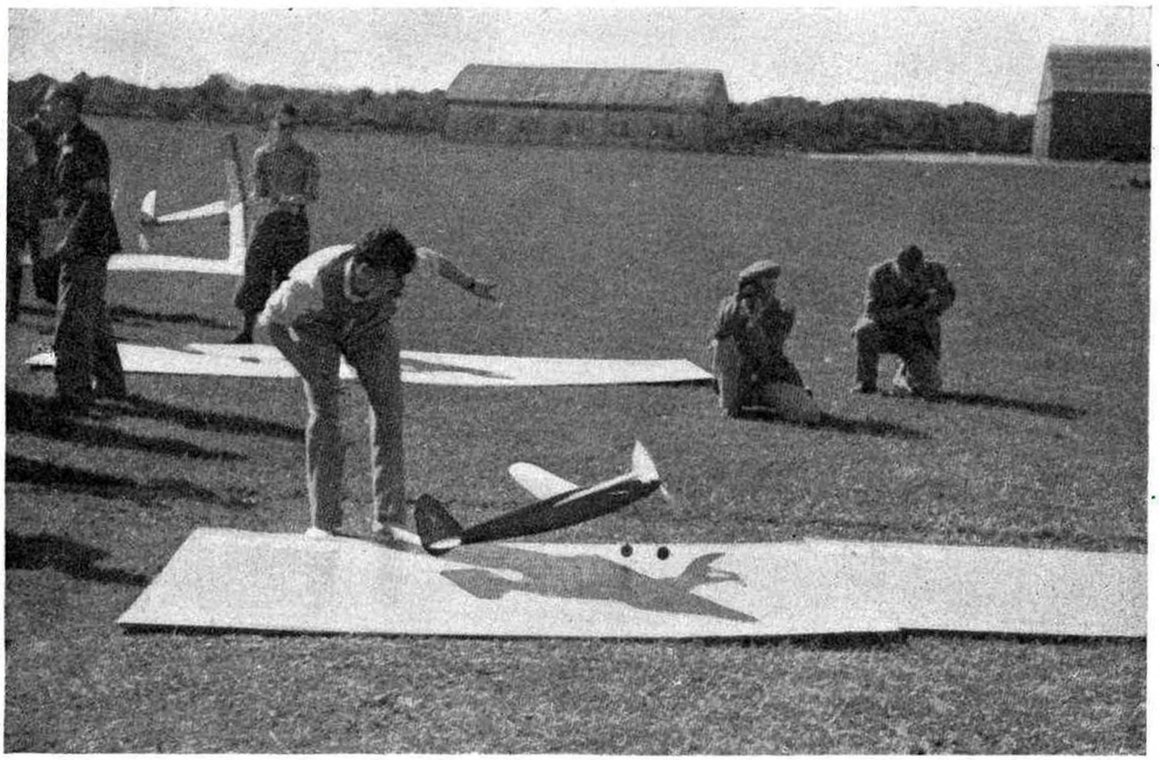
AERO MODELLER

JULY - - 1939
Vol. IV No. 44

FULL REPORT OF WAKEFIELD AND KING PETER CUP ELIMINATING TRIALS



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VOL. IV. No. 44. JULY, 1939

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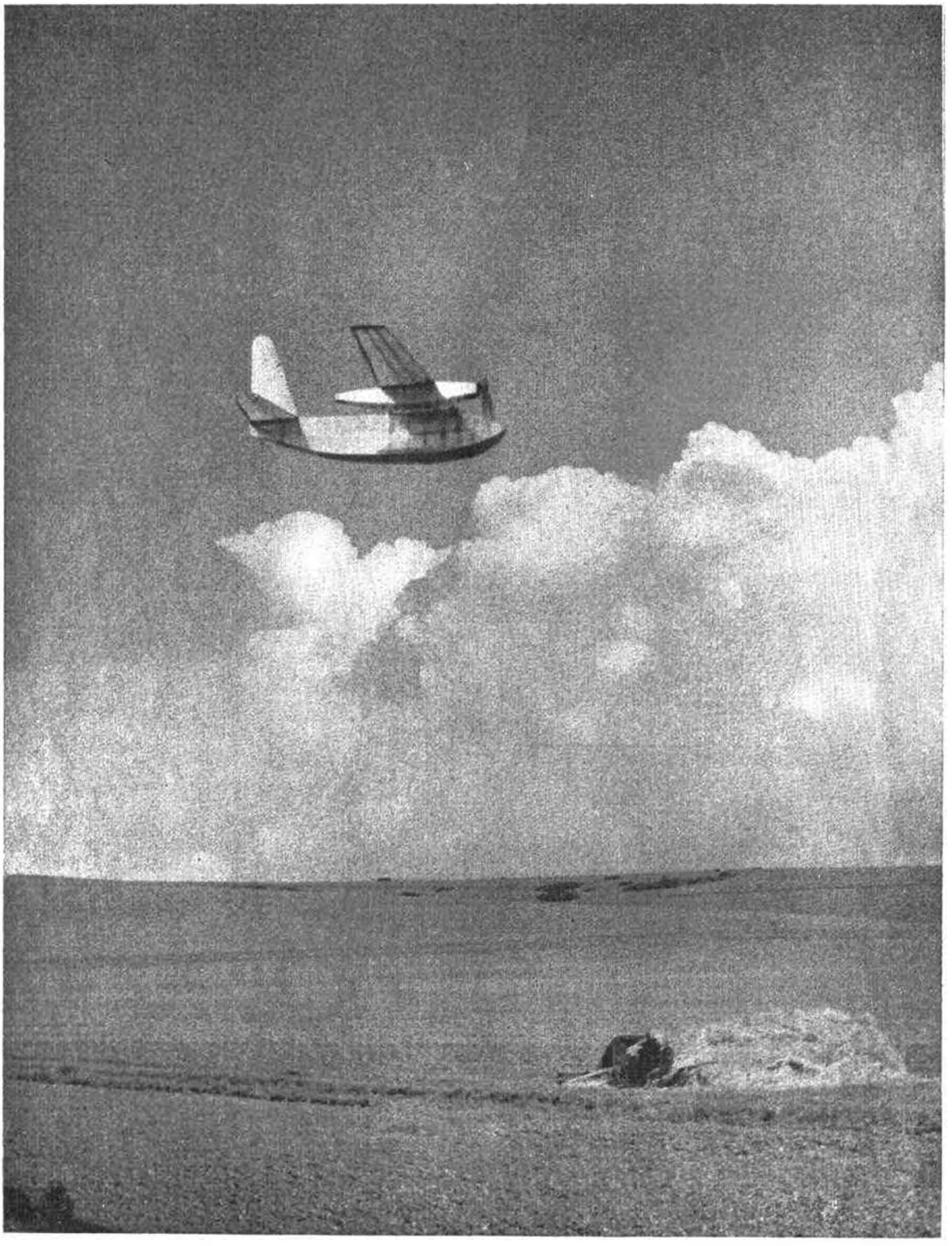

Photo by Capt. J. Blunt.

Mr. H. E. White's well-known flying boat.

Our front cover photograph shows Bob Copland launching his model at Fairey's Aerodrome at the Wakefield Eliminating Trials. Bob, of course, secured a place in the team. This excellent action photo was taken by Mr. I. C. Lucas.

JULY - 1939
Vol. IV. - No. 44

Tel. Leicester 65322

The AERO MODELLER

INCORPORATING THE "MODEL AEROPLANE CONSTRUCTOR"

EDITORIAL

E are pleased to be able to announce that Viscount Wakefield of Hythe has donated to the S.M.A.E. the sum of two hundred and fifty pounds to help defray the expenses of running the King Peter Cup competitions. Once again the "Fairy Godfather" of all aero-modellists shows, in his customary practical manner, his great interest in our sport, and we feel sure we are voicing the thoughts of all our readers when we say that aero-modelling in Great Britain, if not the world, owes more to Viscount Wakefield than to any other person.

* * * * * *

In a matter of offering congratulations in events such as the Wakefield and King Peter Cup Eliminating Trials, we feel that it would be invidious to discriminate. Obviously those who win places in the teams deserve them, and deserve the appropriate congratulations. On the other hand many other aero-modellists "all-butted," who but for one or other minor mischances, might equally well have arrived in the first six places. There are also the hard-working organisers, who made the running of these competitions possible, to whom not only congratulations, but the sincere thanks of all competitors are due. Admitted there was some delay in starting the King Peter Cup Trials on Whit Monday, but nevertheless the competition was completed in a reasonable time, and in view of the magnitude of both these competitions, we feel that we should congratulate everybody concerned.

In regard to further observations on these competitions —since Clubman was present, and has fully reported both events in this issue—we confine ourselves to one or two remarks which we feel it our duty to make, and which we trust will be taken in the right spirit.

Firstly, there is the problem of onlookers crowding competition pens and crowds on the course. A more unwelcome job could not have fallen to Mr. J. C. Smith, Hon. Competition Secretary, in endeavouring to deal with these people. Time, and time, and time again did he beseech, pray, cajole, and even have to threaten these people to get back in their proper places. This should not be—and must not happen again—or we may get big competitions such as these so disorganised that they have to be abandoned. Surely it will be agreed on all sides that a competitor who has spent months of time, what may be quite an amount of money to him, and a week-end in travelling a long distance, is entitled to a fair opportunity of taking off his model?

Yet, on a number of occasions, we saw models take off, turn with the wind, and crash into bystanders who had no right at all to be where they were. Far better views of many of these flights can be obtained from the distance, and we do earnestly appeal to those aero-modellers who are going to attend big meetings throughout this season, to get back in their proper positions except when actually taking part in a competition. We feel that it is time that a more effective control was arranged at large meetings of this type. The funds of the S.M.A.E., or even of the big clubs, are well able to bear the cost of two or three police officials, and personally we are of the opinion that the psychological effect of "the man in blue" will be sufficient to keep unruly and unsportsmanlike onlookers in check.

The second point we feel bound to deal with is the flying of petrol 'planes at meetings of rubber-driven models, such as the two events referred to above. A certain person thought fit to take out a petrol 'plane actually before the competitions had finished. Despite appeals broadcast by Mr. Smith, this person flew his 'plane. We did not know who he was, and he did not respond to an appeal to come forward, but trusting that he reads these words we would point out to him that Fairey's Aerodrome is private, and the property of The Fairey Aircraft Co. Ltd., and it is only through the great kindness of C. R. Fairey, Esq., M.B.E., F.R.Ae.S., that the S.M.A.E. is enabled to hold meetings at this Aerodrome. That being so, the S.M.A.E. officials are solely and fully in charge of all flying and other activities that take place on this Aerodrome. Therefore, any person who does anything without the permission of the S.M.A.E. officials in charge, is definitely committing a trespass. In our last issue we published an article by Mr. C. A. Rippon, which dealt fully with the history of Fairey's Aerodrome, and we do earnestly appeal to all aero-modellers who make use of this and of any other private aerodromes, to realise that to do anything

Miss W. Mason, John Klee, and Mr. A. A. Anderson (who last year for a period reported meetings) of "The Aero-Modeller" staff.

other than is allowed by the officials organising the meeting, is to commit an offence both against the common law of this country, and is an abuse of the generosity of the proprietor of the aerodrome in question.

* * * * * *

Our list of clubs published in the June issue has rather put "the cat among the pigeons." One earnest reader presented us with a marked copy indicating 37 mistakes! Well, we accept responsibility for two or three of them. For instance, the mention of the Croydon Club three times—twice in the non-affiliated and once in the affiliated lists! And as no member of our staff has been able to think up any sort of excuse that we thought we could get away with, we can but offer our sincere apologies to the members of that club.

However, many of these 37 inaccuracies are in no way our responsibility. In past issues we stated on more than one occasion that we were going to prepare this list. We asked, and Clubman asked, too, for club secretaries to send us a postcard or a notice with their reports, stating the latest particulars of their clubs. Quite a number did, and a number didn't! And we could but therefore print the latest names on our lists. In some cases it now appears that clubs are defunct—not our responsibility—maybe the secretary "defuncted" too, and was unable to send us a P.C. saying so! However, Clubman is going to make a special effort to go through the various lists and amendments recently received, and, in his *next* report, give a list of corrections, which we trust will clear up the position.

* * * * * *

Whilst talking of clubs we would like to refer again to the question of Club Reports. A number still continue to come in late. Where possible we endeavour to get a note in, but we do wish it to be understood that the larger the Club Movement becomes the more important it is that we should have reports in by the 25th of the month. Sometimes we get one as late as the 3rd, or even the 5th, of the month following, and then later we get an irate letter from a member of this club—or, worse still, we meet him on the flying field! Two years ago THE AERO-MODELLER consisted of thirty-two pages—now it runs to sixty-four pages and its circulation is getting on to four times what it was when the journal was taken over by the present proprietors. Our printers thus have eight times as much work to do, and consequently printing has to start earlier than was the case in our early days of ownership. Compared with the number of club reports we used to receive, they must have increased at least tenfold, and they go on increasing despite a few "dying." We are very pleased to see this increase in the number of clubs throughout the country, and we are proud to know that in many cases the formation has been due to the increasing popularity of THE AERO-MODELLER. We support the clubs by devoting considerable space to their activities, and we attend in person and report as many of their activities as possible. On the whole, club secretaries *do* get their reports in to time, but we ask the stragglers to make a special effort from now onwards, and to get their reports in by the 25th—and if members find no mention of their club in any issue will you please *first* ask the secretary on what date he sent in his report?

Talking on our method of dealing with Club Reports reminds us of an interesting letter received from the members of the Harrow Club, which we publish in this issue. With the main body of this letter we fully agree. Aero-modelling *is* a scientific hobby, and one which should be taken seriously, but surely we can have a bit of fun as well? And surely, also, it must be obvious that if any journal is to be a success it must satisfy the vast majority of readers? Since Clubman joined our staff and edited all the Club Reports we have had no end of complimentary letters and remarks passed about this feature—both from club members and non-club members. Now—from the whole of the Harrow Club—we get a real "kick in the pants"! Their letter was addressed to Clubman via ourselves, and normally Clubman's reply would have been sent direct to the Harrow Club. But at Fairey's Aerodrome at the Wakefield and King Peter Eliminating Trials both Clubman and ourselves were told by a number of people of the existence of this letter and the fact that it had been sent. In other words, the matter has been made public, and we feel, therefore, that Clubman is entitled to have his reply given equal publicity. We therefore publish both the letters in full on page 490. We are sorry the members of the Harrow Club do not like Clubman's method of dealing with reports, but in view of his otherwise universal popularity we regret we cannot see our way to sack him! We think it as well that we should point out to all club members, and naturally to the members of the Harrow Club in particular, that for every club reader of THE AERO-MODELLER there are at least three readers who do not belong to clubs. For them the old method of publishing reports was of little or no interest. To many of them now we know for a fact it is the first item to which they turn. Many of them who live in outlandish regions, or for other reasons are unable to join clubs, write to us and say how much they appreciate the breezy and newsy way in which Clubman deals with the reports. Last of all, we might point out that Clubman is no ghost. It cost us very little

to publish reports in the old way. The new method involved the addition to our staff of an experienced and well-known aero-modellist who is *au fait* with the model movement throughout the country, and who spends a considerable amount of time travelling from meeting to meeting.

Mention of our staff reminds us to publish a photo here of some of our members taken at a recent meeting at Fairey's.

* * * * * *

In our last issue we published a letter from Mr. R. L. Rogers, under the heading of " Speed Machines." In this issue we are publishing a letter from Mr. Brown in reply. In our next issue we shall publish an article from America on " The Design of a Speed Machine," together with plans by the author of this article, Mr. T. F. Petersen—which he claims has exceeded a speed of 75 m.p.h. Mr. Petersen says that on three occasions his model has clocked the time of 1·6 seconds for a 220 ft. course, which gives a calculated speed of 93·4 m.p.h. ! He further goes on to say that he does not guarantee the accuracy of the timing because of the shortness of the trial course (We have no doubt that a number of our readers will also question this speed !) However, Mr. Petersen does claim that " on every occasion the model has equalled or bettered 75 m.p.h."

Well, there it is. Our object in running this journal is to present all sides of aero-modelling without fear or favour, and since " speed models are in the news," we keep pace with the times and supply the appropriate material for our readers to read, mark, learn, and inwardly digest. No doubt some of our readers, and perhaps Messrs. Rogers and Brown, will build this model, and will, in due course, let us know the results so that we can pass them on to our readers.

* * * * * *

On page 503 we publish a photo of a 41 in. wing span high-wing cabin type monoplane, full size plans of which, together with building instructions, we shall present with our next issue. That is special attraction No. 1. Special attraction No. 2 will be the publishing of the full list of prizes and conditions in our Photographic Competition. There will be no entrance fee, but coupons from current issues published whilst the competition is running must be collected and affixed to the entry forms. The first coupon is published on page 491 of *this* issue. Special attraction No. 3 will be the introduction of an additional class of membership of the N.G.A. to enable those readers who do not take THE AERO-MODELLER every month to avail themselves of our Third Party Insurance.

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Therefore, it is imperative that orders for our August issue are placed in advance, otherwise we may not print enough for everybody !

* * * * * *

As we close this Editorial we are able to announce the results (subject to confirmation from the S.M.A.E.), of the " Flight " Cup Competition, which took place at Cranwell on Sunday, June 11th. First, Mr. Coxhall (Hayes Club), 116 points; second, Mr. Hayes (Surrey Club), 112 joints; and third, Mr. Reason (Leeds Club), 106 points.

THE EDITOR.

THE WAKEFIELD AND KING PETER CUP

Held at Fairey's Aerodrome on Sunday May 28th and Monday, May 29th, 1939

BEHIND the story of this year's Trials meetings lies another tale of weeks of preparation, hard work by a small band of hard-pressed workers, and many sleepless nights spent wondering if everything would turn out right—and would the weather be so kind as to let the programme go through as arranged!

Well, the latter part of the wish was fulfilled up to a point, but wind once again played its dastardly part, keeping up the tradition it has established this season. On both days the breeze was far too boisterous for comfort, but Monday was far better in this respect than the day set aside for the Wakefield Trials—many fine machines being completely written off through sudden gusts.

Let us take the meetings one by one, starting with the Wakefield Trials—and, in most contestants' eyes, the more important of the two events.

A record entry of 427 competitors had been received by the S.M.A.E. Competition Secretary, Mr. J. C. Smith, who was kept fully occupied during the whole of Whit-Sunday and Monday giving directions over the loud-speaking equipment and answering innumerable questions. This number is exclusive of the late entries, which were rightly returned to the senders. This is a point that always tickles me, as, goodness knows, there has been enough publicity given these meetings, yet there is always that odd section (I might almost call them the irresponsible section!) who still think the whole organisation can be set at a standstill while they consider making up their minds whether to enter or not. It's high time that these people were made to realise that this meeting is important, and not to be treated in the same manner as an ordinary club event.

(In connection with this, also, I would suggest that now is the time to tighten up the regulations necessary for entry into the competition. Too many individuals continue to treat the Wakefield as "just another comp.," and I am certain that many entries are made in a half-hearted manner, trusting to luck on the day. I might almost call these entries "frivolous," though that hardly seems the correct term. Anyway, I for one advocate a stricter consideration of entries in future.)

Actually only 314 competitors made actual flights on the day—which might give point to my remarks above!—and whilst some of the non-appearances may be accounted for by crashes, etc., I am sure that some entries were forwarded for machines that are not completed even yet—a sorry state of affairs.

