who must pack up their models till after the cessation of hostilities, but I am sure this section of the aero modelling business, whilst quite large, forms but a small proportion of the movement as a whole, and they will, I am sure, realise the necessity for the temporary banning of their activities. The Average Citizen—and unfortunately there are far more of this class than there are enthusiastic aero-modellers—cannot seem to understand the difference between a flying model and a flock of Messerschmitts, and a number of cases have come to our notice where the authorities have been rung up by frantic individuals who inform them that strange aircraft have been seen flying round certain districts, and call out the L.D.V., special police, A.R.P., etc., etc., etc.! Whilst to those of us in the know all this seems very ridiculous, you will appreciate that the authorities cannot have their time wasted on such matters, and whilst Cosh did his best, the Powers That Be were adamant on the banning of this side of activities.

Fortunately, with the rubber section and gliders we are in a better position, and, considering that the majority of modellers come into the second category, it is just as it should be! After all, the petrol man can temporarily revert—if that is the correct term to use—to the rubber-driven model and gliders, and we shall all be able to carry on with at least some part of our former activities. I doubt very much if there are more than a dozen rubber-driven jobs of the maximum size allowable, and in these days of restricted transport I can quite believe that the large Continental type of gliders would not be in favour. After all, a 6 ft. or 6 ft. 6 in. span job is quite useful and is quite enough to hump about, at least from my point of view. So, reviewing the situation as it stands at the moment, I think you will agree that, apart from the initial disappointment that any restrictions had to be imposed, we have not come off too badly—and this brings me to my second very important point.

As I've said before, we've been fairly fortunate so far, and it is up to everybody to see that their future behaviour does not bring about the imposition of any further restrictions. I say this with some feeling, as I've had several instances brought to my notice of chaps who can only be classed as irresponsible "nit-wits," whose activities will gum up the works for all of us. Firstly, there is the chap I heard about who said "Oh, to heck with that, I'm going to fly my petrol model—and I'm insured anyway." Let me tell this fathead that his insurance policy will not cover him under present circumstances, and he would be well to reconsider his actions.

Case No. 2 was the affair of the Very Spoilt Son of a Very Wealthy Father, who informed all and sundry that he would continue to fly his petrol model, and he didn't mind if he did get fined: he could afford to pay it! Well, well, well—words fail me in instances of this sort, and I only hope that the vast majority of sensible aero-modellers will promptly squash any fools of this type they happen to come across. After all, we must remember that it only needs one or two instances of contravention of the regulations to reach the ears of the authorities for the whole matter to be reconsidered, and most likely end up in the whole sport being suspended. I do not want to see this happen, neither do you—and the matter lies in your hands to see that the irresponsible section is not allowed to bring this about.

Before leaving these matters, there is just one other point which was brought to my notice, and that is the case of the chap who wrote to the S.M.A.E. cribbing right and left at the ban on petrol models. He "could understand large models being banned, but why on earth, etc., etc., should we not be allowed to fly our 3 ft. and 4 ft. span petrol models?" Then further on in his letter we find out why he makes this impassioned plea! He is the owner of two or three petrol models of between 3 ft. and 4 ft. span. . . . Need we say more? Honestly, I have never heard of a more "dog-in-the-manger" attitude since coming into the hobby. In others words, "Oh yes, it's O.K. to ban everything else"—bar the particular type he possesses, and don't you dare touch that. Nuff said!

Under this category, and at the same time very important, there is the matter I have had reported regarding the behaviour of certain aero-modellers on Epsom Downs. I am not naming any individuals or clubs until such time as the

matter has been thoroughly thrashed out and brought home to roost on the actual culprits. At the moment there is an intensive session of " passing the buck," and it will take a little time to weed out the evidence. The case is one in which a number of fellows turn up at Epsom Downs, and after a spot of bother over a meeting which was entirely their own fault (but which was purely a domestic affair between themselves and another club), proceeded to fly their models. This was quite O.K. until an air raid warning was sounded and " dog fights," etc., started to take place in fairly close proximity to the flying ground. On this occurring, the Commanding Officer of a nearby army camp requested the modellers to take cover amongst bushes, etc., which was, you will agree, quite a reasonable—and thoughtful request—but did these brave lads do so? Not they. Instead, with a show of fatheaded bravado, they continued to fly their models; and the result was that a report was made to certain authorities that a large glider had been seen close to Tattenham Corner Station. Now, hang it all—isn't this just the sort of thing that is going to get everybody the bird? As I've said before, at the moment I'm not mentioning any names or the club, but once the matter has been thoroughly investigated I think you will agree that I shall have full justification in black-listing them through these columns. It's not fair that one or two people of this calibre should wreck the goodwill the majority of others enjoy.

Various changes have had to take place in the S.M.A.E. owing to the joining-up of Secretary Cosh, who goes into the R.A.F. This will be a big loss to the movement, as I doubt if we could find a better or more conscientious secretary than Cosh has proved in the past, but I am sure he will take the good wishes of the whole of the model aircraft movement with him. Incidentally, did you hear the story of what happened to Cosh when at Uxbridge on a preliminary course? When lining up for pay before leaving, Cosh, as a married man with a family, drew a fair proportion more than the chap following him, who, being single, drew something like a couple of bob. Looking at Cosh's pay envelope, he said: " Struth, what are you, an Air Vice Marshal Commodore? " " No," chipped in a bright spark, " he's got three wives and sixteen kids! "

Well, before getting on to the reports, there remains one item for me to chivvy you up about, although I don't think it requires much from me on this line. This is the S.M.A.E. " Fighter Fund." This fund has been given this title rather than the " Spitfire Fund," as the Committee feel that by the time the authorities receive your donations there may be better types of craft in commission, and, naturally, the aero-modellers would wish their sponsored machine to be the best type in use. Clubs are being circularised by the Committe, and everybody is asked to do their best to make this a real bumper fund. There are any number of ways in which money can be collected, and I should be pleased if any of you with original ideas on this subject would communicate your ideas to me, when they can be passed on to the Editor—who has been elected Organising Secretary to the Fund. A large number of groups are collecting to-day for similar funds, and I am sure you will agree with me that the aero-modellers should be in the van with any such undertaking. So let's hear from you, and may THE AERO-MODELLER office get choked up with postal orders, cheques, coins, old shirt buttons (aluminium ones) or any other articles of value you like to donate!

I have got a very interesting letter this month from a chap stationed on a barge in a river " somewhere in England," holding one end of a string, on the other end of which is a barroon. (For the information of the ignorant, this is a barrage balloon!) This chappie has for some months been a member of a balloon crew, and for want of means of passing the time made solid models which could be used for identification purposes. This interested other members of the crew, and they have now changed over to flying models, their only difficulty being that they have no facilities for flying, being about three-quarters of a mile from the nearest land. (Why not try sailplanes?) As they only get ashore one day a week, and then only one at a time, you will realise that facilities are pretty restricted. However, having read about pole flying, this chap, whose name, by the way, is W. K. Lyth, got struck with a brain-wave. Having a pole of almost unlimited height in the shape of a balloon cable, he fitted a swivel on the wire, then, waiting for a nice calm day, hooked his " Halcyon " (built from AERO-MODELLER plans) to a thread and sent it buzzing round the barge. He went one better than usual pole flying tactics in so arranging the swivel that he could let out more and more thread as the model got flying—which was also very handy for retrieving the model! A photograph of this model in flight will be published in our next issue. Our reader asks if we have any other readers in the balloon barrage.

The GLASGOW M.A.C. propose organising an indoor meeting during the winter, the present provisional date being December 14th. There are classes for microfilm models, divided into three sections—Stick R.O.G.; Stick, hand-launched; Fuselage, R.O.G. Pylon flying will also take place. The hall is about 35 ft. high and 40 ft. wide, and a sliding scale of entrance fees will be arranged. The competition is open to all, and the secretary will be pleased

for any enthusiasts who are interested to get in touch with him.

A number of NORTHERN HEIGHTS M.F.C. members attended the Open Day staged by the HARROW CLUB, and came second in the team and glider contests. Mr. Valley put up a fine flight of 15 min. with his well-constructed "Air Cadet." On August 11th this club were pleased to welcome a team of Air Cadets to their ground to compete for the "Air Cadet" Cup. Unfortunately the weather was very rough, but quite a good show was put up. Three members made flights in the K. and M.A.A. Biplane Cup, their aggregate times being as follow:

A. G. Bell	397·0 sec.
C. R. Clarke	220·5 ,,
F. Knowles	128·5 ,,

The HORNCHURCH M.A.C. is suffering very acutely from the common disease of "members-being-called-up." Nearly all their active members are now in one or other of the Services, but the remainder are still keeping the flag flying. Mr. Molyneaux gave the members an interesting 5½ min. watching his sailplane sail out of sight. Unfortunately it has not yet been recovered.

The Clyde Model Dockyard Trophy was competed for this year at FIFE, EDINBURGH and GLASGOW. The DUNDEE Club unfortunately had to withdraw their entry owing to lack of the necessary numbers to run the event. The weather at FIFE was very changeable: three competitors flew, the winner being W. Murray, of Kirkcaldy, with an average of 125·6 sec. He only made one flight of 377·0 sec., and did not need to fly again. EDINBURGH area, with five competitors, were unfortunate when a very sudden and heavy downpour did a lot of damage before the models could be covered up. I. C. Jack averaged 65·9 sec. to win this area event. After a poor start, weather with the GLASGOW section improved, but out of twenty entries only eleven finished in the competition. R. Burns, of Stewarton, won this area event with 85·5 sec. average. Murray is therefore the winner of the trophy for this year, and a photograph of his winning model is shown elsewhere.

The big "show" for BLACKHEATH MODEL FLYING CLUB this year was their Open Day, held on Epsom Downs, August 11th, 1940. (We must apologise for the error in THE AERO-MODELLER last month, when the notice sent in stated that the date was August 18th).

Nearly twenty clubs were present, and at the height of activity the crowd must have been over two hundred. The meeting opened with the Team Duration Contest under National Cup Rules. Five clubs entered for this competition, and the result was as follows:—

TEAM DURATION. NEAREST 660 SECONDS. R.O.G.

1. Bushey Park	664·25 secs.
2. Bromley	700·15 ,,
3. Blackheath	723·7 ,,

A good result by Bushey, considering the weather, which was cloudy and with a constantly changing wind. Several 'planes found chalk mounds too hard, while another machine suddenly shed its complete nose assembly and then made a fine glide of over a minute!

After lunch a rush was made for the General Duration Competition, and Mr. G. Hinkley deserves praise for the way he checked in the sixty-one entries. He was, in fact, rooted to the one spot nearly all day.

The result of this competition was taken in conjunction with the B.M.F.C. "Secretaries' Cup," the winner being H. Winter, with an aggregate time of 170·3 sec.

GENERAL DURATION. R.O.G.

	AGGREGATE.
1. S. A. Taylor, Bushey	495·3 sec.
2. D. Piggott, T.M.A.C.	476·6 ,,
3. — Gent, Harrow	421·7 ,,

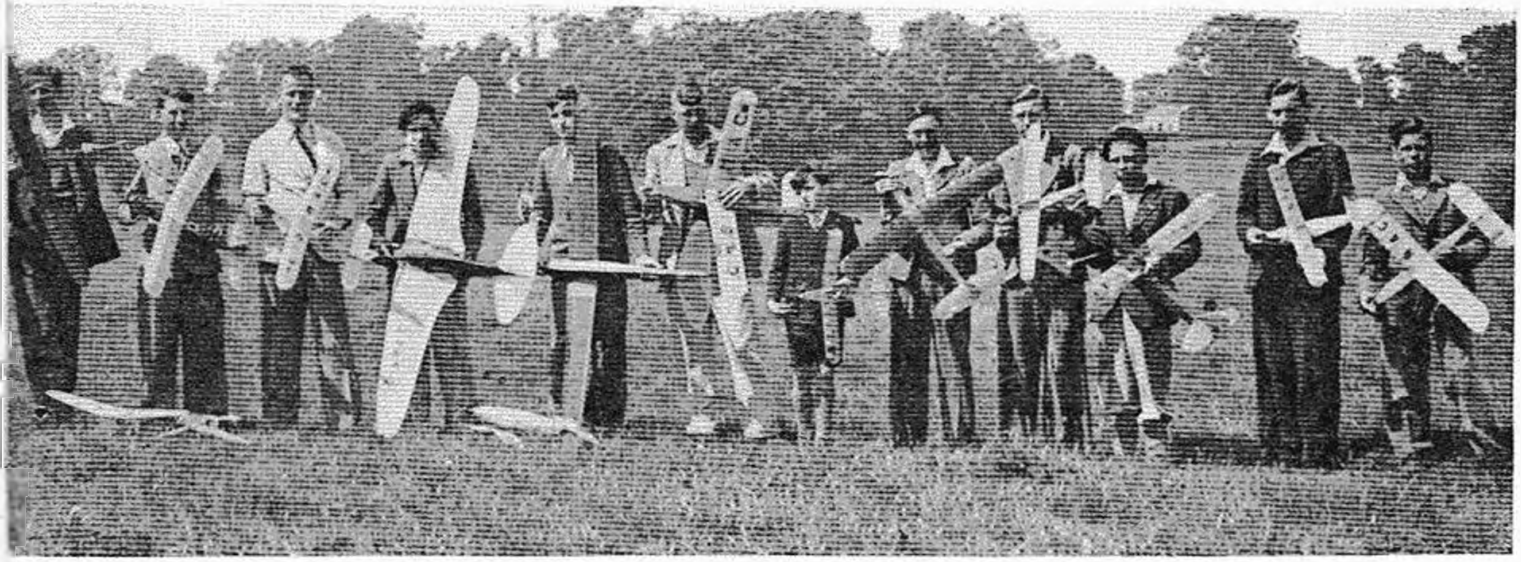
The next contest was for tow-launch gliders, and here again the gusty conditions did not favour high durations. One or two models decided to hold the line too long. Winches were run out, and competitors put "ring to hook." Running was close between the twenty-two entrants, but "Mac" kept the lead, and with his time also won the Club Glider Competition.