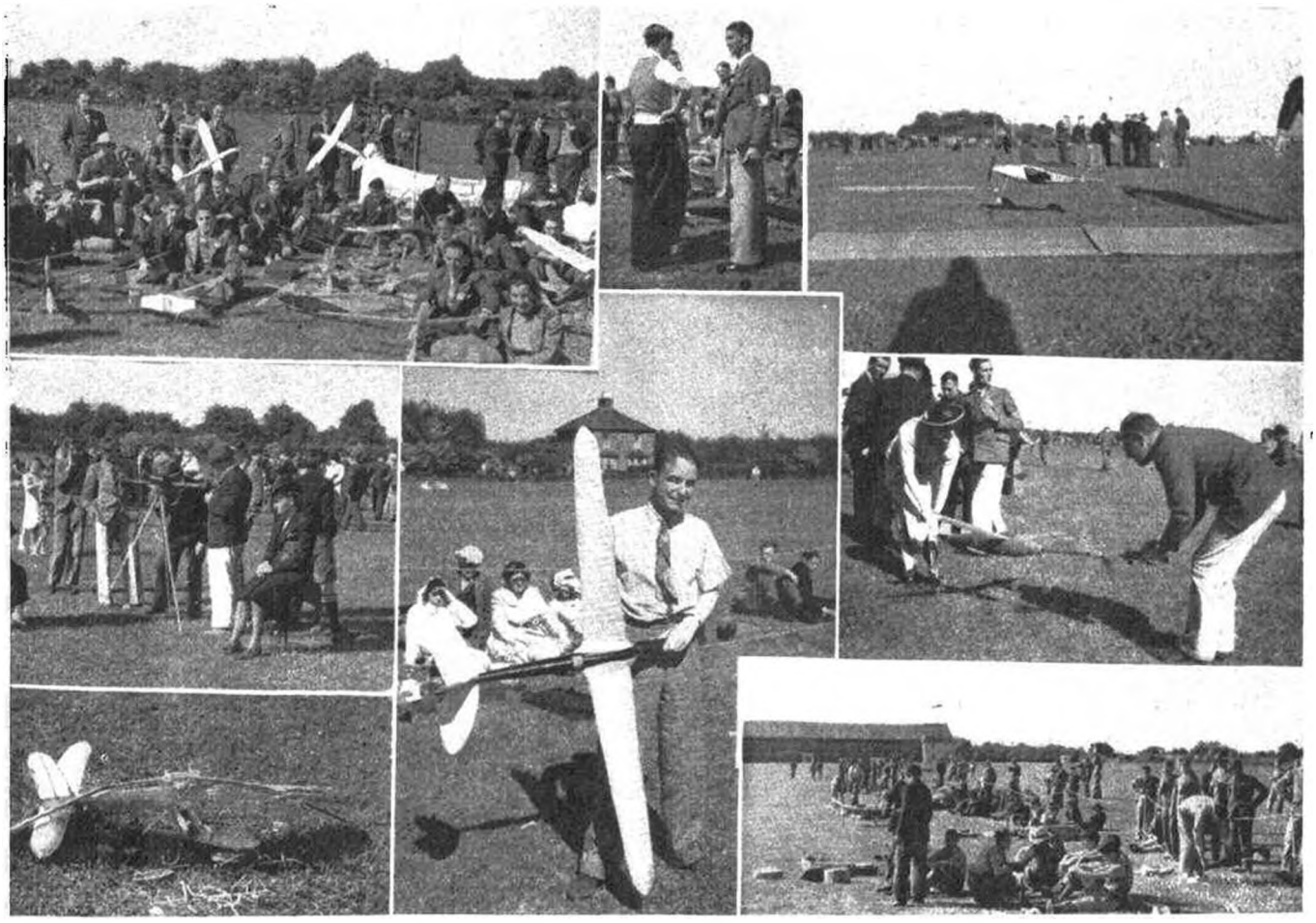
After a great deal of activity early in the day, during which enclosures were staked out, marquee rigged, and the public address system, under the charge of Mr. H. York, fully set up and tested, the meeting got started with the weighing of models. Almost as soon as the call had gone forth forth there was a terrific queue lined up in front of the tent, armed with a most wonderful array and assortment of model aircraft.

It was here that one or two came up against a snag—and it is purely their own fault. Weighing was carried out on a set of extremely accurate scales (kindly loaned by Messrs. Avery, of scale fame), and several were found underweight. Whilst agreeing that the deficiency was slight in all cases, and in a way sympathising with the

Our photos here show from top left to bottom right—Mr. Hawkins and assistants (not forgetting Avery's scales) in the marquee. Dr. Thurston speaks at the microphone, whilst "Daddy" Burchell "listens in"! Len Stott is congratulated by the Doctor. Two of the hardest worked "officials," Mrs. Kiel, and Mrs. F. York. In bottom centre we have Messrs. Rippon and Cosh, with Dr. and Mrs. Thurston, and last, but not least, some fairies at Fairey's!

ELIMINATING TRIALS——

By THE CLUBMAN



Here we have a general view of one of the competitors' enclosures; in centre Mr. D. A. Gordon; and on right photo of a competitor's model making a good take-off. Following is a photo of Dr. Thurston at his range-finder; in centre a good-looking glider (and owner!) Mr. Hill, of Northern Heights club; and on right a wife helps her hubby. Caption for bottom left photo supplied by "Clubman" (all rights reserved!) "Gone with the wind--or who's got a tube of cement?"

unfortunate entrants, I feel that the officials were perfectly in order in disqualifying these machines. The rules and requirements are well known, and the onus rests with the contestant to see that his model complies in every detail with the regulations.

Timekeepers, under the direction of Mr. Cosh, were assembled in a separte enclosure and fully instructed in their duties, after which the flying got under way. After the inevitable slight muddle at the start, everything soon got going smoothly, and flights were made in rapid succession. Here was clearly evident the greatly improved methods of organisation over previous years. Based largely on the procedure seen at Guyencourt last August, but with various modifications and improvements, the system had much to recommend it, especially where each competitor received a duplicate of his score sheet (a different colour was used for each of the three flights), thereby eliminating the everlasting requests for "What did I do on my last flight?"

One criticism only would I make, and this can perhaps be remedied on a future occasion. There were far too many people roaming about the enclosures and take-off boards, and I would suggest that a policing squad be appointed to keep this in check. The place for spectators is *behind* the enclosures, and, from experience, it is no good trying to talk to the delinquents nicely over the microphone—they don't take a blind bit of notice. (What about borrowing some of North Kent's "bobbies"? I saw one lady get very indignant when politely asked to take her perambulator out of the competitors' enclosure!)

Anyway, to get to the flying itself. There were far too many fine machines, and too many new ideas, etc., for me to single out any particular jobs to talk about. Three which did strike me are reproduced here. Howard Boys's tailless job, Towner's all-balsa covered machine, and a curious "paddle winged" job by a Mr. Ashley; but the number was so great, and the quality and originality so good, that is impossible to mention them all.

A cold, dismal-looking early morning had given place to a hot sun, but no decrease in the strength of the wind, and machines were getting crashed right and left. Many jobs were smashed during winding processes, and it

seemed to me that many entrants spoilt their chances by trying to overdo things. Rubber will only stand so much, you know, and I'm afraid many gadgets did not stand up to the racket they were subjected to!

One or two "get-aways" cropped up in the first round, and many were the hearts-in-mouth, wondering whether the models would be returned O.K. for the remainder of the competition. Almond, the eventual winner, travelled some miles to retrieve his machine, found on returning that he had lost the prop., went back, and found the missing item behind some barrels!

With contestants sitting impatiently in their "pens" waiting for the next round (I'm afraid many of them are not used to big affairs, and forgot that with an entry of such dimensions it takes some time to complete even one round). A number got out the feed-bags and proceeded to fortify themselves against the afternoon's running.

You will realise that, without the complete list of times, it is not possible for me to go into a great deal of detail, but it will be evident from the small list I append that the second round produced the better times all round. With two exceptions, the final team made their best flights on the second time out, and I think that applies generally to the whole entry. The reason for this I think is that the chaps had got the hang of things a bit better by now.

With a large number eliminated on the first round through one cause or another, the second round went through smarter. Once again many machines were lost, and one gentleman was kept very busy answering a buzzer sounded from the hangar, indicating a telephone call in connection with the finding of a model somewhere in the wilds of Surrey. I understand one fellow went out in a car and returned with no less than five lost jobs!

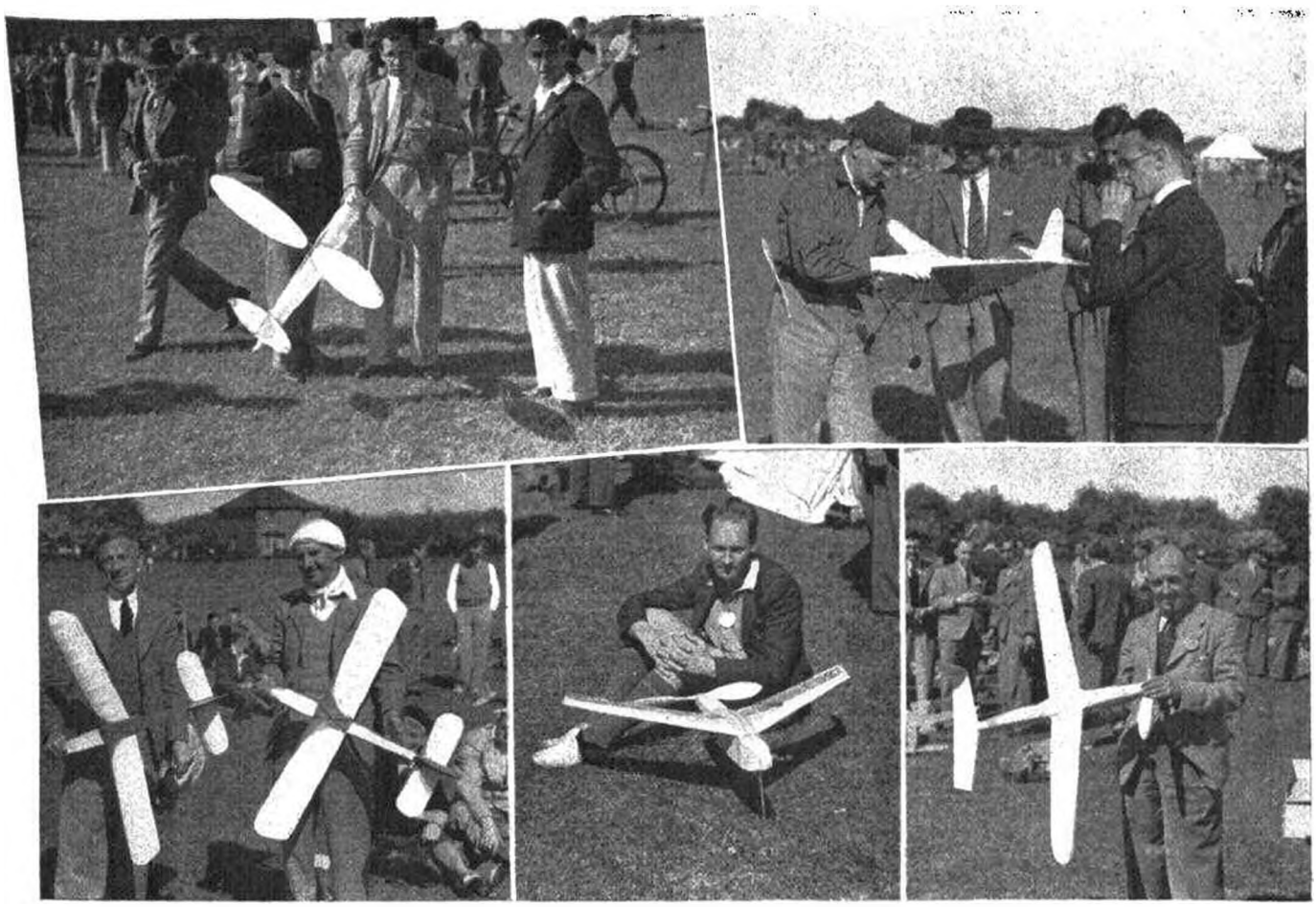
Hastily conducted repairs were being made all over the place, but some models were just a bit too far gone for anything but a complete rebuilding.

A. G. Bell, of the Northern Heights Club, had the worst of bad luck on the second round. Losing his model after a flight of some minutes, his bus was not heard of again—and all he wanted was a 30-second flight to put him in the team! What can we do to cut out this lost model business? It's always so darn unsatisfactory to be unable to complete an event. Hill, of Bournemouth, was in the same fix, but luckily his previous times just placed him in the first six.

More eliminated machines speeded up the running of the third round, and it was evident that soon after 7 p.m. would see the finish. This was excellent, and says much for the improved method of conducting the meeting. Many of the old "regulars" had been eliminated, and it was evident that we should see a number of new faces in the team this year. One well-known northerner was complimented on the way he grinned and "took it" when his fuselage was telescoped by the rubber letting go—a direct contrast to some I noticed, whom I thought could take a whacking with better spirit!

Nearly at the last flight. Excitement runs high, and many speculations are being made as to who is in the lucky top six. One or two are foregone conclusions by now, but the lower places are very much in doubt. Ah, here we are, that's the last flight, and a concerted rush is made to the tent to discover the final results.

During all this time Mr. L. J. (Goldilocks) Hawkins had been working extremely hard and efficiently, with a small band of enthusiastic helpers, tabulating the results as they were handed in to him, and it was not long before



Top left, Mr. Ashley with his model of unusual wing design. Top right, "Rushy" and Coulthurst, of the Lancs. Club. Bottom, left to right—Messrs. Foster, Leadbetter, Howard Boys, and Towner.

Mr. Smith was calling for attention over the mike. A breathless silence as he announces that "Here is the list of winners."

"First, Mr. F. E. J. Almond, of North Kent, with an average of 230·2 sec." Cheers and much hand-clapping—and he fully deserved it. Flying his last year's machine that had won him a place in the 1938 team, he had made three really fine flights, and fully justified his high position this year.

Lees, of Halifax, Bob Copland, Parham, Scott (Halifax again!), Bunce, of High Wycombe. Well, fellows, there's the team to make the trip to America, and I think we can rest assured that they can do their best to bring the old "pot" back with them. Almond and Stott were members of last year's team that went to France, and Copland we all know can do his stuff when called upon. I do not know much of the other members, but if their form can be reproduced in August we do not have much to worry over.

Everyone is just getting ready to listen to a few words from Dr. Thurston, when it is discovered that a mistake has been made! R. A. Hill, of Bournemouth, who lost his machine on his second flight, moves up into position on the times made in his two flights - the recorders having overlooked this owing to the third column being vacant. Quite a pardonable mistake. Luckily, Bunce was not on the spot when the results were announced, and he did not have to go through the sickening procedure of suddenly finding himself back with the also rans!

Unlucky Bell collects eighth place, Leadbetter, now of Bournemouth, is ninth, and Tindal, of Lancs, bags the tenth position. (All the figures and places given, by the way, are subject to recheck and verification—a tidy job in itself.)

Congratulations are due to the officials and their helpers for the efficient way in which this year's Wakefield Trials were dealt with.

And so here's the best of luck to the six lads who will, I know, do their damndest to bring the Wakefield Cup back to England, and I am sure that feeling is endorsed by all those 308 competitors who made them put up a fight for their positions. Look out, New York, here they come!

WAKEFIELD. TRIALS RESULTS.

	1st.	2nd.	3rd.	Av.
1. Almond, F. E. J. (N. Kent)	244·5	315·5	130·7	230·2 sec.
2. Lees, N. (Halifax)	211·5	164·8	284·0	220·1 ,,
3. Copland, R. (N. Heights) ...	118·3	293·5	147·0	186·2 ,,
4. Parham, R. T. (Edgware) ...	73·0	356·5	112·1	180·53 ,,
5. Stott, L. (Halifax)	279·5	112·0	133·5	175·0 ,,
6. Hill, R. A. Bournemouth)...	149·4	365·3	--	171·5 ,,
7. Bunce, F. A. (High Wycombe) ...		...	...	162·5 ,,
8. Bell, A. G. (N. Heights)		...	...	161·5 ,,
9. Leadbetter, J. E. (Bournemouth)		...	...	159·1 ,,
10. Tindal, A. (Lancs)		...	...	152·9 ,,

THE KING PETER CUP ELIMINATING TRIALS

Well, after Sunday's affair, everyone was certainly feeling a bit fagged, but I hardly think there was any justification for the Gliding Trials for the King Peter Cup being a full two-and-a-half hours late in starting. Whilst the organisation of the Sunday event was admirable, that on the Monday left much to be desired, and many competitors who had long distances to travel that night felt rather peeved about the lengthy procedure.

Unfortunately, this gliding business seems to be a very complicated affair to run, and was not helped in any degree by the continued encroachment of the general public on to the " winding spots." Also, with the timekeepers penned in one spot, it was difficult to tell whether a model with being timed or not, especially by those competitors at any distance from the control area. I know of one definite complaint that the timekeepers on one model had timed an entirely different entry!

However, that does not get the meeting reported, and I must get on. Dr. Thurston, who has this event very much at heart, was experimenting with a range-finder, but his readings could not be taken into account in the final results as the distance was not taken for every model.

Many fine examples of work were to be seen, including some huge craft that looked as if they could take up the launcher! Generally these large models were difficult to launch, though Mr. Reynolds's model did get away on a grand flight out of sight, looking for all the world like a full-sized job. Here streamlining had come into its own, and many were the fillets and fairings to be seen.

Wind again made take-offs anything but stable, and many entries were crashed, or turned in dud flights, through this cause. Various types of winch were in evidence, notable among these being the Blackheath model, like a cut-down suit of armour, and a very pretty job turned up in a nice coat of blue paint! Some others had trouble with their apparatus, among these being the Lancashire contingent of four, two of whom, however, managed to get into the team, in spite of their handicap.

Many models were lost before the contest commenced, while test-flying, which of course was just too bad. Models were being lost all day; any job that managed to get to any height on the line being a sure " goner." That's the trouble with the long line method—even a poorly trimmed model can get out of sight before losing its initial height.

Galbreath, of Blackheath, flying a model with a peculiar horned wing shape, got his model up to the full length of the line, and away she went, gaining altitude all the time. The sun was blazing hot, and thermals were all over the place. Incidentally, we had two cases of sunstroke during the afternoon, Mrs. Thurston very efficiently looking after the patients!

Tindal, of Lancs, lost his model for good on his second flight, but his times took him into fifth position. As a matter of fact, it seemed that anyone who managed to get in three fairly good flights was a candidate for the team of twelve required for the finals, and a glance at the final times will show how close some were together.

Mr. Smith was talking himself horse in an endeavour to get the competition run off smoothly, but circumstances and arrangements were against him. However, it gradually drew near the launching of the last flight, and long-distance travellers started to pack their traps. With the last flight completed, entrants once again gathered round the marquee for the results, which were speedily forthcoming.

The twelve finalists will compete in July with the cream of the Continental gliding enthusiasts, and I only hope that the prowess of the visitors in this particular sphere of modelling has been overrated. I'm afraid we have a lot to learn about model gliding; but one can never tell till the time arrives. Anyway, I for one shall be cheering our lads on when the time comes.

Out of 88 entries, only 50 actually competed, though why this sudden drop I have no idea. Perhaps some had had enough after the Sunday's flying, but I think there should be some explanation forthcoming from those who did not put in an appearance. However, with the event not finishing until 8 p.m., it is perhaps just as well that there were no more to cater for. Maybe I am wrong, but there does not seem to be the thrill in gliding that there is in rubber-driven jobs, and I guarantee that there will be a much larger entry than 50 next year, when the " rubber-containers " are once again in vogue.

See you in July!

KING PETER CUP. TRIALS RESULTS.

	1st.	2nd.	3rd.	Total.
1. Galbreath, R. E. (Blackheath)	380·0	79·5	118·25	577·75
2. Wilson, F. E. (N. Heights)...	312·2	32·0	68·4	412·6
3. Cox, A. (N. Heights) ...	250·4	69·2	66·2	385·8
4. Minion, A. C. (Hayes) ...	114·5	131·5	100·2	346·2
5. Tindal, A. (Lancs)	32·2	293·5	—	325·7
6. Clifford, G. F. (City) ...	11·3	284·0	12·6	307·9
7. Weston, A. A. (P.M.A.L.) ...	177·0	81·5	30·6	289·1
8. Reynolds, G. E. J. (Surrey)	19·5	255·0	12·0	286·5
9. Hill, H. (Lancs)	67·2	24·5	192·7	284·4
10. Day, G. W. (N. Heights) ...	97·0	83·8	97·5	278·3
11. Olliver, W. G.	90·5	123·95	56·4	270·85
12. Simmons, H. N. (Blackheath)	104·0	58·75	89·2	251·95

IN NEXT MONTH'S ISSUE——

The Design and Construction of Streamlined Fuselages. By Peter Chinn.

Strength in Model Building. By Rex Young.

Scale Plans for a 75 m.p.h. Speed Model. By T. F. Petersen.

Solid Scale Models. By B. Carver.

Some More " Gadgets." By S. E. Capps.

Plans for Another Simple Duration 'Plane.

Co-axial Airscrews. By G. Badsy.

FULL-SIZE SCALE PLANS OF A 41 in. SPAN CABIN 'PLANE, WITH FULLY DETAILED BUILDING INSTRUCTIONS—See photo on page 503.