GLIDER CONTEST. 150 FT. TOW-LINE.

	AGGREGATE.
1. R. MacKenzie, B.M.F.C. ...	139·0 sec.
2. A. T. Taylor, Bushey	127·6 ,,
3. J. O. Young, Harrow	126·5 ,,

Scale and semi-scale models created great interest among the visitors while judging of the eleven entries was in progress. Points were awarded for originality and neatness of construction, and the 'planes were required to fly for fifteen seconds.

Mr. MacKenzie's model was on the lines of a fighter-bomber with gun blisters, the whole being neatly covered with camouflage paint. Mr. D. Buck deserved his second



place with a fine model resembling a Hampden bomber with one engine. A gun turret under the tail boom, and a very fast climb, completed a realistic machine. Mr. P. Bell flew a D.H. Leopard Moth.

SCALE AND SEMI-SCALE.

1. R. MacKenzie, B.M.F.C. ... 31·33 points.
2. D. Buck, Barnes ... ... 30·58 ..
3. P. J. Bell, B.M.F.C.... ... 28·33 ..

The club would like to thank all visitors for their support and help given on the field, and sincerely trust everyone enjoyed themselves.

Following the very fine weather we had for competitions at the beginning of the season, subsequent Sundays have not been quite so fortunate in this respect. On Gutteridge Trophy Day, the HALIFAX M.A.C. struck the windiest day for weeks, and the only entry to get away was N. Lees, whose machine was lost first flight after 5 min.

B. V. Haisman has pushed the R.O.G. duration record of the WIRRAL M.A.S. up to 9 min. 50 sec., while G. Wolfenden won an open duration competition for junior members with a time of 29·7 seconds—in a howling gale!

Quite a number of records have been broken in the ILKLEY M.A.C., these being as follows :—

Light-weight, H.L., R. H. Crowe 11 min. 45 sec.
Gliding, H.L., K. Anning ... ... 40 ..
Gliding, Tow-line, J. Towsend ... ... 38 ..
Biplane, J. Townsend ... ... 61 ..

An inter-club event staged by the ILKLEY and LEEDS CLUBS was unfortunate from a weather point of view, as a gale was blowing all day. Several strong thermals were in evidence, though the models were carried out of sight too quickly for long-timed flights. The best flight of the day was made by P. Albericci (Leeds) of 3 min. 6 sec. (By the way, did not this lad use to belong to the Lancs M.A.S.?) K. Anning is leading in the club championship event with 33 points to date.

Unfortunately for the NEWCASTLE (STAFFS.) AND DISTRICT M.A.C. the ban on petrol models rather spoilt an event they had arranged. They had drawn up teams for a combined flying and exhibition affair in aid of the Red Cross, and it was unfortunate that the ban came just at this particular time. However, I see no reason why they should not carry on with the exhibition side of things, and perhaps they might be able to do something on these lines for the "S.M.A.E. Fighter Fund."

An expedition by the BUSHEY PARK M.F.C. to the BLACKHEATH day on Epsom Downs was very successful, this club winning both the team event and the duration R.O.G., while one member placed second in the gliding event. S. A. Taylor is still losing his models with unfailing regularity, and taking it all round the performance in this club is progressing steadily.

The READING AND DISTRICT M.A.C. have been very fortunate in finding a really good flying field on part of an old golf course, so their activities have taken on a new lease of life. These chaps are building solid models of allied and enemy 'planes for exhibition in the local Town Hall. The Frost Trophy, for teams of two seniors and one junior, was flown on Sunday, August 18th, the winning team being Messrs. Lawes, Eacott, and Dunn, 276 points.

The WARWICKSHIRE M.A.C.'s competition for the President's Trophy went off very well. N. Wilson again winning it with his three-year-old Wakefield model. F. Harris was second, and Mr. Rose, junr., third. The rules for this event are somewhat unusual, each competitor having three flights on each of three Sundays. The average is then taken of the competitors best flight for each Sunday. This year's winner's average was 112 sec., which is not so bad considering that the competition does not start till 7 p.m. to suit those working a seven-day week.

Mr. Vanner, of the FURNESS M.A.C., had a real day out when the club visited the LANCASTER CLUB at their rally on August 4th, winning the "small duration" event, second in the open event, and first in the Wakefield class.

Another member, Mr. Wheeler, came third in this latter class, and the club are seriously thinking of adopting the motto of the Town Coat-of-Arms, "Semper Sursum" (ever rising)!

After a spot of hectic dashing around the country, the CHEAM M.A.C. had a really hot time in the "Gutteridge Cup" event. T. Elliott, test flying a brand new job, lost it out of sight after close on 10 min., while three other crack-ups left P. Kelsey the sole finisher. Les. Forster was incapacited by a refractory winder that jumped at him and necessitated medical attention! (Yes, Forster, of course!)

The EGHAM AND DISTRICT M.F.C. have been rather unfortunate, as their ground has been liberally excavated in the anti-invasion drive. Incidentally, what did Mr. Hill say when he fell into a trench, smashing the model he was holding? Mr. Burgess won a recent spot landing competition, and at the time of writing the members were busily engaged in preparing biplanes for the biplane event. One interesting machine has a diamond fuselage, the wings being supported top and bottom on wire struts; a one-bladed folding propeller is also incorporated.

Since one member started the stream-line craze, practically all the SWINTON AND DISTRICT M.A.C. have been talking of nothing else, and are all building this type. Mr. Sanderson has created a very good design, which flies for an average of 2½ min., whilst G. Minns is hopeful of beating that figure. These people raise the point of decentralised competitions still being won by the odd thermal flight, and would like to see the four minutes limit (mentioned some time ago) being instituted. I believe it is the Lancs M.A.S. who have instituted this rule for this year's events, and I should be interested to see the results on the full year's working.

When the HITCHIN M.F.C. recently met and beat the Stevenage Club at an inter-club meeting on August 4th, A. E. Lansdell's model made a notable flight of 19 min. O.O.S., its height when last seen being estimated at 2,000 feet. The model has been recovered, but from all available evidence it would appear that the 'plane was in the air for 6¾ hours. Unfortunately, though the evidence is fairly conclusive, but cannot be substantiated.

Results of the HARROW M.A. Gala Day, which was attended by five visiting clubs, are as follow:—

BIPLANE.

1.	S. Pedersen	178·6 sec.
2.	J. O. Young	146·0 ,,
3.	H. Smith	144·0 ,,

GLIDERS AND SAILPLANES.

1.	C. Daniels	187·5 sec.
2.	H. Smith	183·5 ,,
3.	E. Buque	172·0 ,,

INTER-CLUB.

1.	Harrow	793·75 sec.
2.	Northern Heights	724·7 ,,
3.	Edgware	545·0 ,,

LIGHT-WEIGHT DURATION.

1.	L. Brench	740·3 sec.
2.	A. Wilson	350·0 ,,
3.	N. Blacklock	336·0 ,,

P. Brennem, of the Headstone Club, put up the best flight by a junior with 167·7 sec. Best flights during the month in this club have been made by:

L. Gent	18 min.
N. Blacklock	15 min. 40 sec.
J. Keir	15 ,,
J. O. Young	10 min. 9 sec.

The NEWPORT M.A.S. members are building a 6 ft. span Spitfire at their club-rooms, to be used as an advertisement to raise money for the local "Spitfire Fund."

K. Plowman won the monthly Farmer Cup for rubber models in the LEICESTER M.A.C., who report that all future communications should be addressed to the new Secretary, Mr. D. J. Dawson, 247 Birstall Street, Leicester.

In a report of the first annual general meeting of the WESTLAND (ESSEX) M.A.C., I note that the club record has gone up from 62·4 sec. to 13 min. 37·4 sec., and membership, despite various members being called up, continues to rise.

Mr. Glaysher, of the THAMES VALLEY M.F.C., flew away two models during the morning of the "Gutteridge Trophy" competition. One was timed for 5 min. 59 sec., and was recovered from a town nine miles distant, while the other is still missing. During the afternoon Mr. Searle lost his model, after being timed for 10 min. 2 sec. O.O.S., the model being recovered later from Tadworth, a town two miles distant.

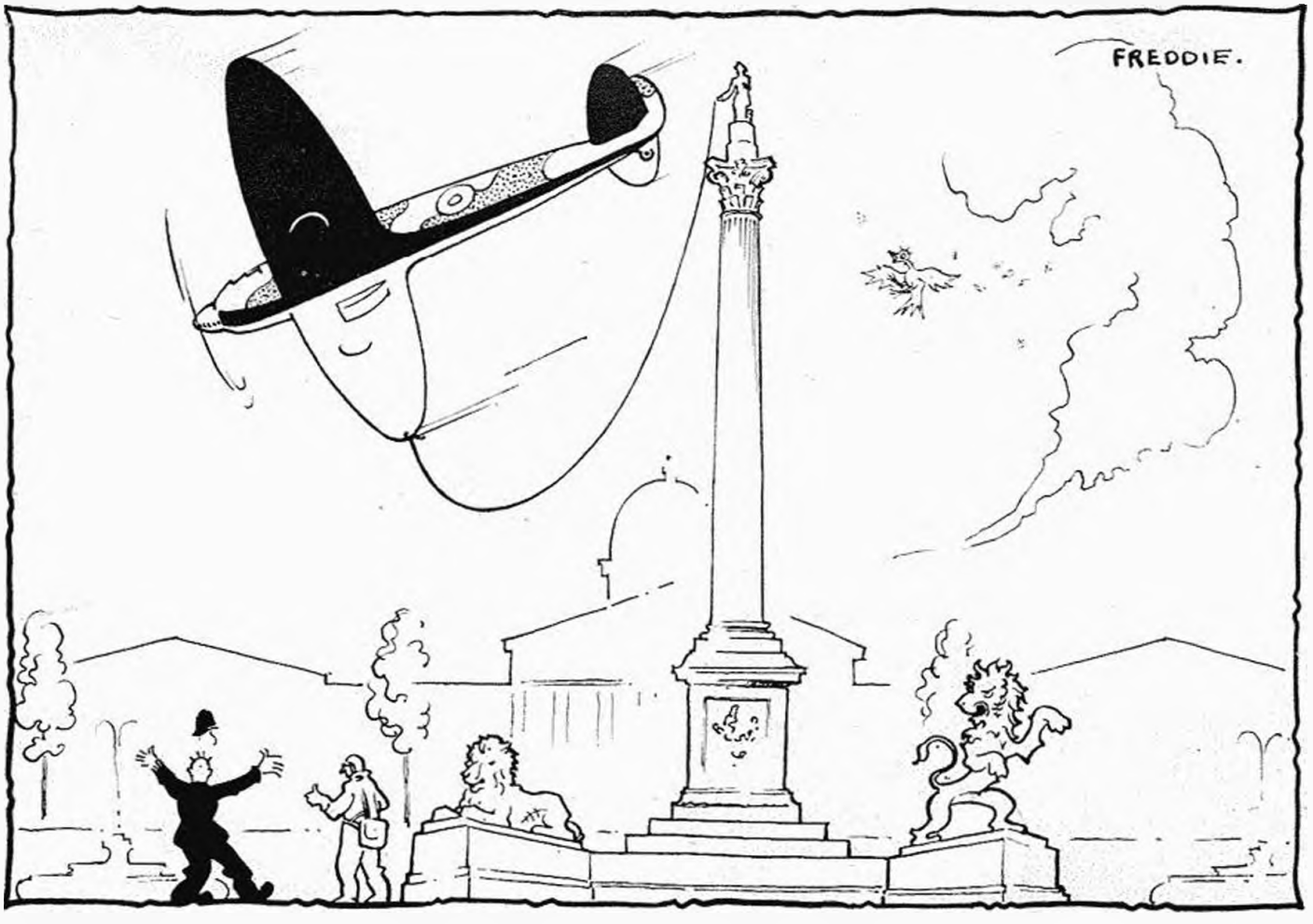
The DULWICH M.A.C. regret to announce the death of their founder, Mr. G. Clements, and I am sure all aero-modellers will join in conveying their sympathy to his widow.