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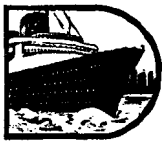

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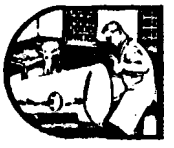

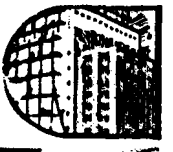

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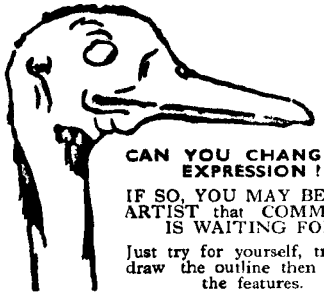

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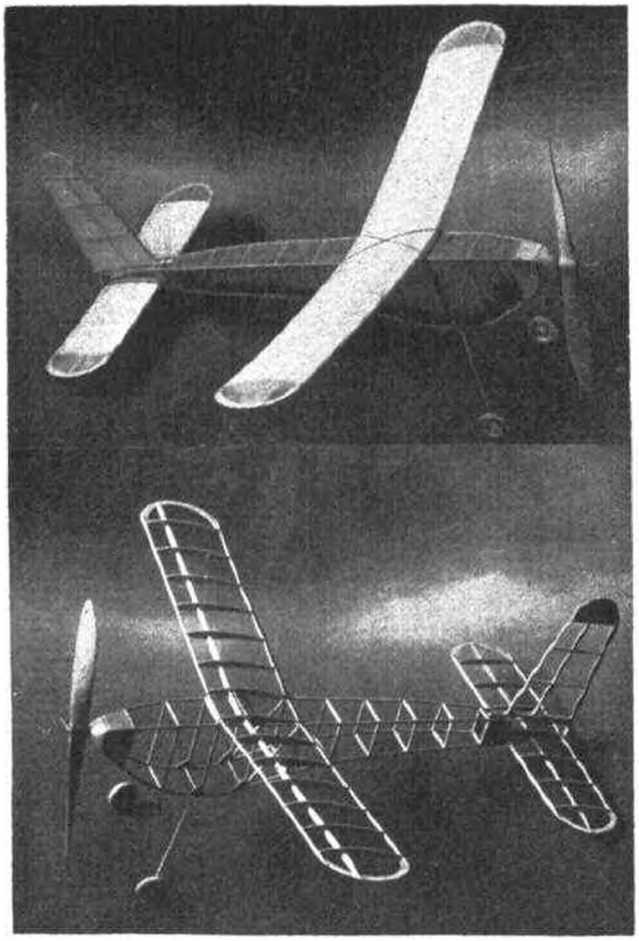
ON TEST—"THE NIPPY"



Built by COLIN BORDEWICK
(Aero-Modeller Staff)

Report by OUR TEST PILOT

OF 30 in. span and 24 in. length, the "Nippy" quite lives up to its name. This model I built from a kit supplied by Elite Model Airplane Supplies, of Bury New Road, Manchester 8, and an interesting job I found it to be. As will be seen from the photographs above, the side view of the fuselage is somewhat reminiscent of the style popularised by Cahill with his 1938 Wakefield winner, but, of course, in section the fuselage is similar to other models of this type, i.e. it is of rectangular section.

The kit is nicely packed and comes complete with a full size scale plan on which the model can be built, and on which a number of detailed sketches are also given.

Elite Model Airplane Supplies are members of the Model Aircraft Trade Association, and claim that all material is to Association standard; I can certainly say that it is all of very good quality. Ample supplies of balsa, tissue, dope and cement are included, together with a completely finished hardwood propeller, a semi-finished nose block, and finished turned balsa wheels. The propeller shaft, which, of course, incorporates a free-wheel, is completely preformed, and 18 s.w.g. steel wire is supplied for bending up into the undercarriage — this latter being of rather novel design. It is made out of one length of wire and passed right through the bottom of the fuselage, and is supported in an aluminium tube cemented to one of the cross struts and backed up with fillets.

(At least, *I* made the unit in one length, although the plan shows the legs as two separate units fitting in the tube from either side. This means, of course, that the legs can be detached. A stronger job results from carrying the wire in one length, and little inconvenience is caused by the legs being non-detachable, since they can be folded back underneath the body.)

The main wing is of constant chord, and the wing ribs are all neatly printed on good quality balsa sheet. A good feature is that all parts to be cut out are numbered and can be immediately identified by reference to the drawing. The trailing edge is of tapered section, already formed. Construction of this type of model, of course, follows accepted methods, and is well within the capabilities of quite a young boy with the aid of the comprehensive set of instructions included in the kit.

With a model of this type one would expect it to require little trimming to obtain good flying characteristics, and very little trimming *was* required. Whilst certainly not *over*powered, the model really has a deal of power available, which gives it a remarkable climb to a considerable height before the motor runs out.

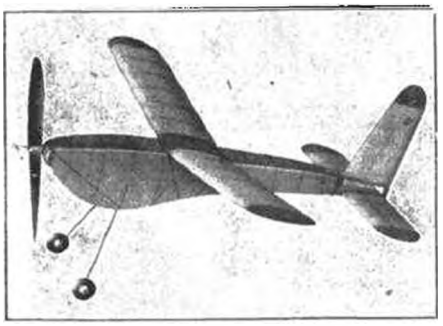
An R.O.G. take-off from a smooth surface results in a run of about four feet or even less, followed by a steep climb, whilst the glide is very good, being quite flat and straight. The model is of very sturdy construction, and will stand up to quite an amount of "tree-hiding," as was experienced by Colin when he first took the model out in a not-too-large field!

The makers claim an average duration of 80 to 120 seconds, and we can confirm that these figures are definitely obtainable under normal flying conditions. Thermals will *always* increase a model's performance figures, and under such conditions the performance would no doubt be better.

Summed up, the "Nippy" certainly lives up to its name; and should prove of interest to many of those aero-modellists who want a medium-priced kit, of good quality throughout, and which will build up into a really attractive little model.

On Test!

"NIPPY"



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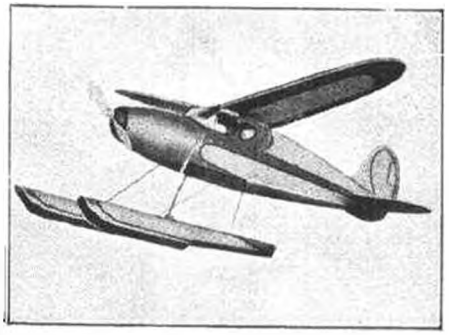

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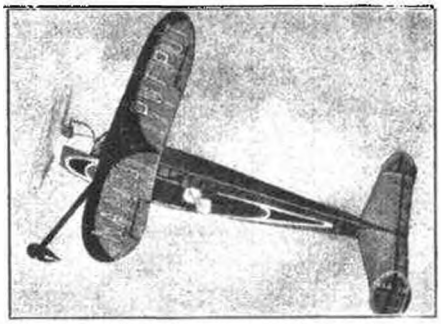

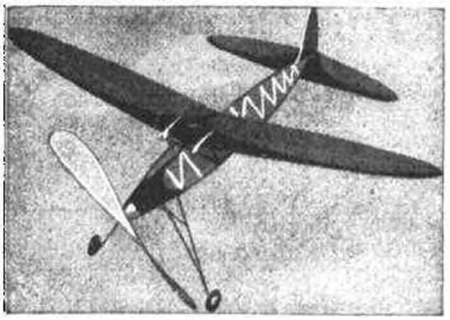

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SOME PRACTICAL DATA ON BODY RESISTANCES OF MODEL AIRCRAFT

By ARNOLD WATHEW

IN my recent article on "Airfoil Data and its Application to Model Aircraft," which was published in the November issue, I was able to deal *only* with airfoils or wings. Since then I have been able to collect useful information relating to body resistances and shapes.

You will remember that the resistance or drag coefficient of a wing section increased very quickly indeed below an air speed of 30 ft./sec. You will see that exactly the same thing applies to body or fuselage resistance co-efficients.

Referring once again to Arthur Judge's *Handbook of Modern Aeronautics*, 1919), we find values for the resistance co-efficient K_n are given for a cylinder 5·0 in. diameter, with spherical ends, for air speeds of from 20 to 100 ft./sec. Here they are:

Velocity V. ft/sec.	Res. Co-eff. K_n.
20	·330
30	·290
40	·275
50	·247
60	·230
70	·220
80	·215 (Authority
90	·210 Eiffel).
100	·200

All these points, with the exception of the ·275, lie upon a well-defined curve, which I have continued down to 10 ft./sec.

Here we have a reasonable means of finding the resistance co-efficient of various fuselage shapes at low speeds, provided that we can secure a reliable figure for K_n at some speed between 20 and 100 ft./sec., for a body of similar size to our models.

Very fortunately such figures are available in the same book and may be used with every confidence since they, too, are by Eiffel.

The body shape most suitable for our purpose is called the "Pateras Pescara No. 2" and is of a streamlined cylindrical shape having a uniform cross-section over some 50 per cent of its length, thus allowing for easy wing fixing, etc.

Its length is 38·4 in. and diameter at the greatest part is 4·72 in. =97·1mm. x 120 mm., giving a fineness ratio of 8·14 to 1.

K_n for this body is given as ·147 at 32·8 ft./sec.

By simple proportion it is now possible to get this table:

Speed ft/sec.	K_n (sper. cyl.)	K_n Patera P. No. 2.
10	·330	·204
15	·360	·180
20	·330	·173
25	·308	·162
30	·300	·152
32·8 (Judge)	·290	·147

The resistance of bodies may be expressed thus:

$$R = K_n \cdot kAV^2$$

where ($k A V^2$) is the resistance of a normal flat plane of area A equal to the maximum cross-sectional area of the body, k being the normal plane co-efficient.

Since the area of a circle is ·7854 x D^2 and the diameter D of Pateras Pescara No. 2 is 4·72 in. its area is

$$\frac{\cdot 7854 \times 4\cdot 72 \times 4\cdot 72}{144} = \cdot 1211 \text{ sq. ft.}$$

then the body resistance figures for a body of this shape, 38·4 in. long x 4·72 in. diameter, are as the following table:

V ft/sec.	K P.P. No. 2.	kAV^2 (lb./sq.ft.)	A (sq.ft.)	R (lb.)	R (oz.)
10·8	·204	·1473	·1211	·00305	·0585
14·7	·180	·3005	·1211	·0049	·110
20·5	·173	·5840	·1211	·0123	·196
24·9	·162	·862	·1211	·0169	·270
29·8	·152	1·198	·1211	·0220	·352
32·8	·147	1·450	·1211	·0258	·413

Another body that was tested in model form was the Deperdussin Monocoque Body. Size of model 2·94 ft. long x 6·7 in. diameter, giving a cross-sectional area of ·245 sq. ft. Speed 80 ft./sec. Tested by Eiffel.

This is a very interesting case, as K_n is given without propeller *and* with propeller revolving freely. Propeller boss is streamlined.

K_n (no propeller) = ·202.

K_n (propeller free to revolve) = ·611.

Here are some slow speed resistance calculations for this body.

NO PROPELLER

V	A	K_n spere.	K_n dep.body	kAV^2	R oz.
10·8	·245	·390	·475	·1478	·275
14·7	·245	·360	·438	·3005	·516
20·5	·245	·330	·401	·584	·916
24·9	·245	·308	·377	·862	1·275
29·8	·245	·290	·358	1·198	1·650
80·0	·245	·215	·202	--	—

WITH PROPELLER FREELY REVOLVING

V	A	K_n spere.	K dep.body	kAV^2	R oz.
10·8	·245	·390	1·110	·1478	·644
14·7	·245	·360	1·022	·3005	1·210
20·5	·245	·330	·937	·584	2·145
24·9	·245	·308	·875	·862	2·96
29·8	·245	·290	·825	1·198	3·87
80·0	·245	·215	·611	—	—

Various writers have told us that a freewheeling propeller offers less resistance than a fixed one, but the increase of resistance due solely to the presence of even a freewheeling propeller is somewhat astonishing. Probably turbulence has something to do with it.

Shall we now try using the Pateras Pescara No. 2

shape for a Wakefield Model Body? It is rather long, so let us reduce it to 32 in. Diameter then becomes 3·94 in.

Maximum cross-sectional area is thus 12·2 sq. in.

$\frac{L \times l.}{100}$ rule give minimum area for 32 in. fuselage as 10·25 sq. in., so we are well away.

V	$K_n AV^2$ flat plate	K_n sphere.	K_n 32"P.P.No.2	Area ·0846 sq.-ft. R oz.
10·3	·1473	·395	·206	·0411
14·7	·3005	·362	·194	·079
20·5	·584	·328	·1755	·139
24·9	·862	·309	·1655	·193
30·8	1·320	·288	·154	·275
32·8	- -	·280	—	—

If the body was of the BE2 shape, 32 in. long, same sectional area, figures would be:

V	$K_n AV^2$ flat plate	K_n sphere.	(K_n at 60 m.p.h. = ·655) K_n 32"P.P.No.2	R oz.
10·3	·1473	·395	1·231	·246
14·7	·3005	·362	1·130	·460
20·5	·584	·328	1·028	·810
24·9	·862	·309	·964	1·125
30·8	1·320	·288	·900	1·61
88·0	- -	·210	- -	- -

The figures for the body shape BE2 are given so that you may know what to avoid. It is the model of the body of one of the best known machines of the early Great War days.

Mr. Judge also publishes some very useful figures relating to tail-planes airfoils on page 529 of his handbook. They are for a streamlined airfoil of fineness ratio 14 to 1 incidence, 0 degrees and air speed 40 ft./sec., size 11·8 in. × 3·3 in.

Referring to the R.A.F.6 airfoil drag figures quoted in my previous article, we get:

V (ft/sec.)	C_d (RAF6)	C_d Tail Airfoil
10	·0370	·0218
15	·0346	·0204
20	·0344	·0202
30	·0314	·0184
40	·0296	·0174

Thus the resistance of a tail-plane of 64 sq. in. area at 20 ft./sec. would be ·0051 oz. at Odegress incidence.

Remains the chassis.

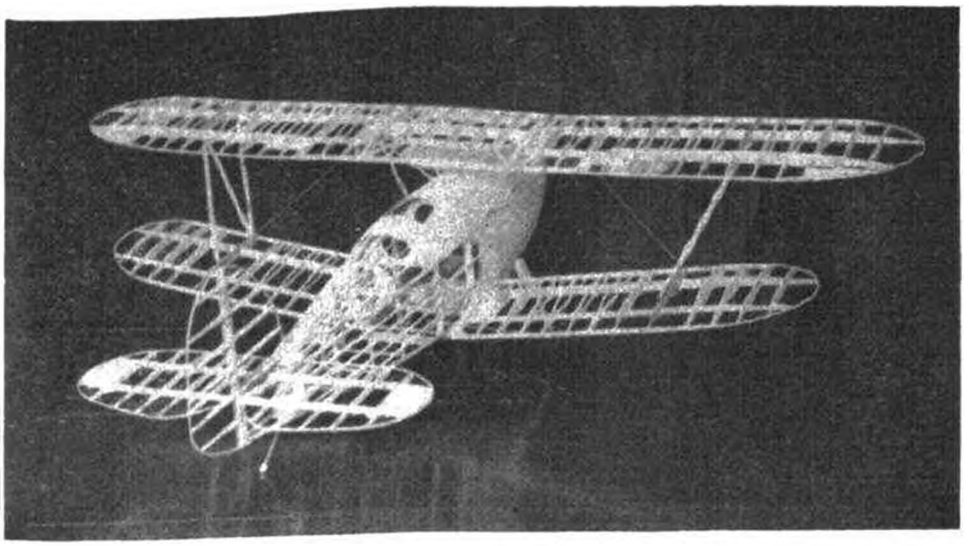
Most reluctantly I have to admit that I can find no figures for chassis resistance based upon slow-speed tests. I suggest, therefore, that the projected frontal area be taken and K_n be assumed to be ·4 at 20 ft./sec. for balsa or hardwood wheels and struts. For balloon wheels K_n must be about ·8.

Rubber vibration, causing chassis vibration, increases the effective frontal area of the chassis and hence the drag.

Ordinates for a 32 in. long Pateras Pescara fuselage are as follow:

Station	...	0	1	2	3	4	5 to 19	20
Diameter	...	0	1·52	2·56	3·80	3·80	4·00	3·06
Station	...	22	24	26	28	30	32	
Diameter	...	3·12	3·04	2·40	1·70	1·14	0	

In conclusion, may I say that these figures are only offered in the absence of any published figures of wind-tunnel tests upon Wakefield specification models at model flying speeds.



A 1¼ in. to 1ft. OF THE

Designed and built by
LEN HASTINGS

THE "Fury" is 1¼ in. to 1 ft. Weight 15 oz. complete. Almost every part is flexible. The flying time is 15 sec. R.O.G. on about half turns, and the flights were perfect. The weather being rather unkind, I have not been able to get a final trim for the great "wind up" (including me) but am confident of really good results. The model took second place in the Concours d'Elegance at the Northern Heights Gala Day at Fairey's in 1938.

The undercarriage has caught many people napping. The back legs are light *rubber tubing*, and simply buckle when the front legs are driven back, these being sprung inside.

This type of undercart can be used with single legs or V struts, as the back struts are only dummies, which buckle up when the legs are driven back. When V struts are used the rubber tube (back struts) should hold the stop loop on bellcrank just off the former. This will keep the tube taut.

The front legs must be faired with balsa to keep them rigid. If balsa formers are used, a piece of wire should be soldered across the two brass bearing tubes before binding to the former.

The action of the undercarriage is: When the legs are driven back the bellcrank turns forward, away from the former, stretching the spring, which in turn returns the legs to their normal position.

The Gearbox.

The advantages of this type of gearbox are that the weight can be kept well forward, the gears are kept free from dirt, and the shafts are supported on both sides of the gear wheels.

Cut two $\frac{1}{16}$ in. ply circles, one smaller than the other. The size of the smaller one is governed by the thickness you wish to have the noseblock after allowing enough room to take the gears and taper. As an example, the drawing is 2½ in. diameter at back, ¾ in. thick and tapering to 1½ in.

Now make two bearing plates of brass about 16 gauge thick and ⅜ in. wide, and for twin gears drill holes as in Fig. 2. Insert a shaft through bearing hole A, Fig. 2, and through centre hole of ply circle, to hold plate in position while riveting to ply. Countersink the holes in the ply down to the bearing plate, so that the shafts will run clear when inserted.

Having done this to both ply circles, we next cut five 2½ in. circles of ¼ in. balsa. Three of them should have slots cut in them big enough to clear the gears, and the others slots just big enough for the bearing plate to recess in.

Now cement the three large slotted balsa circles to the largest ply circle, on the side the bearing plate is. While setting, solder two gears on to their shafts, leaving plenty of shaft each side. Now insert into each hole (not forgetting a thrust washer between gear and bearing plate) and cement the remaining two balsa circles on afterwards.

When these are set the most important job comes. The smaller or front ply circle is cemented on top of the balsa after threading the shafts through the bearing plate (plate inside), and great care should be taken to ensure that the shafts are perfectly square each way with the ply. This can be done with a setsquare before the cement sets. When set, cut the bottom shaft off flush with the ply and the top shaft (this will be in the centre) leave long enough to take a prop., etc. At the back leave shafts long enough to make hooks.

When finished, sand balsa down to the two ply circles and a nice taper noseblock will result. Also drill a ¼ in. hole right through to the gears in the bottom of the block,

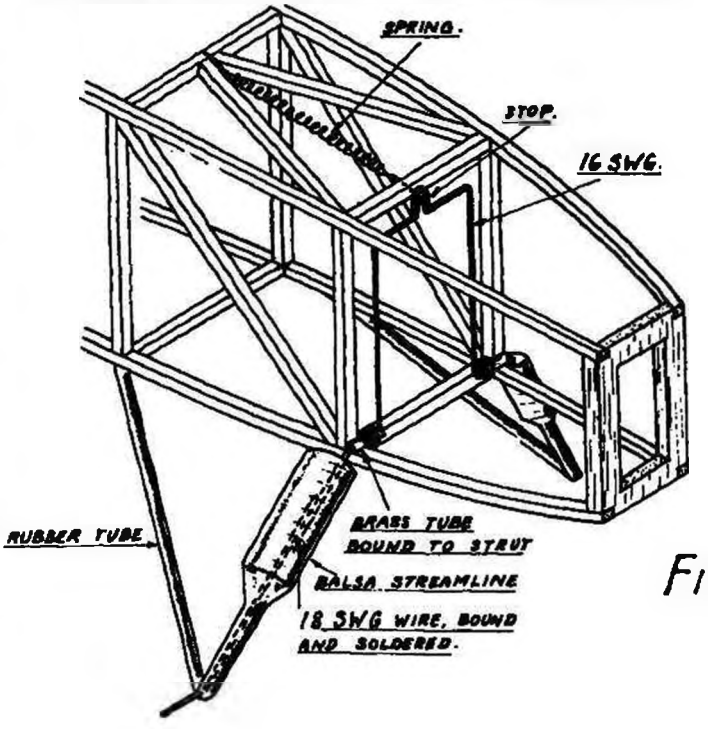
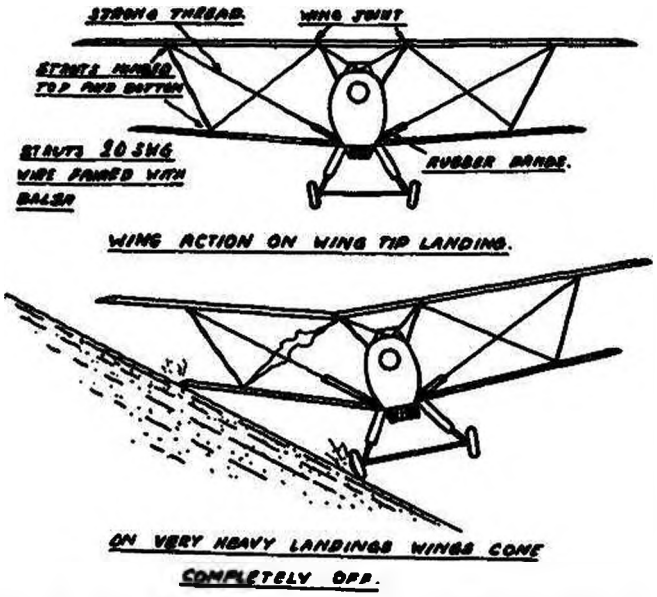


FIG. 1.

FLYING SCALE MODEL HAWKER FURY



to allow for oiling. Two $\frac{1}{8}$ in. square spruce blocks can be cemented on the back to fit in the nose of the fuselage.

The Wheels.

First cut a 3 in. circle from $\frac{1}{16}$ in. ply and cut it out as shown, leaving a $\frac{1}{8}$ in. rim, a spoke (along grain) $\frac{1}{4}$ in. wide and a centre boss $\frac{3}{8}$ in. diameter. (See Fig. 3).

Next cut four 3 in. circles of $\frac{1}{8}$ in. balsa and cut out the centres, leaving a $\frac{3}{16}$ in. rim (this is also the width of the tyre). Care should be taken to make a clean cut, and the pieces cut out should be retained. Now cement two balsa rims to each side of the ply wheel, and when set put a brass-threaded bush (18 gauge hole) in the ply centre boss. The bush will be found long enough to go into the chuck of a wheel brace. Fasten brace in a vice and sand balsa down level with the ply outside edge. A light pencil line should be made with a compass at half the depth ($\frac{3}{32}$ in.) of the balsa rims both sides as a sanding guide. Now spin outside edges off with a sandpaper block, rounding them from the ply to the above-mentioned guide line. Next wrap a piece of sandpaper round a pencil and fashion a neat curve from inside the balsa rims to the guide line whilst spinning.

To do the opposite side the brass bush should be reversed, or, better still, use a nut and bolt the same size as the bush, as this will save damaging the bush thread in the chuck. If the spinning is done carefully the result should be a nice round tyre.

The centre pieces cut from the balsa rims should now be cemented together in pairs and spun to shape by the same method as above. I advise a ply disc at the back nearly as large as the balsa, and a $\frac{1}{2}$ in. one in front while spinning. When finished it is advisable at this stage to black the tyres and paint the discs the colour you wish to have them. Now cement a disc to the ply spoke and round the edges on the side the *bush nut* is placed. When set, put wheel on axle and solder on, then cut axle off as closely as possible. Now cement on the outside disc after countersinking on the inside to clear the end of axle.

If a thin piece of doped string is now cemented round the disc joint it will cover the joint and also represent a wheel rim. Also cement a small piece of balsa, hexagon in shape, over the hole in outside disc and the job will look very realistic.

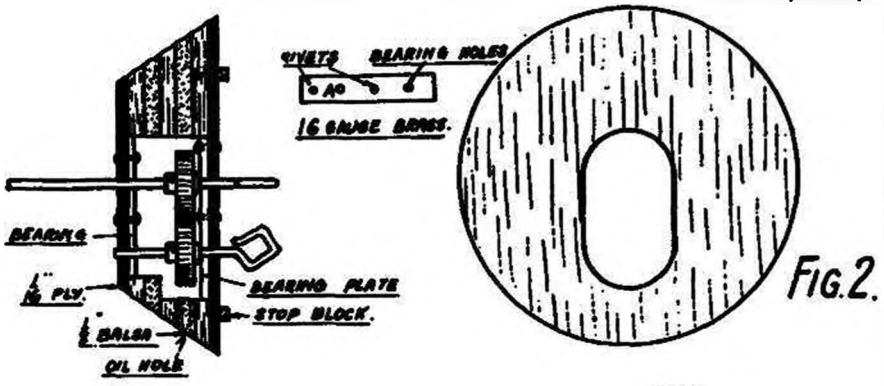


FIG. 2.

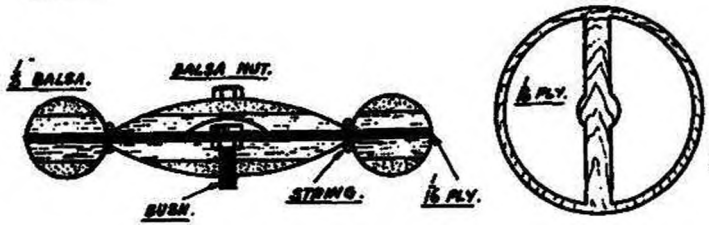
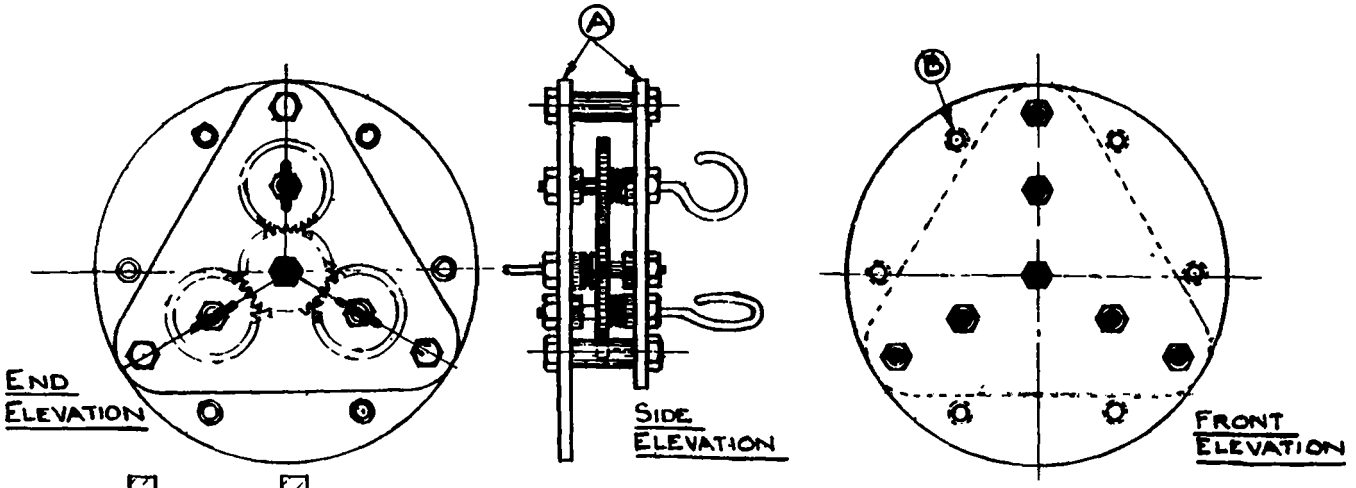


FIG. 3.

Note.

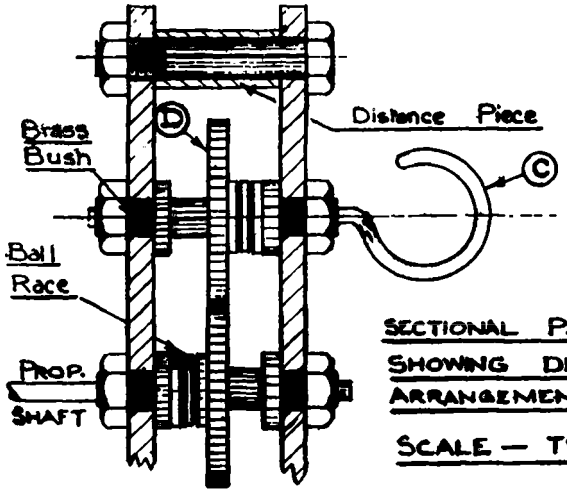
The rubber bands for the wings pass right through square balsa tubes in fuselage at bottom and through centre section at top.

A TRI-MESH GEARBOX —— AND ——



SCALE — FULL SIZE.

TRI-MESH GEAR BOX



SECTIONAL PART SIDE ELEVATION SHOWING DETAILS OF GEAR ARRANGEMENT.

SCALE — TWICE FULL SIZE.

By GORDON ALLEN

IN my opinion, the cause of so many gears stripping is that the load of the wound rubber motors is taken by an " in-line " gear train. It is obvious that when gears are used a subsequent heavy motor will be employed, and hence the strain will be considerable, which, if an inline gearbox is used, will be taken by only two or three teeth which are meshing. For instance, take a quad gearbox where the four gears are working in mesh under one another, their centres making a straight line. Let us assume that the bottom three are driven by motors, and the one at the top in turn driven by the lower drives. Then the total torque of the three motors is conveyed through the lower gears to the upper one, and therefore the load will be taken by the teeth, which are in mesh between the uppermost and the cog immediately below. It can be seen that there will only be one or two teeth meshing.

The following design of a quad gearbox is the result of a great deal of consideration of this problem. In this case the load of three motors is taken in three places on the driven gear instead of one—hence the title of this article—thus eliminating to a further degree the danger of stripping. The design is original, and is an advancement on many others, ball races being one of its special features. However, it is a train for a heavy job, say ten to twelve ounces, and will be admirable for a racing machine. The author's gearbox is amazingly rigid and free from any sign of slip, being extremely smooth when under power. If the reader takes care and does not rush, then there is no reason why it should not have the same qualities.

Construction.

Frequent reference to the drawings will make this quite simple, as they are almost self-explanatory. In the side elevation the plates marked " A " are shown $\frac{3}{32}$ in. thick. The plates of the original box were of $\frac{1}{32}$ in. aluminium (plate alum.), but whether thinner sheet brass is used instead is entirely up to the reader. Two plates of the chosen material are cut to the shapes indicated by the end elevation and the front elevation, and their edges filed smooth. Then the necessary holes are marked on each plate and drilled cleanly. Those marked " B " on the drawing are countersunk to take small $\frac{3}{8}$ in. wood screws, while all others are drilled to take screwed brass bushes, which have a centrol hole which in turn will make a nice fit for 16 S.W.G. steel wire. Where indicated the brass bushes are fitted into the holes and screwed tight by means of small nuts, which are included with the bushes. Having accomplished this job, the projections are then cut off to the length shown in the part side elevations. Distance pieces are then cut from $\frac{1}{8}$ in. diameter (bore) tubing a *full* $\frac{7}{16}$ in. long, giving a working clearance for the assembly. These are shown in detail in the sectional part side elevation. Three are required. When this has been

done three lengths of 16 s.w.g. steel wire are cut to a length suitable for the driving shafts " C." Note that the central shaft is unhooked and will be longer, as it is the airscrew shaft.

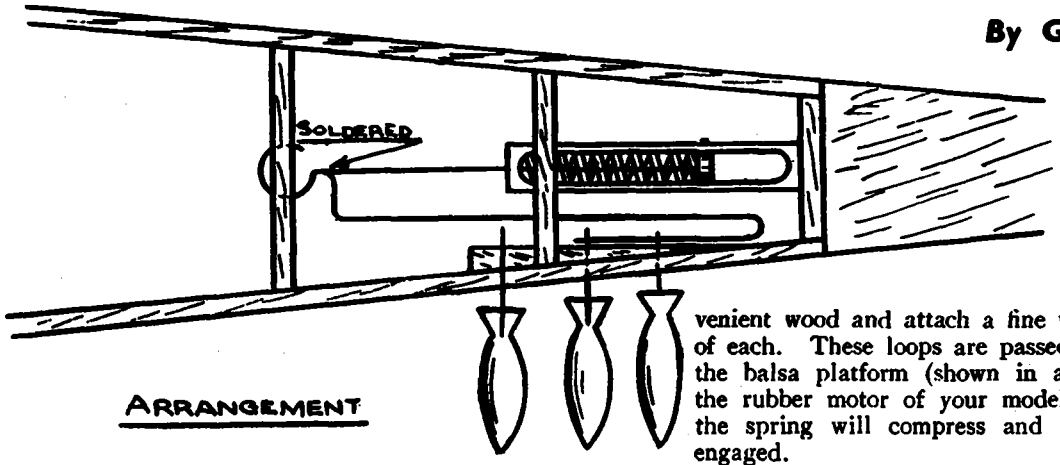
On these the respective positions of the gears are marked " D." Now four gears $\frac{11}{16}$ in. diameter (thin type) are taken (clearly shown in the drawing), and carefully and rigidly sweated in place, surplus solder being filed off to ensure smooth running of the ball races.

The latter (which are the well-known drome thrust races), are slipped on to the shafts (see drawing), and the whole unit assembled, the two plates being bolted together with three brass bolts or bushes, with the distance pieces in place. *Note*—the type of bush previously employed will be very suitable for this. If all holes have been drilled very carefully at the outset, the gears will now be accurately in mesh. A touch of the solder is applied to all nuts or they may work loose.

All that is now required to be done is the bending of the driving hooks. This is done by rigidly holding the projecting shafts close to the bushes with a pair of round-nosed pliers, and steadily bending with a second pair until the required hook is obtained. The finished job is now fastened to the desired nose block by small $\frac{3}{8}$ in. wood screws, which are screwed in from the back of the front circular plate. The installation of the gearbox in the 'plane is left to the initiative of the reader, as it does not come within the scope of this article.

— AN AUTOMATIC BOMB RELEASE

By GORDON ALLEN



ARRANGEMENT

Referring to the drawing. Procure a length of $\frac{1}{4}$ in. diameter brass or copper tube, and from it cut about a two-inch piece. Lighten it by means of apertures cut in the sides (enlarged plan and section), also cut a slot (see plan) along the top to take a steel pin. Now take a brass disc so that it makes a good sliding fit in the tube previously made, and bore it centrally to take a length of stout piano wire. Having accomplished this, turn the disc on edge and bore it so that a piece of steel wire, pin, or needle will make a snug fit inside it. Solder this pin in place in the hole. Incidentally, this pin must make a sliding fit in the slot in the top of the tube.

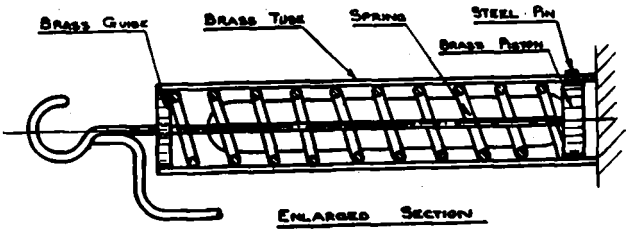
Take a piece of piano wire and solder the end into the hole (centre hole) in the disc. Now slide this piston into the tube, the pin engaging in the slot of the tube, then over the wire slip a compression spring, the length of which corresponds with the length of the tube (see drawings).

The brass guide, as shown in the drawings, is bored centrally and soldered in place with the free end of the wire running through the hole. This free end of wire is then hooked to take the rubber motor. When this has been done, solder the bomb engager into position, after having bound the joint with fine brass wire. This engager is fashioned from a piece of fine wire.

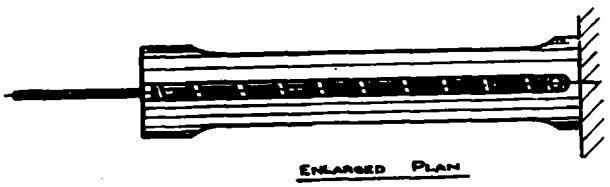
The actual installation of the unit is now left to the modeller.

Shape your bombs from hard balsa or any other convenient wood and attach a fine wire loop to the fin end of each. These loops are passed through small slots in the balsa platform (shown in arrangement), and when the rubber motor of your model is stretched (to wind) the spring will compress and the bombs will become engaged.

When the rubber motor is stretched and wound the spring will become compressed and will move the bomb engager through the loops in the bombs. Now when the airscrew is released the spring will gradually decompress and move the bomb engager back until the bombs become disengaged one by one. The arrangement drawing shows the unit when the first bomb is being released. If a spring is used which is not *too* strong, it will remain compressed until the motor has practically run out, giving the model a good chance to gain height before the bombs are released.



ENLARGED SECTION



ENLARGED PLAN

ESTIMATING THE LOADS ACTING ON A MODEL AEROPLANE STRUCTURE

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

Introduction.

IN a previous series of articles published by this journal I have endeavoured to explain the nature of the aerodynamic principles that govern the flight of model—and full-size—aeroplanes. We have, in the course of these articles, had plenty of opportunity to see that the model is subject to air-forces, and these air-forces will influence the model's attitude and general behaviour. When we look into this we shall find that air-forces act on every part of the model that is exposed to the air-stream. Some are but small and of no consequence in the problems of design; some, on the other hand, are very great and must not be under-estimated.

Careful investigation of the forces that act on the model, and allowing for the loads in the design, will bring us nearer perfection. By accurately gauging the loads the various members must carry, we can give them the right strength to do so, and eliminate waste by not making them stronger than necessary. On the other hand, careful reasoning may explain why one should strengthen up a certain spot which had failed repeatedly. Every breakage should be regarded as a useful lesson, not as a set-back. It is the object of these articles to take the various points where strength is an important factor and try to formulate some general principles which may be of use to the builders who design their own models.

Like its full-size prototype, the model aeroplane depends largely on detail design. Whatever its flying qualities, no model is really satisfactory so long as little things keep giving trouble. Only when abnormal wear in moving parts is absent and the main structure can stand up to the maximum loads that may be expected can one depend on the model for competition work, day in and day out.

All successful aero-modellers have dependable models. A propeller-clutch that shears or a rear hook that pulls out, or a landing gear that is either weak in itself or imposes too great loads on the fuselage structure; these are bad spots we all blunder into at times, but which should—and could—be avoided, or at least improved.

The actual shape of the model—the outline, the choice of wing section and plan—belongs to the aerodynamics side of model aeroplane design. By keeping to a conventional lay-out one cannot go far wrong, and even an unorthodox arrangement can be analysed by carefully investigating the various problems. However, the outward appearance of the models may differ, the structure presents much the same types of problems in all cases. There are the forces to be visualised first, then to be apportioned over the members of the structure, and finally given a suitable " path " to follow. Now to " see " these forces is often rather difficult, just as it is to " see " the air-flow—generally admitted to be an elusive quantity. But if we accept certain fixed principles of statics we shall not find great difficulty in acquiring the habit of always making allowance for the loads that may be imposed on the model by changes in design. For many models make a very good impression on their first appearance, but seem to fade away. They are structurally unsound, and further strengthening increases the weight, until they are unsuitable for the job they were intended for. Also, additional strengthening may do more harm than good if it is not carried out properly. There are cases where " strengthening " weakens the structure.

For the present we must regard the problem in a general way, and we do this by dividing the forces that may act on a model into three different groups:

1. Flying forces and—loads.
2. Landing forces and—loads.
3. Handling forces and—loads.

When trying to determine the required " strength " of a component we must, therefore, first find which of these three kinds of loads will be greatest. This will largely depend on the particular component, and on the type of model aeroplane to be designed. Let us first consider the nature of the above three groups of forces:

1. Flying—or air—forces, as the name implies, act on the model in flight and will be mainly lift and drag forces. Although they will act on all parts of the model, it is clear that they will be of most importance in the cases of wings and control surfaces, and probably be small in the cases of fuselages and undercarriages. If we regard the lift as an elliptical loading along the span it will cause a bending moment in the spars of a cantilever wing and an additional compressive or tensile " end load " in the case of a wing braced by means of a strut. The drag will act more or less along the chord and will therefore impose strain on the internal structure of the wing. Although the lift may be considerable, the drag is generally—at least at normal speeds—not a deciding factor, although it must be taken into account where the junction of wing and fuselage is concerned.