If anybody around the Birmingham District should hear of a 30 in. high-wing monoplane, with diamond type fuselage and folding propeller, which was lost by Mr. F. J. Lofley after a flight of 17 min., he will be obliged if they will get in touch with him. When last seen the model was going in the direction of Alcester, and I am informed that the finder will be rewarded!

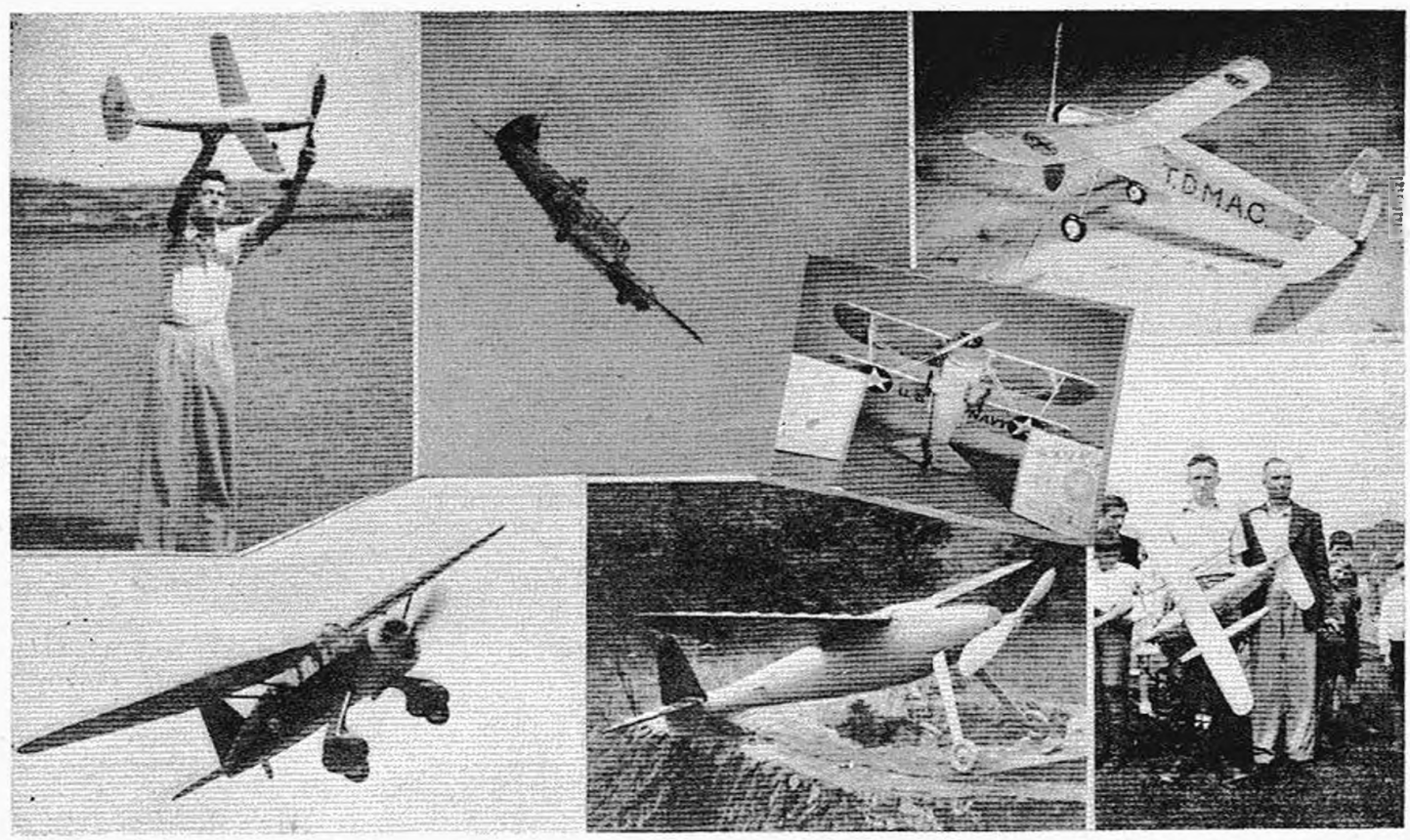
Mr. A. Topham, of the SKYBIRD No. 374 Club, won both the duration and sailplane events in a recent competition with times of 140 seconds and 90 seconds respectively.

During the last month or so many good flights have been recorded in the BEVERLEY AND DISTRICT M.A.C. A 'plane lost on their Gala Day last June has been found 14 miles away—and this on a day when there was almost a complete absence of wind—so you will realise it was up some time to travel that distance. J. H. Elwell has been putting up many high flights, one of his models being recovered from Hull Docks, eight miles away. I am told that one complete goods train passed over the propeller and one wheel of the under-carriage—otherwise the model was not damaged! Mr. A. Edwards has raised the glider record to 4 min. 29 sec., while R. Skinner won a duration event with an aggregate time of 241 sec. R. D. Gray, the runner-up, clocked 239·5 sec., which you will agree is quite close competition. Increased interest has been noticed in flying scale models, the record so far being about 20 sec.

The STOCKTON-ON-TEES M.A.C. extend an invitation to any aero-modeller in the Forces who is stationed in their district to visit their club-room on Tuesday evenings. This should enable them to keep in touch with the hobby and spend a pleasant hour or two chatting about the models they have built and flown. The club-room is situated at 69



"IT'S O.K. OFFICER—I'M JUST TRYING MY R.T.P."



Top (left to right) B. V. Haisman, of the Wirral club, with his model that totalled 565 sec. in the Gutteridge Trophy. A well-posed shot of model "Anson," built by R. H. Weavers, of Edinburgh. Good-looking model by Mr. Cudmore, of the Twickenham and D.M.A.C.
Bottom (left to right) Nice shot of a "Lysander," built by D. Molyneux, average duration 25 sec. All-balsa planked fuselage model, by F. B. Buckley, of Huddersfield. The new holder of the flying boat record, Mr. Sayers, of the North Kent club, with Secretary Wickens, who acted as a timekeeper.
(Centre) How's this for small work? Builder, W. Pettigrew, of Kirkintilloch.