2. Landing-forces may be very great, especially in cases when the model is badly flown or trimmed. They do not only impose loads on the landing gear—as is the case on full-size aeroplanes—but on almost any projecting members, such as wing-tips, tail-plane, fin and airscrew. They are the most common cause of breakage of the structure, and should not be under-estimated. The most interesting problems appear under this heading. We might justly call them crash forces.

3. Handling forces are what we make them. In most cases they are confined to the actual handling when picking up the model from the field and holding it up for a hand-launched flight. The latter may cause a large load on the wing, especially in very gusty weather. Obviously much depends on the way the model is used. For instance, those flyers who let their models be brought back to them by obliging small boys do well not to underestimate the effect of inexpert handling.

There are also other loads which I have not listed amongst the above groups, but which we shall have to investigate. They are the internal forces set up by the type of construction used, such as the tension of rubber

fixing bands, the pressure needed to engage dress-snaps and fix the landing gear, and so on. In most cases these have to be considered individually. In the case of a tow-line glider there is also the pull on the thread to be taken into account, and in this connection we must keep in mind that an excessively fast launch may set up very large loads in the wing structure. The compressive force caused by a fully wound motor on the fuselage is another that does not fall logically in one of the main groups, but, with some liberty, might be considered as one of the forces acting in flight.

As already stated, much depends on the type of model contemplated. A Wakefield type model will not always be handled carefully, as it is often found in a field by a stranger, and may be packed and returned without expert knowledge. Also, it is a fairly heavy type, and this is also a factor making for vulnerability. An indoor model on the other hand is handled with utmost care, and its speed and absence of gusty weather practically rule out groups 2 and 3, so that one has to design only for the forces acting in flight.

So we see that the problems of sufficient structural strength may vary considerably with the model, the uses to which it is put and the ways in which it is handled. Only when taking full advantage of these factors can one evolve the very best structure for the purpose. Some of the foregoing remarks may seem very much like " blind ing flashes of the obvious." I feel, however, that a systematic treatment of structural design would help in getting the greatest value out of the materials used. In other words, by logical reasoning we may design our models for less weight without sacrificing strength.

In the next article I will give a table in which all the forces and the resulting loads on the various components are grouped so that a clear picture may be obtained of the requirements each part must satisfy.

FLYING SCALE MODELS FOR BEGINNERS

By HOWARD BOYS

AS a sort of continuation of the last article, I will now describe the method of stopping the propeller horizontally, to prevent damage in landing, as promised early on in this series. A plan of this is shown in Fig. 31, and this is how it works. The motor is wound up enough to take up the slack with the nose in position,

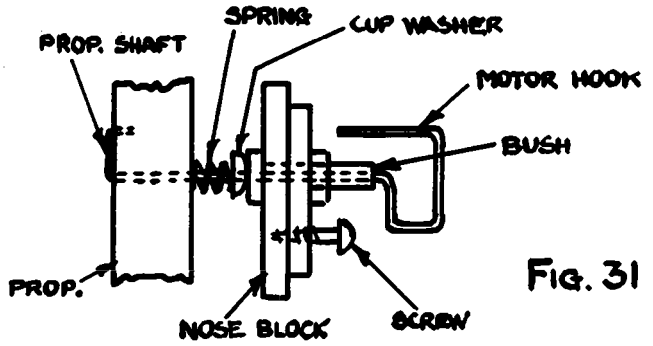


FIG. 31

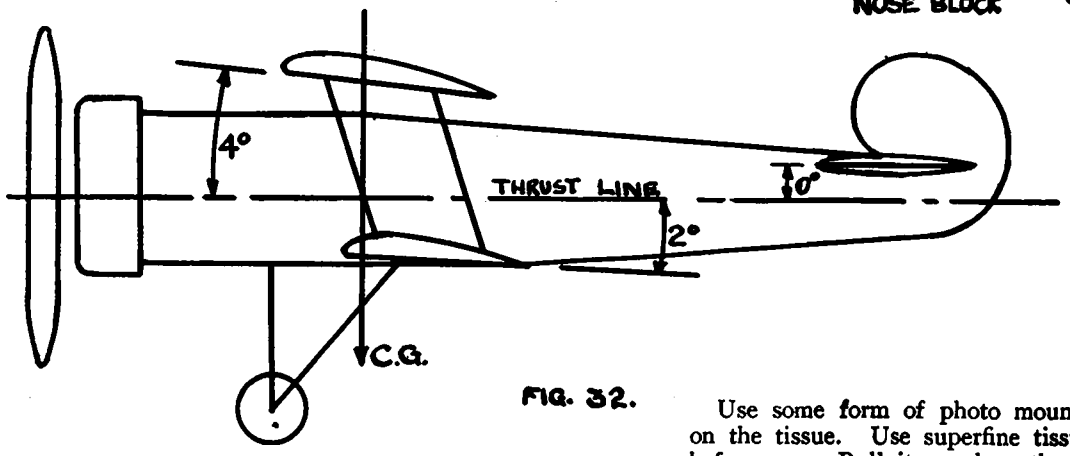


FIG. 32.

and the wood-screw is adjusted so that the motor hook just catches it. The spring should not be too strong, about 26 or 28 s.w.g. will do. Winding the rubber a few more turns will then pull the shaft through the bush compressing the spring and allowing the motor hook to revolve. The screw should be in such a position that when the hook rests against it the prop. is horizontal. This method of taking up the slack also prevents the rubber moving about in the fuselage and altering the position of the centre of gravity. It can also be applied to gears, in which case it is only needed on one shaft.

I had intended to include quite a bit about covering a model in this series, but as Mr. Rushbrooke wrote wrote such a good article on the subject in the Christmas issue, I will only make brief references to the most important points.

Use some form of photo mounting paste for sticking on the tissue. Use superfine tissue and iron it out flat before use. Pull it evenly rather than tightly, and use only highest quality dope. Use lots of care and patience.

The next thing is trimming the model ready for flying. This means getting the angles of incidence of wing and tail-plane correct, and the centre of gravity in the right place. You will no doubt have to experiment a bit, so I will try to put you on the right lines. The most difficult is, of course, the biplane, so I have shown this in Fig. 32. For a start we have the tail-plane adn thrust line parallel and the wing incidence as shown. The wings have what is known as positive stagger; that is, the top wing is farther forward than the bottom one, which is the usual

arrangement. There are, however, a few machines with negative stagger, that is, with the bottom wing farthest forwards. With negative stagger the bottom wing would need the most incidence, and a monoplane needs about three or four degrees incidence.

These various angles are, of course, arranged when the model is put together, but should be so made that you can alter them without too much trouble afterwards.

To get the centre of gravity in the right place it is usually necessary to add weight in some form or another to the nose. It is best to do this first by strengthening the nose. Any extra weight should be bits of lead or solder, etc., as far forward as possible. With a monoplane it is best to try to get the centre of gravity about one-quarter to one-third of the wing chord back from the leading edge. The best position will have to be found by experiment, as it varies with different wing sections. Another thing to help is altering the length of the rubber motor, and the position of the rear hook, putting it farther forward or backwards.

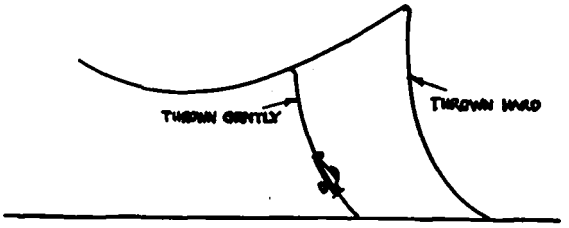


FIG 33

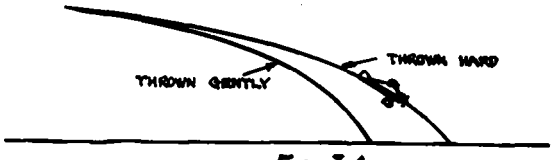


FIG. 34.

FIG. 35.

FIG. 36

When you have the incidences and the cantre of gravity somewhere near right you can try gliding the model. Try it over long grass or a bed of stinging nettles, or something similar that will not hurt the model in a crash landing. Launch the model, don't throw it, forwards and downwards in the way you would a dart, to hit the ground a few yards ahead. Try this a few times, gently and harder, and see how it behaves. It is unlikely that everything will be alright, but the following diagrams will help you to find out what is wrong. If the model

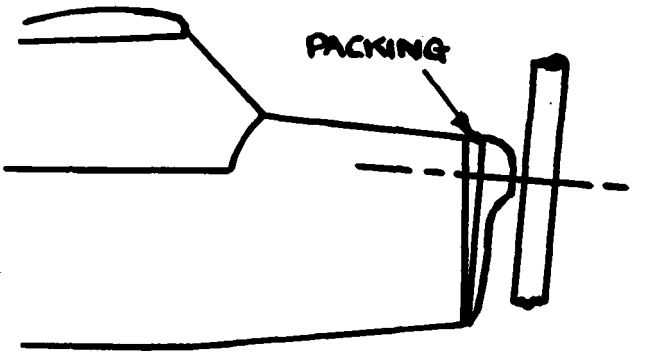


FIG. 37

is tail heavy, or the nose light, it will try to lift its nose and then fall into a dive, as shown in Fig. 33. Some people get rather confused with this, and think that if it dives it is nose heavy, but if it is nose heavy it will not rise first. If the model is nose heavy it will go straight from your hand and curve over into a dive, even when thrown hard, as shown in Fig. 34. Fig. 5 shows the sort of thing you get when the model is properly trimmed. If you do not get the levelling out when thrown hard, but a straight glide like Fig. 36, try a little more incidence on the wing. When you get a good glide wind the motor up a few turns and try again. This should make the glide a bit longer, and more turns should give a level flight. If now the model tries to rise too much, so that it stalls and dives rather like Fig. 33, try fewer strands of rubber on the motor. This may or may not cure the trouble; if not, put a bit of packing in the nose to tilt the propeller downards a bit, as shown in Fig. 37. If the model flies all right, except that it does not climb even when fully wound, try more strands of rubber again. With a low wing model you may find that adding more rubber makes the model fly faster instead of climbing. In that case try a little more incidence on the wing or even tilting the propeller up as a last resort. When making adjustments to the wing or tail-plane, always try the model gliding again before winding up. Working this way you should soon have the model flying properly, but don't get impatient. Keep at it, trying one thing at a time, and you will learn what is wrong. After all, you learn more from a model that is difficult to trim. When launching a model, always send it slightly downwards to begin with, at any rate, and follow through with a swinging movement of your arm to make sure it goes in the right direction. Another thing I think I ought to mention is always start the model against the wind. Some people seem to think that if it does not fly very well, by launching it with the wind the wind will help it along. Well! it just doesn't work. The model has to fly through the air at a certain speed to overcome the force of gravity, and it does not matter in what direction the air is travelling. The speed of the model in relation to the ground is different, but you can imagine a model in the air to be like a goldfish in a bowl. If you carry the bowl of water across the room it makes no difference to the speed at which the fish swims. The bowl of water is like the particular square mile of air your model flies in.

Well, I have come to the end of this series so I will wish you lots of happy hours with good flying and happy landings.

CAN METEOROLOGY ASSIST THE DURATION-SEEKER?

By THE CLOUDMEN

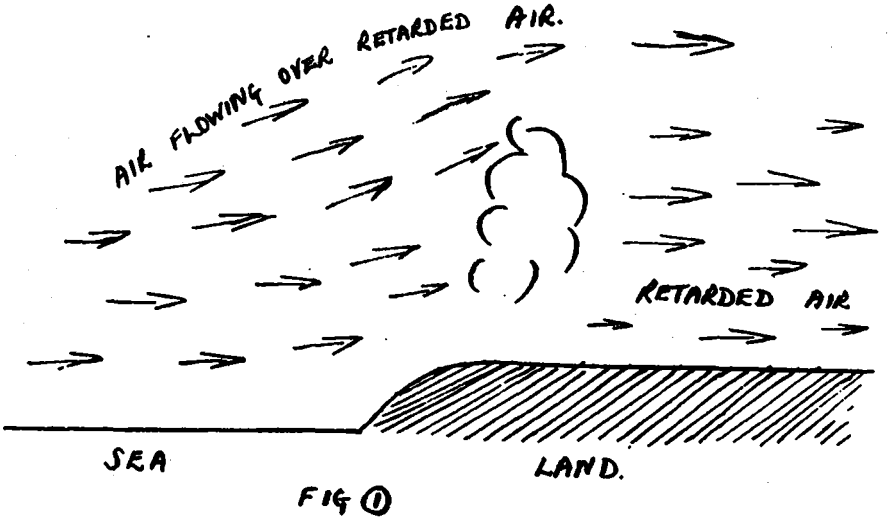


FIG 1

THAT is the question that the authors of this article are endeavouring to find an answer to. The study of the weather in relation to model flying will be thought by many, no doubt, to be futile, and this is probably why this subject, which has so many possibilities, has been neglected and passed over as being of no practical use to the model flyer. Considering the fact that all real record-breaking flights are due not so much to the 'planes but to the weather conditions under which they are flown, it would seem almost essential that we should at least know something about these conditions —and, more important, when to expect them.

When one is referring to the weather, probably the most familiar word to the aero-modellist is thermals. Although many of us know the conditions necessary to produce these, perhaps a few remarks on their formation would not be out of place. The sun on a hot summer's day heats the earth's surface irregularly—that is, rocky soil or cornfields, or even fields of buttercups and daisies, become heated quicker than grass-covered land. These warmer patches in turn heat the air immediately above them, causing it to become lighter than the surrounding air. This lighter air commences to rise, and if the atmosphere is sufficiently humid a cumulus cloud will form at the air's dewpoint, that is, where it condenses into visible moisture. Although this cloud formation is a good indication of rising air, its absence does not necessarily mean that there are no thermals. While we do not dispute the fact that thermals account for a good many of the real record breaking flights, they cannot be existent on dull, unpromising days, when exceptional durations have been recorded. The following may help us realise that the warm, sunny day is not the only type of weather that can assist the model 'plane to make a good flight.

Besides thermal up-currents there are what is known as frictional up-currents. These are caused by air over the sea flowing towards the land and being slowed up by friction, as in Fig. 1. You will notice that, as in a thermal up-current, a cumulus cloud may denote the rising air. This type of convection current will only be advantageous to clubs who are fortunate enough to have their flying ground fairly near the coastline.

Perhaps the most promising of all weather phenomena to the duration seeker are frontal up-currents. We are all familiar with the depressure or low-pressure system, with which we generally associate rain and high wind, but we may not be able to distinguish it on a weather map. Fig. 2 shows us a low or depression situated over Scotland. The closed lines roughly circular in shape are known as isobars, and connect all places on the map which have the same barometric pressure. Instead of the isobar continuing smoothly round, we notice that south of the low the lines have a sharp angle, run straight for a short distance, and then continue round. These " kinks " in the isobars are the fronts. On Fig. 8 a double line has been drawn by us through the angles to the south-east, and a single line to the south-west. The double line is the warm front and the single the cold front. The whole pressure system moves across the country from a westerly point at approximately 37 m.p.h. in the winter and 22 m.p.h. in the summer, and what is actually happening is that along the warm front the warmer air is rising over the colder in its path, and the cold front—which is a current of colder, and therefore heavier, air—is undercutting the warm air in the wake of the warm front. This, of course, gives rise in both warm and cold fronts to rising air, although in the case of warm fronts this is not so evident, it is at least strong enough to assist duration on a model of low sinking speed.

Now, having been given the direction from which the fronts are moving, and their speed, one will see that it is not difficult to anticipate at what time the fronts will pass over your neighbourhood, and take advantage of the up-currents produced. For example, Fig. 3 shows the cold front, when the weather map was compiled, was 260 miles from London, that is, seven hours away, so we may expect it about 5 a.m. the following day.

The foregoing, although having been very useful to the authors, enabling them to successfully predetermine the presence of rising air-currents, the novice at first may experience some difficulty in this direction. Further observations are in progress, and we hope at the end of this flying season to be in possession of useful information which should materially assist the duration-seeker.

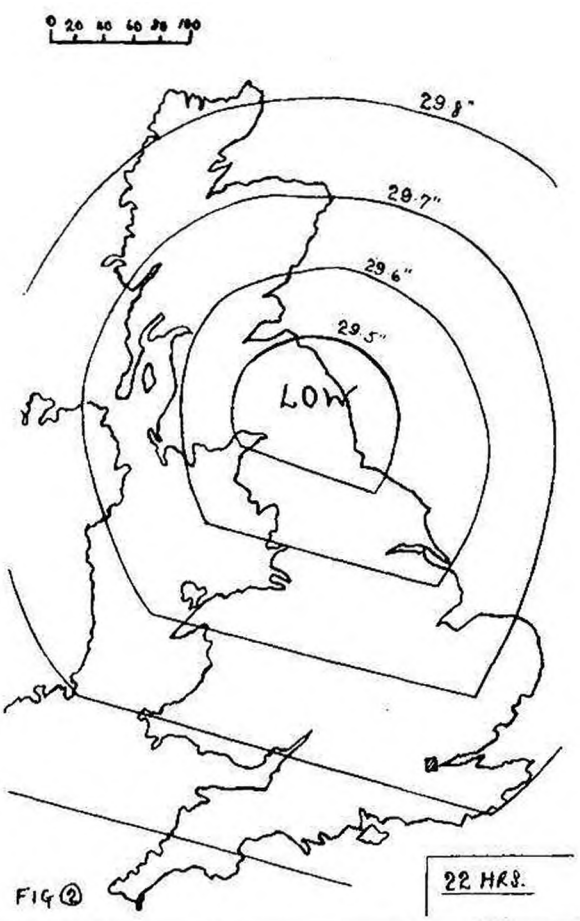


FIG ②

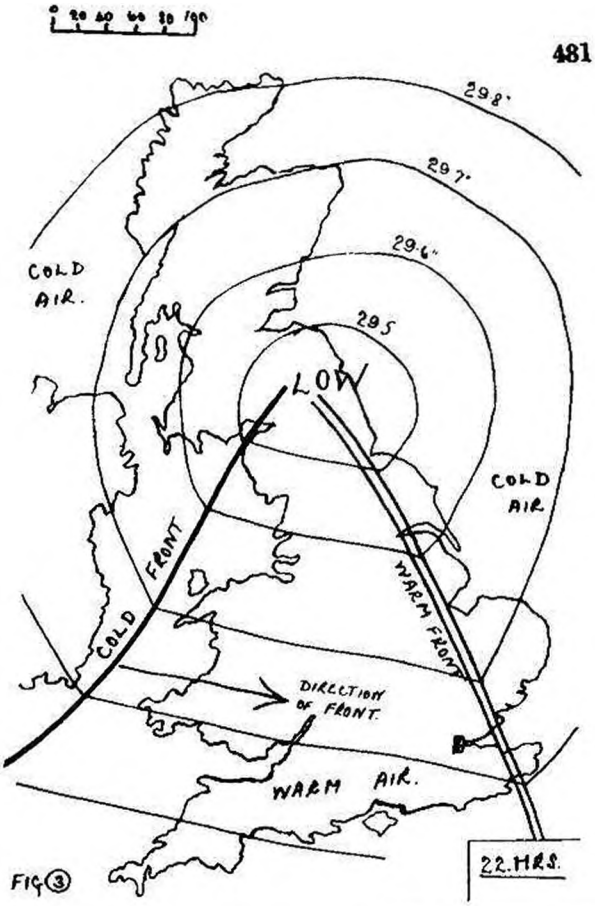
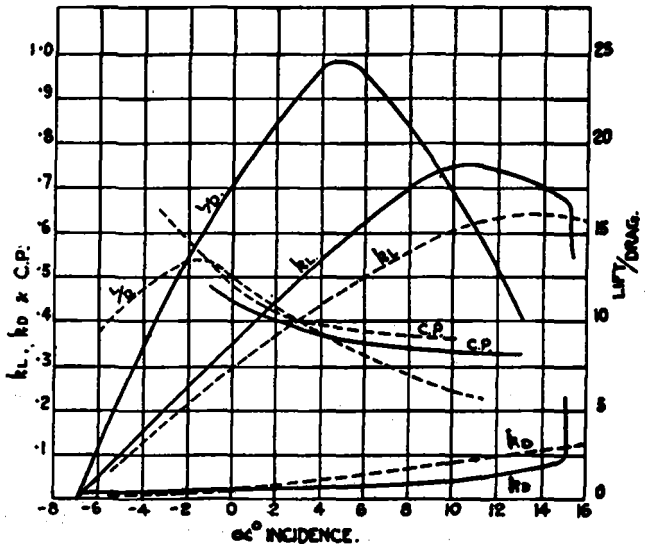


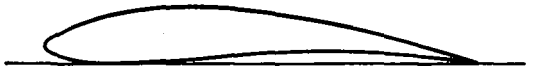
FIG ③

DR. SCHUKOWSKY'S AEROFOIL

By H. RENNESON ASHLEY,
Assoc M.C.Tech. (Eng.)