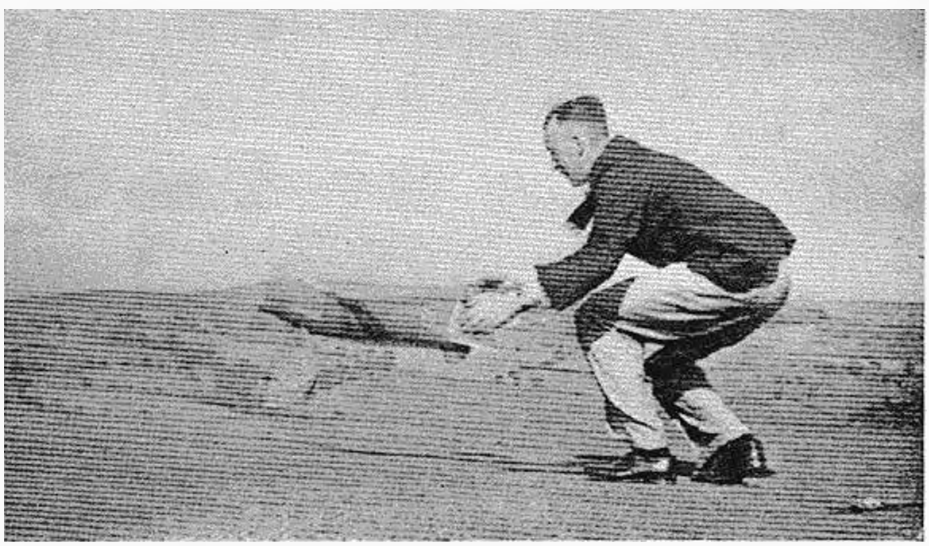
High Street, Stockton-on-Tees. I hope any of our readers in the Forces will avail themselves of this generous offer.

Mr. Farrar, of the CROYDON AND DISTRICT M.A.C., has pushed up the heavy-weight duration record to 4½ min. with a model of his own design, while Mr. Golding made a flight of over 1 min. with a glider, *hand launched*. Mr. Stone won a glider competition with his own designed model (wing span 5 ft. 9 in.), his aggregate time being 234·2 sec.; second was Mr. Putman, with 184·6 sec., and Mr. Golding was third with 134 sec.

The first competition of the TWICKENHAM AND DISTRICT M.A.C. was held at Bushey Park on July 14th under very difficult conditions. A. Palfrey won a weight-lifting event, scoring 89 points; F. Norman and A. Elliott placed second and third respectively. The machines were required to carry from 25 to 50 per cent of their own weight.

Two records have been broken in the SWINDON M.A.C., these being the semi-scale H.L. at 1 min. 57 sec., and duration type, 10 min. O.O.S. A fine photograph, showing a group of these members, appears elsewhere in these columns.

On Sunday, August 4th, the NORTH KENT M.A.S. held their Roberts Trophy event for flying boats. Owing no doubt to the war, the only entry was a local one, Mr. Sayer, who has won the trophy twice previously. Conditions were good when, on his first flight,



H. Calvert, Huddersfield A.M.S., getting his 'plane away in the Gutteridge Trophy contest on Baildon Moor.

SKYLEADA

REGD.

15" WING SPAN— FLYING SCALE — MODELS —

Curtiss Fighter.
Morane Fighter.
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Super Spitfire.
Hurricane.
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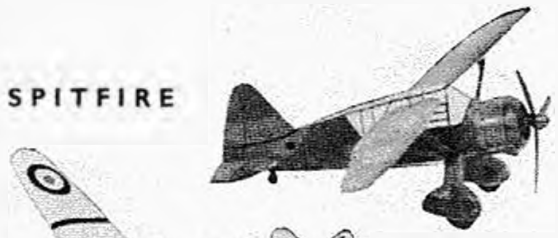
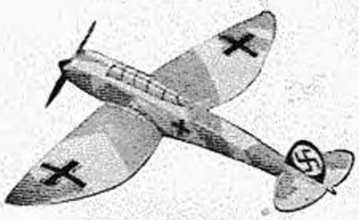


SPITFIRE



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SOLID 1/72" SCALE CONSTRUCTIONAL KITS

Hurricane. Spitfire. Hawker Fury. Westland Lysander. Fairey Battle. Morane Fighter. Heinkel. Messerschmitt. Kits contain balsa fuselage and wings cut to profile shape, moulded propeller, sundry printed parts, cement, wheels, full-size plan, instructions and insignias.

COMPLETE KIT **1/3**

NEW 20" WING SPAN

This model needs no illustration.

DICK KORDA'S SENSATIONAL WAKEFIELD TROPHY WINNER

Officially timed 43 min.

Kit of materials with full-size authentic drawing. Approx. 44-in. span. **8/6**

Plans only. 2s. Set of three printed balsa sheets. 2s. These are included in kit but can be purchased alone. Kit does not include rubber. 24 yds. 3/16 in. at 2s. 2d., or large jar dope, 10½d.

SKYLEADA "STAR" SERIES FLYING SCALE MODELS

Hawker Hurricane
Fairey Battle
Super Spitfire
Heinkel
Messerschmitt 109
Curtiss Fighter
Cabin Duration

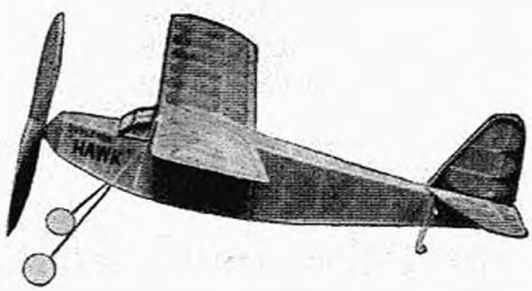
2/6

Complete Kit

Kits contain full-size plan, four printed balsa sheets, ample balsa strip, wheels, scale and flying propellers, cement, prop. shafts, tissue, instructions and insignia, etc.