(Technical and Stress Assistant for Messrs. A. V. ROE Ltd.)





DR SCHUKOWSKY'S AEROFOIL R.R.A. 3. 2. 39.

LOOKING through some old files the other day, I found an aerofoil that seems to lend itself particularly well to model requirements. This section was tested in the Göttingen laboratories, the birthplace of many aerodynamic discoveries, and was designed by Dr. Schukowsky in 1915. The results of the tests, which were given here in modern English convention, were originally published in *Zeitschrift für Flugtechnik und Motorluftschiffahrt*, December, 1915, pages 23 and 24.

Considering the fact that the usual wartime machine was stayed and braced like a windjammer, it is evident that Dr. Schukowsky anticipated the modern cantilever monoplane, and the thickness of the wing section makes it very adaptable to model aircraft.

The figures for the accompanying graph have been worked out from the test data, and are in the usual non-dimensional coefficients. The maximum L/D of 25 will be noticed, and that the maximum lift coefficient is also high, namely, 0·745 at 11 deg. This may seem rather low, but when comparing with other curves, remember that this test would have been carried out with a tunnel speed of around 40 f.p.s. Also, this value does not occur at the critical angle, which is fairly sharply defined at 15 deg.

Other points about the test that are worth mentioning are that the aerofoil was of low aspect ratio—3·2 : 1—and that the ends of the section were fitted with large vertical partitions, to prevent end losses. Hence trailing vortices from the extremities were prevented, and the only circulatory system could be that around the aerofoil itself.

Let us now compare Dr. Schukowsky's aerofoil with the standard section for model work, R.A.F.32. In comparing aerofoils on a lift drag basis, it is essential to compare L/D ratios at the same K_L value, not at the same angle of incidence. This is on account of the fact that for two aerofoils at the same incidence the lift coefficients are different; hence the speeds would be different on a given model, and it is at the same speed that a comparison is required.

The results for the same aspect ratio must also be used for comparison. I have worked out the figures for R.A.F.32 at the same aspect ratio, and these are shown by dotted lines on the graph. (R.A.F.32 Aerofoil Test, R. & M. 928, September, 1924).

(The corrections for A=6 were made with the usual formula :—

$$\Delta\alpha=\frac{2}{\pi}\left(\frac{1}{A^1}-\frac{1}{A}\right)k_L \text{ and } \Delta k_D=\frac{2}{\pi}\left(\frac{1}{A^1}-\frac{1}{A}\right)k_L^2$$

and the corresponding lift drag curve found). (Note :— $k_L=\frac{1}{2}C_L$).

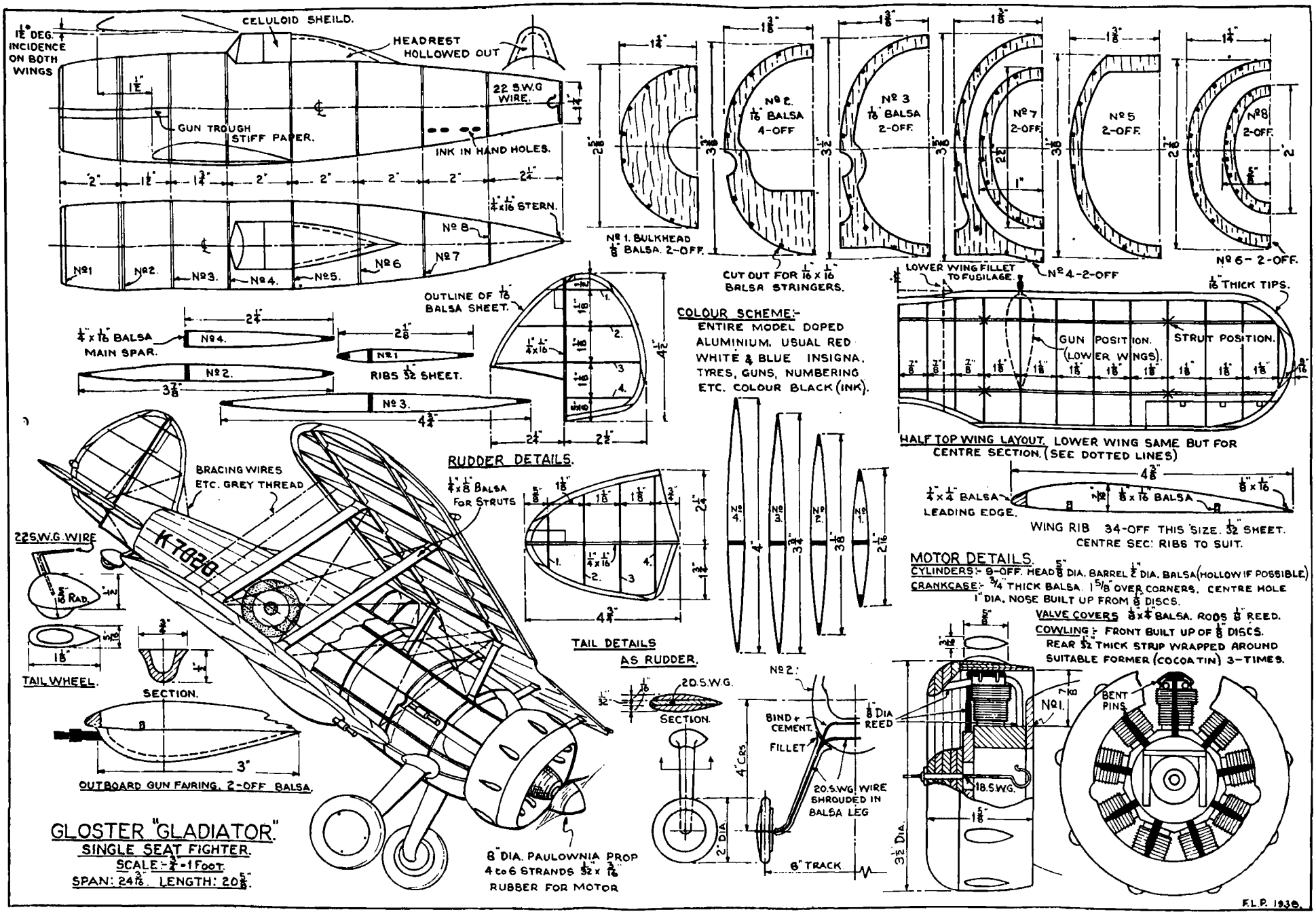
It will be seen that the lift-drag for R.A.F.32 is considerably higher than that for Dr. Schukowsky's section up to $K_L=·22$, after which the lift-drag for R.A.F.32 is considerably lower. So much so, in fact, that it can be said that the fitting of the vertical baffle plates in the Göttingen tests tend to make the results comparable with an aspect ratio of infinity, though this cannot be the case altogether, or the drag coefficients could not be of such magnitude. The maximum L/D for R.A.F.32 corrected to infinity is in the region of 68, for $K_L=·5$.

Although the method of testing makes the graph comparison incorrect, except for C.P. travel, this aerofoil shows worthwhile characteristics, and should be worth a few practical tests.

The ordinates for Dr. Schukowsky's section are given in the accompanying table.

ORDINATES FOR AEROFOIL.

%C.	Upper.	Lower.	%C.	Upper.	Lower.
0	3·75	3·75	40	12·4	1·70
2·5	6·50	1·37	50	11·2	2·40
5·0	8·00	0·87	60	10·0	2·60
7·5	8·90	0·37	70	7·70	2·70
10	9·90	0·12	80	5·50	2·50
20	11·9	0·37	90	2·70	1·50
30	12·6	1·20	100	0·00	0·00



GLOSTER "GLADIATOR."

SINGLE SEAT FIGHTER.

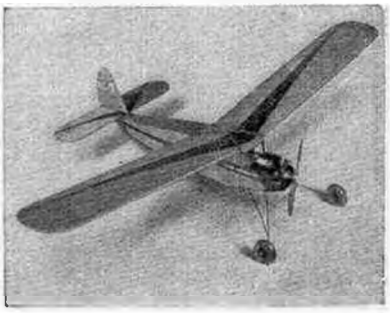
SCALE:- ½ = 1 FOOT.

SPAN: 24⅛". LENGTH: 20⅝".

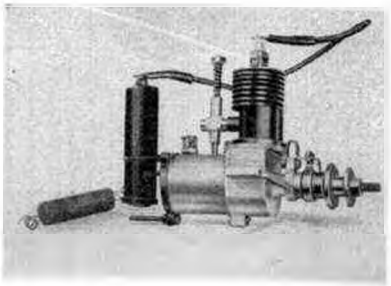
F.L.P. 1938.

THE CLOUD AIRMASTER

Wing Span 7" Weight 4½ lb.



An all-British Kit designed for British conditions. It has a remarkable climb and a wonderful glide. The wing divides and the tail unit and undercarriage are detachable. The Kit is complete to the smallest detail, and includes ample materials and a pair of 4½-in. inflatable air wheels, and two sheets of blue prints 53 in. × 31 in., with full instructions for building and flying. Complete Kit 52/6 carriage paid in U.K.



All-steel cylinder. Cast-iron piston. Steel crank disc, shaft and cam. Phosphor bronze main bearing. Silver steel needle. Crank case and fuel tank of aluminium. Dual system of mounting, either radially or on bearers. Timer of simple and robust construction. Tungsten points. Carburetter of simple mixing valve type. Bore and stroke ⅝ of an inch. 7,000 r.p.m. with 9-in. propeller. Easy starter, reliable, neat and compact. Total weight, with coil, condenser and prop., is 10 oz.

Price, complete with coil and condenser, £4 7s. 6d.
Propeller 2/6 extra.

S.A.E. "70" OIL

Prolong the life of your engine. You can now obtain the super quality S.A.E.70 lubricating oil, as used by all the leading experts in America. This oil is especially developed for the miniature engine. FROM YOUR DEALER 2/- per large can (12 oz.), or direct from Cloud.

CLOUD SILVER STREAK

A new unparalled discovery. One coat gives a silver metallic waterproof finish unobtainable with several coats of the ordinary silver dope. Due to the smaller number of coats needed, it is much lighter in weight. 7½d., 1/-, 3/- per tin.

POWER YOUR 'AIRMASTER' or 'CLIPPER' WITH A *DENNYMITE* 9cc. ENGINE

Most up-to-date motor on market to-day. New streamlined head permits rear of cylinder to be cooled, thereby preventing cylinder distortion due to uneven cooling. Long timer rod away from hot motor and propeller.

Cylinder and piston of molybdenum iron micro lapped. No rings. World's largest bearings for size of motor. Special aluminium alloy crankcase. Withstands 2,100 lb. breaking test. Surest timer—replaced free if one ever breaks.

DeLuxe Dennymite Airstream complete with exhaust, motor mount, coil and special choke. **£4 17s. 6d.**

Standard Dennymite exactly as above, but without exhaust, mount and special choke, **£4 7s. 6d.**

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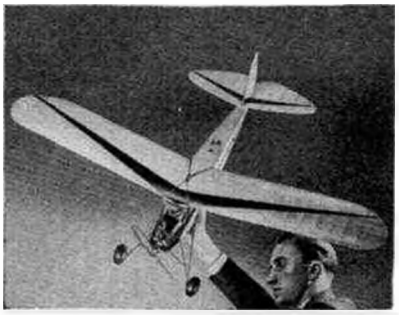
Wing Span 52"

A 'plane specially designed for the Cloud "3" 3 cc. engine. Any other engine of 2.5 cc. to 3 cc. may be fitted. The kit contains everything necessary. Plan and instructions are clear in every detail. Drawings full size, materials ample. Complete kit 32/6 carriage paid U.K.



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Per 3 ft. straight lengths.

28, 24, 20 S.W.G.	1½d.	per length.
18, 16 S.W.G.	2d.	"
14 S.W.G.	3d.	"
12 S.W.G.	4d.	"
10 S.W.G.	5d.	"

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Bore to fit 10, 12, 14, 16, 18, 20 S.W.G. wire. 4d. per 6 in. length. 1d. per 1 in.

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.0005 in., 6d. per ft. 6 in. wide.
4 in × 10 in. × 1/16 in., 1/-.

WHITE JAP SILK

¼ yd. 7d. ½ yd. 1/-. 1 yd. 1/10.

THE AMCO CLIPPER

De Luxe Kit with air wheels

39/6 carriage paid.

Wingspan, 6 ft. Weight (ready to fly), 2 lb. 5 oz.
Length, 53½ in. Wing loading, 8 oz. per sq. ft.

In the short period of time the CLIPPER has been on the market, it piled up an enviable record. More CLIPPERS are flown in contests throughout the United States and foreign countries than any other commercial model. Its tremendous popularity alone proves it's "got the goods."

BAMBOO TISSUE

for heavy rubber driven or petrol models, 36 in. × 24 in., per sheet 4d. Heavy weight coloured bamboo tissue, red, green, yellow, blue, per sheet 5d.

FINEST JAP TISSUE

Silver	per sheet	3d.
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1/10 in. thick, 12 in. × 6 in. ...		8d.
1/20 in. thin,	" ...	4d.

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Extra Strong, Quick Drying,
per tube 3d. and 6d. and 1/-

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All sizes	½ lb. 3/6, 1 lb. 6/-
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Celluloid, Balloon Type,
½ in. 3d. 1 in. 3d. 1½ in. 4d.
1½ in. 5d. 2 in. 8d. per pair.
Celluloid, Super Streamlined,
1 in. 3d. 1½ in. 5d. per pair.

"AIRITE" CELLULOID BALLOON WHEELS. A fine quality wheel with a reinforced hub and smooth rims, 1 in. 6d., 1½ in. 9d., 2 in. 1/-.

AUTO KNIPS TIMER for Petrol Models, 9/6.

CONDENSER. Can be used for any motor on market. Multiple strand leads. Price 1/6 each.

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Accurately cut in 36 in. lengths.

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⅛ in. × ¼ in. 2	"	1½d.
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¼ in. × ¼ in. 2	"	1½d.
¼ in. × ⅜ in. 2	"	1½d.
⅛ in. × ½ in.	each	1d.
⅛ in. × ¾ in.	"	1d.
⅛ in. × 1 in.	"	1d.
¼ in. × ½ in.	each	1d.
⅜ in. × ⅜ in.	"	1d.
⅜ in. × ½ in.	"	1d.
⅜ in. × ¾ in.	"	1d.
⅜ in. × 1 in.	"	1½d.
½ in. × ½ in.	"	1d.
½ in. × ¾ in.	"	1½d.
½ in. × 1 in.	"	1½d.
¾ in. × ¾ in.	"	1½d.
¾ in. × 1 in.	"	1½d.
¾ in. × 1½ in.	each	3d.
1 in. × 1 in.	"	3d.
1 in. × 1½ in.	"	4d.
1 in. × 2 in.	"	5d.
1½ in. × 1½ in.	"	6d.
1½ in. × 2 in.	"	8d.
2 in. × 2 in.	"	10d.

BALSA BLOCK, 36 in. length

½ in. × ½ in.	8d.	each, 3d.	per ft.
½ in. × 1 in.	9d.	" 3d.	"
¾ in. × 1 in.	10½d.	" 4d.	"
1 in. × 1 in.	10½d.	" 4d.	"
1 in. × 1½ in.	1 1	" 5d.	"
1 in. × 1½ in.	1 3	" 6d.	"
1½ in. × 1½ in.	2 -	" 9d.	"
2 in. × 1 in.	2-	" 9d.	"
2 in. × 1½ in.	2 3	10d.	"
2 in. × 2 in.	2/9	" 1/-	"
3 in. × 3 in.	4/9	" 1/10	"

BALSA SHEETS, 36 in. lengths.

	2 in. wide.	3 in. wide.	4 in. wide.	6 in. wide.
3 ft. × ⅛ in.	3d.	5d.	9d.	1/-
3ft. × ¼ in.	3d.	5d.	7d.	—
3 ft. × ⅜ in.	3d.	5d.	7d.	10d.
3 ft. × ½ in.	4d.	6d.	9d.	1/-
3 ft. × ¾ in.	5d.	7d.	10d.	—
3 ft. × 1 in.	5d.	8d.	11d.	—

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48 in. × ⅜ in. × ⅛ in.	1½d.	each	
48 in. × ⅜ in. × ¼ in.	2½d.	"	
48 in. × ½ in. × ¼ in.	3d.	"	

SPECIAL REED FOR TAILS, WING TIPS, ETC.

36 in. × ⅛ in.	1d.	each
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36 in. × ⅜ in.	2d.	"
36 in. × ½ in.	3d.	"
⅛ in. × Birch dowling	1d.	per ft.
¼ in.	1½d.	"
½ in.	1½d.	"

BIRCH PLYWOOD FOR FORMERS, ETC.

12 in. × 3 in. × 1 mm.	1½d.	each	
12 in. × 3 in. × ⅛ in.	1½d.	"	
12 in. × 3 in. × ⅛ in.	1½d.	each	
12 in. × 3 in. × ¼ in.	1½d.	"	

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Send for illustrated catalogue 3d. post free

AMCO GOLDEN EAGLE DE LUXE KIT

30/- carriage paid

A NEW TYPE

GAS MODEL designed for the SMALL MOTOR

Amco designers present gas model enthusiasts with a distinctly new type of gas model especially designed for a small motor. Tested hundreds of times in actual flights. Its versatility alone is enough to stamp it as unique—think of being able to fly a gas model in three different ways—as a high-wing, mid-wing, or low-wing—instantly interchangeable at the field in only a few seconds. The list of contents is impressive for its completeness.

Features of the GOLDEN EAGLE DeLuxe Kit.

Wingspan 45 in. Length 32¼ in. Weight, ready to fly, including motor, 1 lb. Completely finished parts include ribs die-cut; shock-absorbing bent music wire landing gear with streamlined fairing; semi-carved propeller; motor mount ready to install; adjustable battery mount; 1 pair air wheels; removable cowling for motor inspection; motor, cowl and battery instantly removable in one unit for servicing; motor may be mounted inverted or upright; sliding cabin hood for access to battery. All wire and metal fittings furnished; many finished and semi-finished fittings; full size 3-view plans with full size patterns; bamboo paper; generous quantities of cement, banana oil, and red, blue and yellow dope.

NEW AUSTIN FLIGHT TIMER

Adjustable from 1 sec. to 1 hour. Weight ⅝ oz. Accurate, reliable. Complete to drilled mounting holes. Ready to attach wires and install in ship. The first dependable timer made just for models. 9/6.

DOPE

Clear or Aluminium,
per tin 6d., large tin 10½d.
8-oz. **Clear Dope**, for petrol models, 1/6 per can
8-oz. **Aluminium Dope**, " 2/- "
8-oz. **Cement**, " 2/- "

BANANA OIL

No. 1 for waterproofing and finishing balsa, ply, etc.,
per tin 6d., large tin 10½d.
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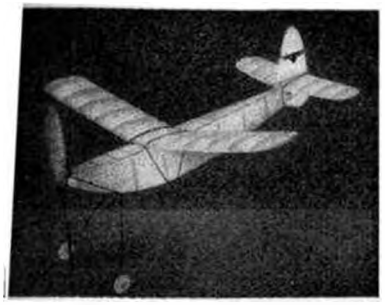
per bottle 4½d.
Dope Brushes ... ... 2d. each
Super Quality Brush ... 3d. "

CLOUD (MODEL) AIRCRAFT

MODEL AIRCRAFT TRADE ASSOCIATION



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Span 24 in. To S.M.A.E. formula. Weight 3¼ oz. Designed by R. J. O'Neil. The thousands sold indicate its worth. To build one makes you a sure convert to the happy throng of satisfied aero-modellists. Price of complete kit, including finished prop., ready-cut ribs, print and ample supplies of everything needed. **Price 5/-. Carriage 6d. extra.**

PRICE 8/- POST FREE

CLIPPER JUNIOR

Flies like a Gas Model

FEATURES

- 36 in. elliptical wing.
- Detachable wing—protects it in event of collision.
- Engine roar device—whines just like the real thing.
- Metal cylinder flanges.
- Finished propeller.
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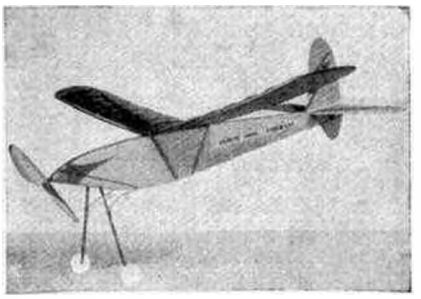
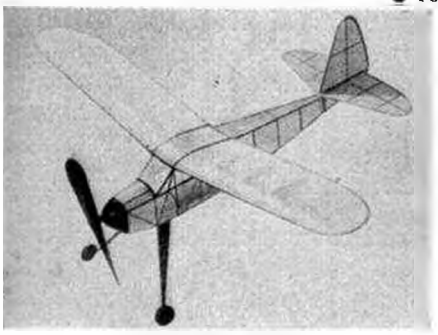
Exact duplicate of famous CLIPPER in every detail—looks exactly like it. You can't tell it apart from a gas model. Its high climb, roaring motor, and flat glide will fool even experts. Building and flying the CLIPPER JR. gives you fundamentals of gas model building and flying. *Experts recommend it before building first gas model.*



THE CLOUD NIPPER

Wing span 26 in. Length 17½ in. Weight 2 oz. Designed by R. J. O'Neil. Designed especially for the beginner. The fuselage, tail-plane and fin are all made of sheet balsa wood. Construction is very simple, and materials supplied are ample. Entire kit, with instructional print. Finished propeller. Wing ribs stencilled out to facilitate accurate cutting.