SKYLEADA GULL-WING SAILPLANE 3 ft. wingspan

A splendid model, with distinct soaring qualities. Wings detachable; also tail-plane. Kit is fully complete with all materials, full-size drawings and instructions, and includes dope. **5/6**



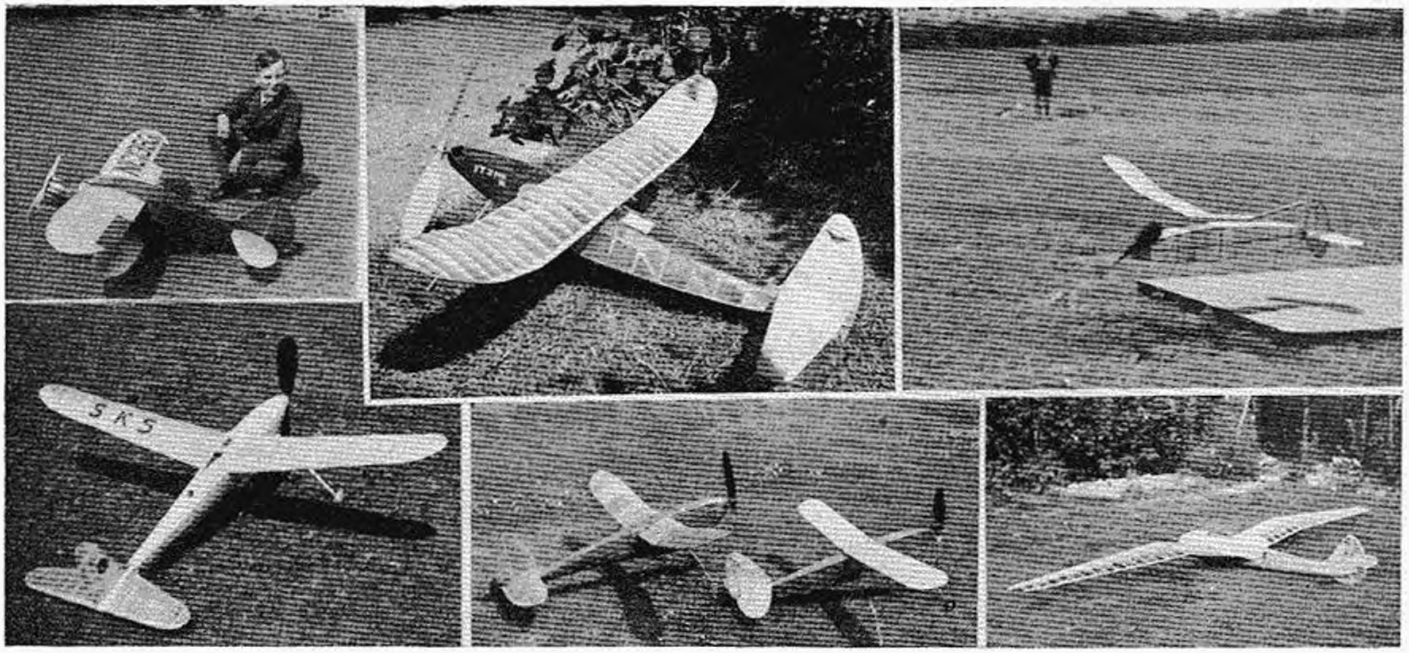
24-in. wing span Skyleader "HAWK" duration model. Designed for flying performance, easy to construct and attractive in appearance. Kit includes ample material, full-size drawing and instructions, as well as hand-finished propeller and dope. **5/-**

Packing and postage extra: 3½d. on 1s. and 1s. 3d. kits. Korda plans, 3d.; Korda kit, 9d.; others 7d.

SKYLEADA MODEL CO.

5 SOUTH END - - CROYDON

Trade enquiries invited.



Top (left to right) Norman Wareham with his 60 in. span Waco "Custom Cabin." A highly successful model, built by R. F. L. Gosling, of the Bradford club, timed for 9 min. 21 sec. in the Weston Cup. Another successful model—owner, Joe Young, of Harrow. Flights of 8, 10 and 15 min. have been obtained.
Bottom (left to right) Wakefield model, constructed by S. W. Spackman, of Grantham. A "Clodhopper" and "Air Cadet," built by K. Rollett, of Leicester. The former recently made a 7-mile flight. A beautifully constructed sailplane of 10 ft. 3 in. span, built by W. Eawte, of Croydon. Pity this cannot now be flown!

he came within ·7 sec. of the record for flying boats, and on the second flight the model crossed the lake and returned to land on the same side as it was launched. This flight, timed for 42·3 sec., has been claimed as a new British record. Of 46½ in. span the model weighs 13½ oz., and is characterised by quick take-off and flat glide.

Mr. W. S. Garratt, 7 York Avenue, Shotton, nr. Chester, will be pleased for anybody in his district to get in touch with him with a view to opening a club.

The above remark applies also to Mr. W. Downey, 28 Calder Street, Liverpool 5.

New clubs to report their activities this month are the following:—

CARLISLE MODEL AERO CLUB.—Secretary, J. G. Sharpes, 28 Scotland Road, Stanwix, Carlisle.

MIDLAND HEIGHTS AERONAUTICAL CLUB.—Secretary, D. H. Kitchen, 18 Wykham Place, Easington, Banbury, Oxon.

THE NORTHUMBRIAN MODEL AIRCRAFT CLUB.—Secretary, Mr. K. Allan, 13 Lavender Gardens, Newcastle-on-Tyne 2.

WITNEY AND DISTRICT M.A.C.—Secretary, Mr. V. C. Brooke, 40 Burford Road, Witney, Oxon.

BARRY M.A.C.—Secretary, Mr. R. Jones, 344 Barry Road, Barry, Glam.

Well, that's all for this month, and please heed what I said at the beginning of this month's chatter, namely, be very careful how you fly your models and, as advised by the S.M.A.E., do not enter into needless discussions with any authorities who ask you to stop flying, but immediately refer the matter to the officials. And finally, don't forget the "Fighter Fund." I'm certain we can make a really good do of this, so get your coats off and get down to raking in the spondulics!

THE CLUBMAN.

Small Traders' Announcements

The charge for these insertions is 5/- each prepaid for a minimum of 30 words, extra words charged at rate of 2d. per word.

BEDFORD.—Good stock of Cloud, Halfax, Veronite and Skyleada kits, balsa wood and all accessories. Joy-plane products, etc. Expert advice.—Goldings, 107 High Street, Bedford.

BERKHAMSTED.—J. W. Wood & Son, 20 Lower King's Road. M.A.T.A. for Flying Scale, Duration and Solid kits by Cloud, Veron, Aeromodel, Keelbild, Penguin, Skybird, etc. Selected balsa, and full range of accessories.

BIRMINGHAM.—Balsa wood, cement, dopes and accessories. Clouderaft, Skyleada, 'Drome and other kits obtainable from Parson's Timber Yards, Bristol Road, Longbridge and Church Road, Northfield, Birmingham.

BLACKPOOL.—The Sports Shop, Palladium Buildings, Waterloo Road. All model supplies. Joy, Studiette, Cloud. 'Drome kits; balsa, cements, dopes; grand flying scale kits at 1s. 6d., including postage. Latest models, solids, durations. Remember "The Sports Shop."