Price 6/6 complete. Postage 6d. extra.



PACIFIC ACE

Light-weight Duration Model. 30 in. span.
Price 3/6. Postage 6d. extra.

TREXLER BALLOON WHEELS

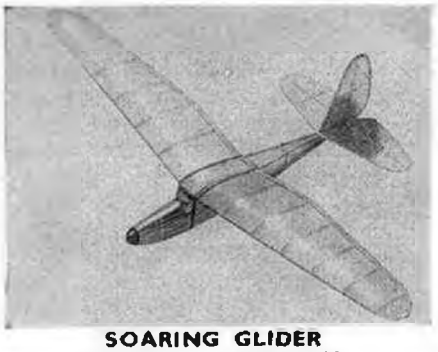
Trexler Balloon Wheels can be inflated and deflated by the new patented tube on each wheel. The wheel and hub are separate, allowing the wheel to be easily removed for repairs. Trexler Balloon Wheels are made of the finest rubber available.

Rubber Powered Models.

	Size.	Weight of Wheels.	Price
No. 1	1¾ in.	15/100 oz. per pair	2/3
,, 3	1¾ in.	30/100 oz. ,,	2/6
,, 4	2¼ in.	30/100 oz. ,,	3/-
,, 6	2¾ in.	35/100 oz. ,,	3/9

Gas Powered Models.

	Size.	Weight of Wheels.	Price.
No. 8-G	2¾ in.	1 oz. per pair	6/6
,, 9-G	3 in.	1¼ oz. ,,	7/6
,, 10-G	3¼ in.	2 oz ,,	8/6
,, 11-G	4¼ in.	3 oz. ,,	9/6



SOARING GLIDER

31½ in. span. Simple to build.
Price 3/-. Postage 6d. extra.

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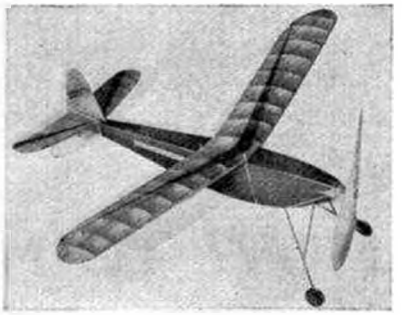

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Petrol Propellers—plain unvarnished—

9 in. diam.	2/6	13 in. diam.	4/-
10 in. ,,	3/-	13½ in. ,,	4/3
12 in. ,,	3/6	14 in. ,,	4/6
12½ in. ,,	3/9		

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WINDING WITHOUT TEARS

By H. A. C. HASSALL

HAVING had the misfortune on several occasions to "explode" a rubber motor in the fuselage of a model, with disastrous consequences, I decided that it was time something was done about it, and the following is a brief description of the method I finally adopted, and have used successfully for the past twelve months. Although it may not be novel, I do not recollect seeing anything of the kind published, and feel that there must be many fellow-sufferers who will take the little extra trouble to ensure safety.

The first requirement is that all one's models should be built with a detachable tail unit, so that this may be removed from the model prior to winding. Secondly, the rear motor fixing should be by means of a dowel. Thirdly, the motor itself should be mounted on a short piece of aluminium tubing, as shown in Fig. 1, the tubing being sufficiently large in diameter to allow the dowel to be easily pushed through same. The other end of motor is attached to propeller spindle hook in the usual manner. These are the only modifications necessary on the model itself. The next requirement is a winding stick, shown in Fig. 2. This is made from a piece of $\frac{3}{8}$ in. dowel, and should be long enough to pass right through the fuselage and project six inches in front of same. To one end is attached a double wire claw made from 18 gauge piano wire, and to the other a handle made from 1 in. dowel. The method of securely fixing these is also shown in Fig. 2.

The system of operation found most satisfactory is as follows:

(*a*) Remove tail unit and attach claw to aluminium tube. (A helper is required, of course, to hold the winding stick).

(*b*) Withdraw dowel from fuselage and tube with one hand, holding the noseblock with the other.

(*c*) Slide the model away from you on to the winding stick.

Fig. 1

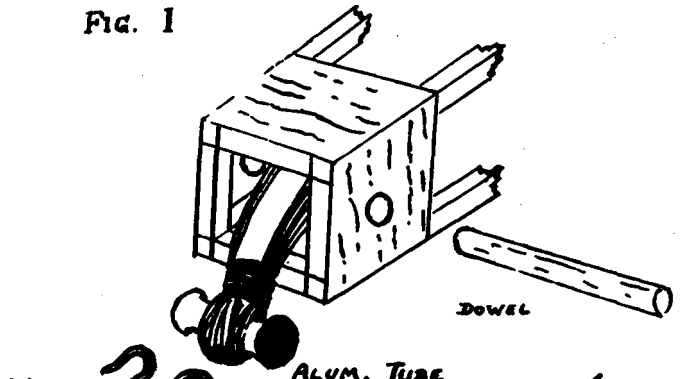
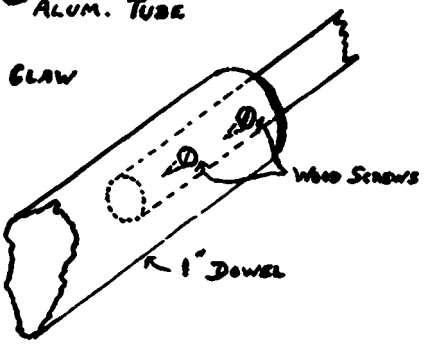


Fig. 2



Your helper will now be able to hold both ends of the stick, with the model swinging loose on same, and you can stretch and wind to your heart's content in absolute safety. After winding, the model is pulled forward over the motor, the dowel replaced through the rear end of fuselage and aluminium tube and the claw is then released, after which it is only necessary to replace tail assembly.

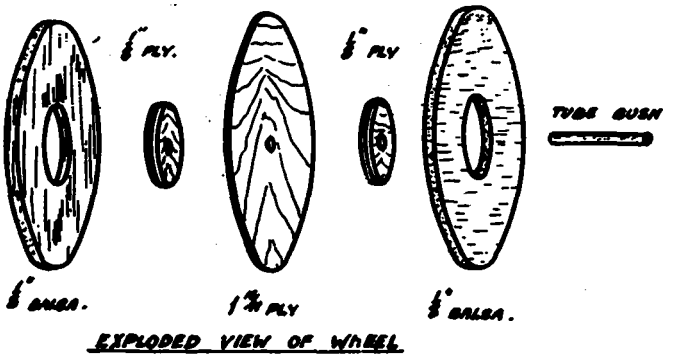
Although this may seem rather complicated, it is really very easy, and after a little practice it is possible to wind a model almost as quickly as by the more usual methods.

HOW TO MAKE BUILT-UP DISC WHEELS

By S. VOULES

How to Make Built-up Disc Wheels.

Cut two discs of $\frac{1}{8}$ in. balsa the size of the wheels required, and also 1 mm. 3-ply disc same size. Now cut two discs of $\frac{1}{8}$ in. 3-ply $\frac{3}{4}$ in. diameter. Glue these on to the 1 mm. 3-ply disc at the centre, cut a $\frac{3}{4}$ in. hole out of the centre of each $\frac{1}{8}$ in. balsa disc, and glue on to 1 mm. ply disc. Mush with a piece of tube and shape up.



EXPLODED VIEW OF WHEEL

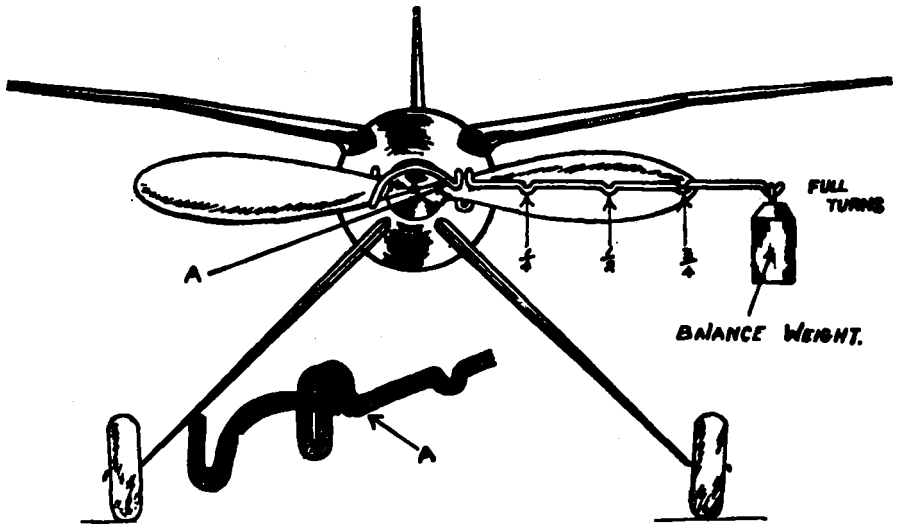
Marking Formers, Ribs, etc.

A good way to mark formers, ribs, etc., for slotting, to take spars and stringers, is to take a small stick of spruce, about three inches long, of the required size, and cut it off dead square. Then press one end on a self-inking stamp pad and mark the place on the former, rib, or what-have-you, where you want to cut a slot. This saves a lot of time and trouble in drawing out the slots.

I advise spruce, because balsa tends to make a blurred mark on the wood impressed. and birch does not soak up the ink too well.

A TORQUE TURN BALANCER

By S. E. CAPPS



THE idea described here was devised as an indicator of the number of turns on a rubber motor without indulging in the doubtful pleasure of counting them. Counting the turns on a model aircraft motor always has been a frightful job with the writer, who, not gifted with high powers of concentration, has never been able to count carefully the turns imparted to his motors and at the same time listen to questions and take part in the conversation of the spectators who, for some unknown reason, always start an involved discussion about models when one is winding up. With this gadget one can talk and wind, and at the same time keep an eye on the performance of the gadget.

The device is simple, and the one the writer made has proved remarkably satisfactory in use. The main essentials are the arm A, which can be made from any stiff wire (about 12 S.W.G. is suitable), or a good cycle spoke will do. This is bent as shown to fit round the airscrew boss and can be instantly removed. The length of the arm is not very important, but should just exceed the outside of the diameter of the airscrew.

How this is arranged at one end to clip on the airscrew is clearly shown in the sketch. The next part is deciding the counterweight necessary. Now this weight must balance the full torque developed by the motor when fully wound up.

To do this the motor should be wound right up to full; attach balance arm on to boss of airscrew, hold in this position, while different lead weights are hung on the end of arm. When one has been found that either balances the torque or very nearly does, discard all the others and concentrate on adjusting that one correctly. Note here that it is always easier to lighten a weight than to increase one in a case such as this, and it would be advisable to choose one somewhat heavier than required. Lighten weight by cutting or filing away the lead until the torque just holds it in a horizontal position. When this has been obtained one can make positions on the arm for quarter, half, and three-quarter turns. This is accomplished in the same way as with full turns. First wind to the number required, and then make a dent or mark on the arm at this point, where the weight balances. Repeat for the half and three-quarter turns positions.

In conclusion, may the writer point out that this gadget will *not* tell exactly to a turn how many are on the motor, nor will it actually count the turns, but if adjusted correctly with a good, free-running airscrew shaft, an approximation near enough to any predetermined number can be had which is sufficiently accurate for most general flying models, and oh! boy, one does not have to count the turns.

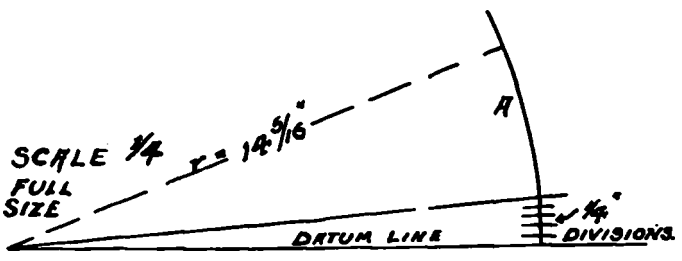
The idea is most effective when motor is wound from the rear, when the balance arm is mounted on airscrew and left there while motor is wound.

A PRACTICAL METHOD OF SETTING OUT ANGLES FOR DIHEDRAL INCIDENCES, DOWNTHRUST, Etc.

By G. W. GREENHALGH

TO set out an angle for dihedral with the protractor—which most aero-modellists are likely to possess—is prone to a large percentage of error at the tip of a wing of, say, 24 or more inches long. I have used the following method quite successfully when setting out my models, and pass it on to aero-modellists and students generally as being very close to accuracy.

On the most convenient point on your datum line strike an arc "A" of $14\frac{5}{16}$ in. radius. You have no compasses to accommodate this radius—well, obtain a stick, and at $14\frac{5}{16}$ in. drive in a small tack. Use this as the point. Placing your pencil at the end of stick, you will find it quite easy to strike the arc.



Now every $\frac{1}{16}$ in. division on this arc represents one degree, and, referring to sketch, which is quarter full size, you will see that five such divisions give an angle of 5 degrees. You will find it quite easy to work to a half degree with this method, if necessary.

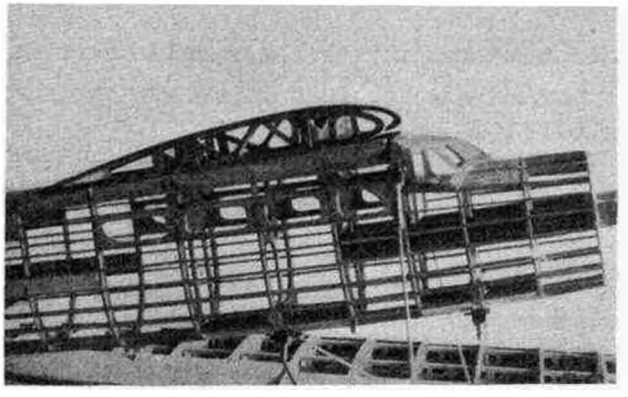
SOME NOTES ON GAS MODEL ACTIVITY IN ITALY

By FIDIA PIATELLI

Our Italian Correspondent

IT is well known to the readers of THE AERO-MODELLER that Italian model builders have specialised for many years in the construction of model sailplanes, and the technique of launching them with a tow-line in flat country and by hand in the hills.

Nevertheless, recent interest in international competitions has brought the Wakefield model much to the fore, and very recently great interest has been centred around gas-engined models. The real reason for this new activity is probably twofold. Firstly, the easy building of a really efficient gas model is strictly dependent on the reliability of the engine adopted, and it is only in 1938 that suitable model petrol engines have been built in series in Italy and became available at reasonable prices.



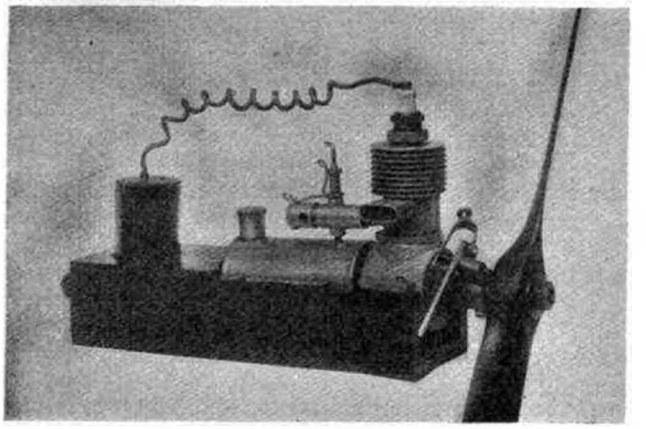
Centre section of petrol 'plane built by Giovani Piccardi.

Moreover, the governing bodies became interested in this branch of national aero-modelling, and have been officially encouraging the building of gas-powered models with prizes and competitions.

In 1938 the Under-Secretary for Air, Generale Valle, gave a prize for the first Italian petrol-engined model 'plane to fly for more than one hour.

The winner, Ing. Ciampolini, of Bologna, had been for many years designing and building not only models, but gas engines to power them; isolated efforts to build model petrol engines have also been made in Reggio Emilia, where a motor of completely new and original design had been built and tested, and also in Rome.

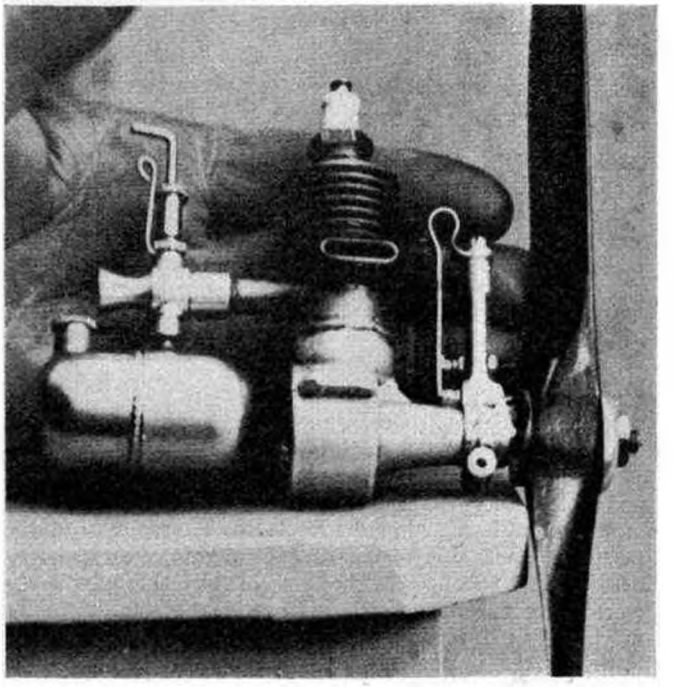
The "Giglio" series of engines, designed and built in Florence, has been developed in close connection with the local aero-modelling school. They are now full production jobs, and range in size from three to ten cubic centimeters. Of the two-stroke type, they give power up to ¼ h.p. and are of moderate price. Cylinders are of machined steel, the screwed-on head being of die-cast duralumin. Duralumin pistons, with three gas rings, are adopted, with duralumin connecting-rods. Crankshaft in steel, stamped and machined, while the crankcase and accessories are in light alloy, die cast.



The "Giglio" 10 cc. engine.

National gas model components being now available, the Italian model journal, *l'Aquilone*, has been able to organise a new and very interesting gas model competition for next summer. The trials will be held in Rome, at the Littorio Aerodrome, during a meeting of the International Aeronautical Press, which is being organized by the *Editoriale Aeronautica*. Aeronautical journalists from all over the world will be present, and models will be entered by Italian newspapers and flown by aero-modellers appointed by the papers. A money prize is given for the best article, in an Italian newspaper, on the contest and aero-modelling in general. The competition is for duration, and every model is to be fitted with a timer, allowing a power run of exactly 30 seconds. So the best climber and glider will succeed.

The "Giglio" 3 cc. engine.



LETTERS TO THE EDITOR——

DEAR SIR,

With reference to Mr. Rogers' letter in the June issue of THE AERO-MODELLER, I have one or two criticisms to make with regard to his remarks on speed flying.

Having read his letter carefully, I drew the conclusion that Mr. Rogers is quite opposed to any form of lightly loaded speed models. This, coming from such an old hand at the game as himself, might discourage any would-be speed fan from building a model for racing purposes.