BROMLEY.—H. E. Hills & Son, 481 Bromley Road, Downham, 646 Downham Way, Bromley ('phone HIT 4197). Model aeroplane supplies, dozens of kits, plenty of spares, miles of balsa.

BURY, Lancs.—A. E. Wales, 8 Bell Lane. Flying scale, duration and solid kits by Cloud, 'Drome, Skyleada, Sweeten, Elite, etc. All accessories, balsa, dopes and sundries in stock.

CHISWICK, W.4.—A. A. Baker, 426 High Road. Large stocks of Atlanta, Aeromodels, Cloud, Burd, C.M.A. Keelbild, Tower, Veron, Veronite, Truscale, Scalecraft, Britannia, Skyleada, etc. Splendid selection propellers and all accessories. 'Phone Chi. 3816.

CHISWICK, W.4.—G. W. Jones, Bros. & Co., 56 Turnham Green Terrace (Chiswick 0858). Stock balsa wood and cut special sizes as required. Agents for Club, Cloud, Aeromodels, Atlanta, Skyleada and Scalecraft kits. Caton's rubber. Joy-plane products. Large stock of propellers and all accessories.

DUMFRIES.—Campbell's, 46 High Street. Penny stamp brings our price list. Balsa, stripwood, dopes, kits, all sundries. Skybirds, Skyryda, Aeromodels, Studiette, Tower, Comet: hand-painted tarmac paper, 9d. per sheet, post free.

EDINBURGH.—"Calling all aero-modellers." Whatever your requirements Frank Royle, 54 South Clerk Street is at your service. Fullest range of kits, balsa wood, petrol engines, accessories.

EDINBURGH.—Everything for the aero-modeller. All the leading models stocked. Joy-plane cements, dopes, Japanese tissue, ball races, etc.—Wade & Co., 40 Chambers Street.

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

HERNE HILL, S.E.24.—T. W. Standivan, 1 Milkwood Road. 'Phone BRI. 3741. For all model aeroplane supplies—Cloud, Keilcraft, Skyleada, Keelbild, Studiette, Veronite. All accessories. Postage 6d. extra. Open Sunday morning. Satisfaction guaranteed.

IPSWICH, Suffolk.—A. J. Sneezum & Sons, 31-35 Norwich Road. 'Phone 2779. For model aircraft supplies, aeromodel, Atlanta, Cloud, Elite, Frog, Skyleada, Studiette, Tower, Veronite, Penguin, Scalecraft, Skybird, Truscale kits. Caton's rubber. Joy-plane productions, etc.

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

NORWICH and District modellers send to Williments for aero accessories. Popular kits in stock. Tower, 'Drome, Veron, Cloud, Skyleada; also solids, paints, dopes, etc. —39 St. Benedicts. 'Phone 3225 Norwich.

NOTTINGHAM.—Still going strong at 21 Arkwright Street, just below Midland Station, and 87 Wilford Road, close to Imperial Cinema. Choose your own wood, kit accessories. Ample stocks at keenest prices. Advice free.

OXFORD.—Hopkins Stores, Hollow Way, Cowley. Comprehensive stocks balsa and all accessories. Kits by Cloud, Skyleada, Keilcraft, 'Drome, Scalecraft, etc. Solids, scales, durations, Joy-plane products, Le Pages, Caton's rubber.

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STOCKPORT'S Aeromodel Shop.—All materials and accessories in stock. Large range of kits—Frog, Cloud, Studiette, Keilcraft, 'Drome, Tower, Chingford, etc.—51 Wellington Road South.

TWICKENHAM'S leading model aircraft store. Large selection of kits, balsa, dopes, etc. Stockists of Cloud, Keilcraft, Halfax, Truscale, Frog, Scalecraft, Skyleada, Joy, O'My and Slick products.—Beazley's, 138-140 Heath Road.

TRURO.—John Langdon, St. Mary's Street ('phone 2207). Stockists of model aero supplies. Kits from 9d. to 70s. Cloud, Sweeten, Joy-plane and 'Drome products. Balsa wood and all accessories.

WARRINGTON.—Burton's Model Aero, 55 Bewsey Street. 'Drome, Cloud, Keelbild, Truscale, Scalecraft, Studiette, Penguin, Aeromodels kits. 'Drome accessories. Joy-plane dopes.

WILLESDEN'S leading aero-model suppliers.—Wood's Sports Ltd., 98 Chamberlayne Road, Kensal Rise, N.W.10. Comprehensive stocks of all kits, materials and prints. Write for free catalogue. 'Phone Ladbroke 1414. Buses Nos. 6, 46, 52, 70 stop at door.

WOLVERHAMPTON.—Regent Cycle Stores for latest duration, flying scale and solids by leading makers. All Frog spares in stock. Balsa, cements, tissue rubber. Expert advice given. Cleveland Street, Wolverhampton.

WOLVERHAMPTON.—The aero-modeller's rendezvous: Start & Sons, 61 Victoria Street. Kits by all popular makers. Selected balsa, spruce, cements, dopes, etc., and a complete range of materials and accessories.

WORCESTER.—A. N. Cutler, Bridge Street. For balsa, dopes, tissues, elastic, propellers, cements, etc.; in fact, all accessories for the aero-modeller. Stockist of 'Drome, Studiette, Skyleada, Scalecraft, etc. 'Phone Worcester 4137.

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ADVERTISEMENTS.—THE AERO-MODELLER is recognised as the official journal of the Model Aircraft Trade Association, and reports are published from time to time for the benefit of the members. The policy of the journal is to support the M.A.T.A. in every possible way.

All instructions, matter and blocks for all kinds of advertisements must reach **Allen House, Newarke Street, Leicester,** not later than the 3rd of the month, otherwise we cannot guarantee to provide proofs in time for checking. Passed proofs should be sent direct to our printers, **The Sidney Press, Sidney Road, Bedford,** to arrive not later than the 6th of the month. We reserve the right to hold over until the following issue, if necessary, advertisements or passed proofs thereof received at our printers later than the 6th of the month.

Copy must be supplied without application from the publishers, and current copy and blocks will be repeated if new copy is not received at the time of closing for Press. Advertisement copy is subject to the approval of the publishers. All advertisements and contracts are accepted and made upon the express condition that the publishers have the absolute right to refuse to insert copy to which they may object for legal, public, or trade reasons, which includes the right of rejection of advertisements, whole or part, containing cut prices of goods coming under any price maintenance scheme as approved by the Model Aircraft Trade Association, and such refusal shall not be good ground for advertisers to stop a current contract or to refuse to pay for the same, or for taking action for breach of contract.

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