In my opinion, the formula upon which Mr. Rogers basis his designs ($S=\sqrt{L}\times 6$) need never be taken into consideration when laying out one's model. This formula will give the minimum approximate flying speed, but that is all. When one considers the enormous wing loading of Mr. Rogers' " Mercury," incorporating considerable time, money and labour and giving a speed of 46 m.p.h. against that of American light models with their 60-70 m.p.h., one wonders whether or not there is something to be achieved with light loading. In fact, it rather bears out the two important facts required for fast flight:

(*a*) Light streamline design.
(*b*) Fast-revving propeller capable of delivering work equal to the required speed.

In order to try to convince some friends of mine on the possibilities of light speed models, I entered a model in the 1938 S.M.A.E. contest, designed on similar lines to the American machines. My model was finally placed second, with a speed of 31·37 m.p.h.

The data on this model might prove of interest to readers:

Span ...	=	19 in.
Length ...	=	28 in.
Area of wing	=	67 sq. in.
Propeller ...	=	9 in. dia. 12 in. pitch.
Power ...	=	20 strands of ⅛ in. rubber.
Total weight	=	4·9 oz.

The loading of this machine was only 10·25 oz. per sq. ft., and according to Mr. Rogers' formula, the model should never have exceeded more than about 20 m.p.h. However, of the fourteen flights made, twelve were in excess of 30 m.p.h. More power might have given a speed of 50 m.p.h. or more.

I feel quite sure that anyone entering this year's contest with a light model will be quite surprised and pleased with the result. Why not give them a try?

Yours faithfully,

R. A. BROWN (B.M.F.C.).

DEAR SIR,

After atempting to read the effusion published under the name of " Clubman " in your May issue, we find ourselves wondering if the publication of your journal is really fostering the interests of model aviation. The building and flying of model aircraft is increasingly recognised as a valuable means of encouraging " air-mindedness." The advances made by the hobby throughout the world have shown its worth and universal appeal, not only to youth but to serious-minded adults.

Surely the journal devoted to a subject of such wide interest can rise above the cheap vulgarity of the music-hall. Such lack of taste can but produce extremely unwanted results.

Yours faithfully,

J. G. COOTE (*Chairman*).
A. S. HANDS (*Hon. Sec.*).
A. R. TURNER (*Treasurer*).
R. BEDFORD (*Competition Sec.*)
H. K. HICKS (*Delegate*).
E. J. ARCHBOLD (*Press Sec.*).
N. BLACKLOCK } (*Committee*
—. PEDERSON } *members*).

J. O. Young.	W. H. Gilby.
L. Gent.	J. Hands.
L. A. Skinner.	A. E. Halt.
D. Wallis.	H. Beedle.
W. H. Swan.	B. Shaw.
I. D. Keir.	A. Perry.
L. G. Dowding.	R. T. Church.
W. J. Prescott.	M. Holbrook.
R. W. Smyth.	J. Reynolds.
D. Shepherd.	R. C. New.
T. Doman.	

(All above are members of the Harrow and District Club.)

To the Harrow M.A.C. (all 29 of 'em).

MY DEAR MRS. GRUNDIES,

Were it not for the fact that you have seen fit to broadcast your cleverness in the sending of the above letter, I would have answered you through the post, but as I am forced to continue under a *nom-de-plume* for the purpose of conducting Club News (for reasons obvious even to *you*, I would surmise) I am forced to make my reply through the columns of this journal.

In justification of a certain amount of levity creeping into my notes now and again, may I point out that to date I have received no less than thirty-two " acclamations " for the " Sid Walker " skit, against your solitary condemnation—a case in which I submit that facts speak for themselves.

Whilst agreeing that the sport of aero-modelling is a valuable means of encouraging air-mindedness, I would respectfully submit that any sport, hobby—or even work—is the better for a little brightness, and to pick up a journal that confined itself entirely to technicalities would pall in time. I would draw to your attention the title under which my notes are written, e.g. " Club News " —and I claim that it is my experience that nowhere else can one find a jollier crowd, or more leg-pulling, than occurs in a model aeronautics club. Is it any wonder, then, that on occasion humour rears its ugly head—but I'll guarantee it pleases more than it displeases.

Honestly, I was at a loss to understand your attitude at first, but on investigation I discovered that naughty me had not put in any report from the exalted Harrow Club in the criticised issue—and on further investigation I found that said report did not reach me until five days after the closing date for receipt of club reports. Well —I asks yer, chums, need I say more!

It would seem that your venerable Press secretary has got a bee in his bonnet, and the rest of you signed up like a lot of sheep! I have not had the pleasure of meeting you all as a club, but I do know various individuals, and

this effusion of yours rather goes against my opinion of these few. Surely the geographic location of your club has not imbued you too deply with the " old school tie " anathema for a bit of good low humour on occasion. I fear my opinion of aero-modelling is like to undergo a change!

However, may I trust that this sees the last of such petty quibbling, and for goodness sake, if you don't like a thing, don't take it for granted that everybody else is of the same opinion. I wish to remain friends with all enthusiasts, but to broadcast this sort of criticism is running up against a mule that can give a helluva kick back! So, my cheery friends, let's bury the hatchet—(in my skull if you like—and can find me) and " Let's call the whole thing off."

Regretfully, but very necessarily, I must sign myself

THE CLUBMAN.

KEEP THIS COUPON TO ATTACH TO YOUR ENTRY FOR OUR PHOTO-GRAPHIC COMPETITION

Coupon No. 1—July

THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

Notes of a Council Meeting of the S.M.A.E., held in the Central Y.M.C.A., Great Russell Street, Tottenham Court Road, London, W.C.1, on Wednesday, May 8th, 1939.

Dr. Thurston was in the chair.

The minutes of the previous meeting were read and confirmed.

Arising from the minutes, Dr. Thurston wished to thank Mr. Cosh from the chair for the very nice letter he had circulated, appealing on behalf of the Dray Memorial Fund.

The Council again discussed the question of Mr. Leadbetter and the Southport Club. The Council decided to allow the matter to rest, the Pilcher Cup remaining in the S.M.A.E.'s keeping.

It was brought to the notice of the Council that the Lincoln Club had sent a circular letter to other affiliated clubs *re* the Wakefield Trials. While the Council realised that the Lincoln Club was young, the secretary was instructed to write informing them that circularising clubs, other than issuing invitations to open competitions or gala days, etc., was unconstitutional, and that all matters for the Council's attention should be brought to the notice of the Council through their delegate.

A letter from the Hayes Club *re* the Area Scheme was read. Maps and particulars of the Area Representation Scheme were handed to all delegates.

A letter from Mr. York was read, in which he desired to bring before the notice of all club members that, through an oversight in the S.M.A.E. Handbook, it appeared that the Competition Secretary, Technical Secretary, Treasurer and himself as Press Secretary, received remunerations. These gentlemen wished it to be known that their positions were entirely honorary, and that no remunerations of any kind were received by them. The secretaries stated that the reverse was the case, as their offices caused them considerable financial expenditure. Dr. Thurston and Mr. Houlberg, as president and chairman, thoroughly endorsed their remarks. The Press Secretary was instructed to make a special note of this in his next report.

Mr. Hawkins announced that the Wakefield Cup Fund totalled £208 15s. 2d. This was exclusive of promises. Mr. Houlberg stated that as a result of writing two articles, one in *Flying* and one in THE AERO-MODELLER, he would, when these articles were paid for, hand to the Society five guineas in respect of each, a total of ten guineas. A very hearty vote of thanks was passed to Mr. Houlberg.

Alterations and additions to timekeepers and Council delegates were made for the following clubs:

Bournemouth.	West Sussex.
Bushey Park.	Gosport.
Surrey.	Windsor (Manchester).
City (Birmingham).	Victoria.
Aldersbrook.	Letchworth.
Dartford.	

The following applications for reaffiliation were granted.

Sheffield and District	50 members
Stockport	20 ,,
Dartford	12 ,,
S. Smith & Sons	21 ,,
Southport	17 ,,
Surrey	30 ,,
Windsor (Manchester)	12 ,,
Newcastle (Staffs)	13 ,,
Woking	49 ,,
Southampton	17 ,,

The following clubs were affiliated:

Burnley M.A.C.	14 members
Egham and District M.A.C. ...	19 ,,
Queries M.A.C.	12 ,,
Devon and Exeter	20 ,,
Wanstead M.A.S.	12 ,,

The Council, in the case of the Queries Club, suggested that Surrey should be incorporated in their title.

Retford M.A.C., with 18 members, and Ilkeston M.A.C., with 16 members, were affiliated, subject to further information being received.

The following grounds were sanctioned for the use of petrol flying: Mildenhall, Reading, Blackpool, Bolton, Barnsley. Newcastle Town Moor was passed subject to permission being given by the local authorities.

It was announced that transfers of the S.M.A.E. badge for attaching to models were ready, the price of these being 10 for 4d. Will club secretaries order these in bulk from Mr. Cosh?

A letter from a club was read, in which it was claimed that in a competition two persons had flown one model as separate entries. It was also stated that one competitor had entered two models. The Council unanimously expressed the opinion that this was contrary to the spirit of the movement and it is hoped that such occurrences will not happen again. This instance will be brought up at the annual general meeting for discussion.

The Competition Secretary announced that the West Sussex Club had informed him that they had sent on the results of a decentralised competition. This letter had not been received by Mr. Smith. The West Sussex Club had not supporting counterfoil covering the postal order for their entries. The Council expressed regret that no action could be taken in the matter.

The Council then disucssed " trade number plates " (for petrol models). Cloud Model Aircraft had asked whether one fee would be accepted by the Council covering any petrol models they wished to test out in the course of their business. They stated that such a number plate would save them time in registering, with the S.M.A.E., their models. The Council decided to consider this matter and bring it up at the next meeting.

Records.

Tow-line glider record by K. L. Stothers of 5 min. 10 sec. was referred back, as the Council wished to know the length of run Mr. Stothers had made.

Winch-launched glider record by Mr. Mawby of 36 min. 31 sec. was passed. The Council desired to know whether Mr. Mawby held an F.A.I. licence, as in a flight of this description a world record may have been made.

The Council stressed the desirability of club members obtaining these licences.

Particulars had been received by the Competition Secretary of two flights in the Caton Trophy Competition.

Mr. A. C. Freeman, 19 min. 56·8 sec.

Flight-Sergt. Darling, 15 min. 3 sec.

Mr. Rushbrooke announced that the North-Western Area had commenced operations under the new Area Representation Scheme. Mr. D. A. Gordon announced that preliminary meetings had been held in order to get the north-eastern area of London working, and that Woodford had been chosen as the most central spot. Will club secretaries in the various areas get together and arrange their preliminary meetings?

The Council decided to have two winches made for the King Peter Cup trials. It was thought that this number would be sufficient, as most competitors in the trials would provide their own winches. The Council will consider having more winches made for the competition proper, after having examined those used in the trials.

The meeting closed at 10.45 p.m. with a vote of thanks to the chair, which for the latter part of the evening had been taken by the chairman, Mr. A. F. Houlberg.

H. YORK,
Hon. Press Secretary.

Wakefield Cup Trial Results

F. Almond (North Kent)	230·2 sec.
N. Lee (Halifax)	220·1 ,,
R. Copland (Northern Heights)	186·2 ,,
R. T. Parham (Edgware)	180·0 ,,
L. Stott (Halifax)	175·0 ,,
R. A. Hill (Bournemouth)	171·5 ,,

King Peter Cup Results

R. E. Galbraith (Blackheath)	577·75 sec.
F. E. Wilson (Northern Heights)	412·6 ,,
A. Cox (Northern Heights)	385·8 ,,
A. C. Minion (Hayes and District) ...	346·2 ,,
A. Tindall (Lancs M.A.S.)	325·7 ,,
G. F. Clifford (City (Birmingham)) ...	307·9 ,,
A. A. Weston (Park M.A.L.)	289·1 ,,
G. E. J. Reynolds (Surrey)	286·5 ,,
H. Hill (Lancs M.A.S.)	284·4 ,,
G. W. Day (Northern Heights)	278·3 ,,
W. G. Olliver (Unattached)	270·85 ,,
H. N. Simmons (Blackheath)	251·95 ,,

The Wakefield Fund

Following is a list of further donations received since our last list was published.

	£	s.	d.
THE AERO-MODELLER	15	15	0
Luton	4	4	0
King Edward's School (Birmingham) ...	0	7	6
Oxford	0	7	6
D. Gilby, Esq.	0	10	0
Hawker M.A.C.	2	2	0
Whitstable	0	3	6
Gosport	1	0	0
Air League of British Empire	5	0	0
Luton (2nd)	0	10	0
Geo. Marshall and Co. Ltd.	1	0	0
Bushey Park	1	1	0
Bromley	1	0	0
Northern Heights	3	0	0
Devon and Exeter	1	1	0
Midland	2	2	0
Chingford	0	5	0
Hayes and District (3rd)	1	10	0
Messrs. C. Arthur Pearson Ltd.	5	5	0
Hackney	1	1	0
Hornchurch	0	19	0
C. R. Fairey, Esq.	10	0	0
Sheffield	0	10	0
Cardiff	1	1	0
T.M.A.C.	2	0	0
Ulster	5	0	0
The Balsa Wood Co.	10	10	0
B. K. Johnson, Esq.	2	2	0
Surrey	0	10	6
Twickenham	0	7	0
Newcastle (Staffs)	0	15	0
Wakefield (Yorks)	1	11	0
Edinburgh M.F.C.	1	0	0
This makes a total of	£266	12	9

The Dray Memorial Fund

	£	s.	d.
S.M.A.E.	26	5	0
THE AERO-MODELLER	5	0	0
R. T. S. Gillet, Esq.	0	10	0
Windsor (Manchester)	0	4	6
Edgware	0	10	3
W.M.A.C., P.A.D.S	0	4	0
Hayes and District	1	1	0
Cranwell	2	0	0
Dagenham	0	5	0
Newcastle (Staffs)	0	5	0
	£36	4	9

THE HANNOVERANER C.L.III

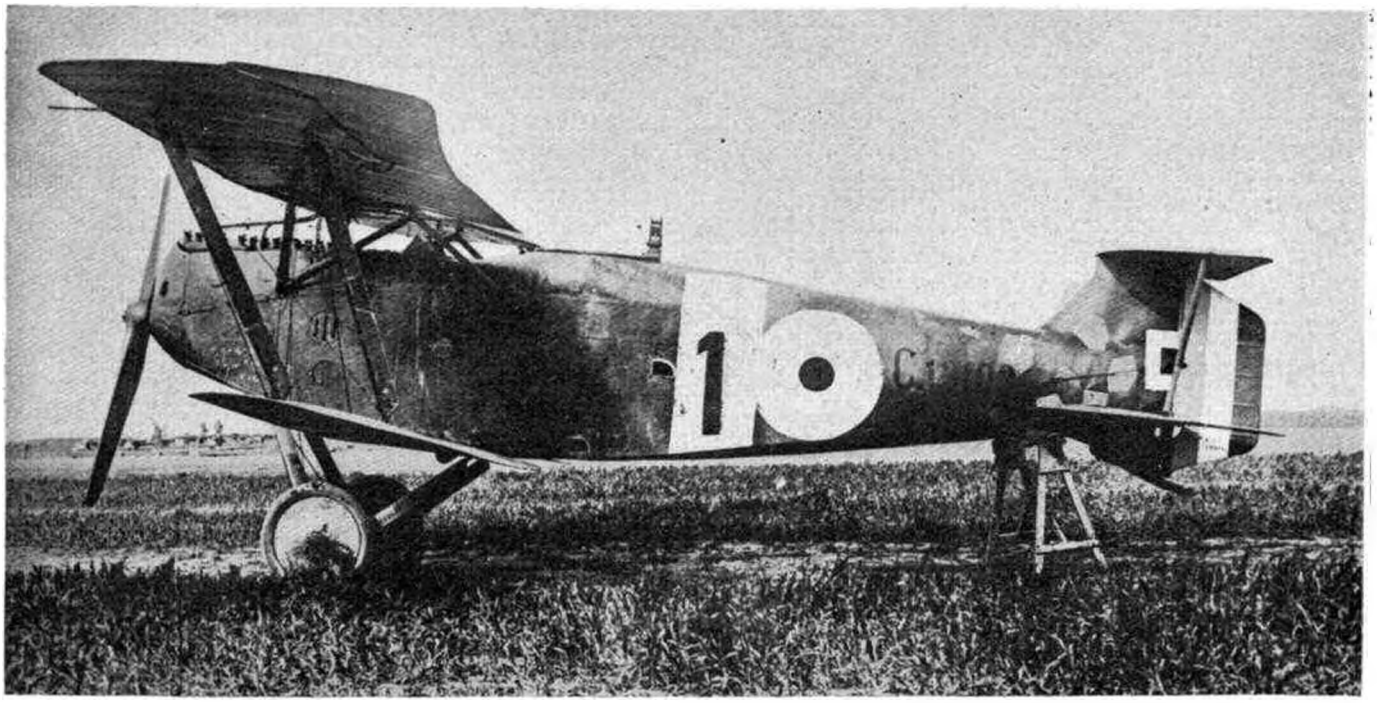


Photo reproduced by permission of Imperial War Museum.

A GERMAN WARTIME TWO-SEATER

By J. A. BRAMAH

IT is very rarely indeed that one can open the morning paper nowadays without seeing numerous references to the latest military aircraft and without reading hair-raising accounts of their destructive powers. Air-power appears to be the bogey of all politicians—and of all ordinary people, for that matter. We are a far cry from the days when London was only just within the range of raiding Gothas, for now no portion of our island home is safe from air attack. Many have no recollections of the Great War of 1914—1918, and it is interesting and instructive to study the types of machines that were used during that period.

Both sides used all shapes and sizes of aeroplanes, and, due to the rigid censorship that prevailed, we have more information on aircraft used by the Central Powers than on machines used by the Allies. There were instances of British papers publishing details of our aeroplanes which were derived from German publications obtained via Switzerland.

When an enemy aircraft was captured intact it was minutely examined by its captors and full details subsequently appeared in the technical journals of the country concerned. This interest was far more than academic, for it was essential that each side should know the powers and capabilities of opposing equipment. In this way full particulars have been made available of the subject of this article—the Hannoveraner C.L.III, a German two-seater fighter and " maid of all work."

The first machines of this type were sighted by Allied pilots early in 1918. The reports subsequently sent in to headquarters were not noteworthy for consistency, and all sorts of wild rumours and descriptions were in circulation. This state of affairs was largely accounted for by the fact that no one had had a really close enough view to be able to give a satisfactory description of the machine. All these reports mention an unusual biplane tail unit, but usually conclude with the information that when approached the E.A. (enemy aircraft) dived away and that further details could not be discerned.

Captain J. B. McCudden, of No. 56 Squadron, R.F.C., mentions an encounter with a Hannoveraner, and it is listed as one of his fifty-seven victories. The pleasing lines belied its size, and McCudden was surprised to find that it was not a single-seater and that it had a sting in its tail in the form a Parabellum machine gun wielded by an observer.

The pleasing lines of the Hannoveraner were not unusual for a German machine, and were due to the method of construction employed. Certain German manufacturers had evolved monocoque plywood fuselages of very good aerodynamic form, and noteworthy among these were the Pfalz concern, with their D.III scout, and the Albatros firm, with their shark-like D.I, D.III and D.V types, which were all too familiar to Allied airmen on both the eastern and western fronts. The use of radiators lying flat in the wings helped to further improve

their appearance and performance, and did not offer the drag of radiators mounted in front of the engine, as in the S.P.A.D. and S.E.5.

It was not until 1918 that the Hannoveraner began to appear in any quantity, although the prototype must have been flying in 1917, and, judging by the number of photographs that have been published of American airmen standing beside captured machines of this type, they must either have been very numerous or the ones that were captured must have been overworked as "background material." One photograph, which is definitely authentic, depicts Rickenbacker, of the 96th Pursuit, leaning against a Hannoveraner which he had driven down intact. This pilot, during the comparatively short time he was at the front, accounted for twenty-six E.A., and is the highest ranking American "ace." It was from machines such as these that the pilots studied the "blind spots," and one pilot would fly a captured machine—a good distance behind the lines, of course—whilst fellow pilots would work out the best method of attacking that particular type.

When a new enemy design made its appearance at the front instructions would be given for a specimen to be captured intact, if possible, and in the case of a new two-seater the method was as follows. On several days in succession the machine in question may have appeared in the same locality at about the same time each day. A lone scout would be sent up, and, by taking advantage of the position of the sun and of any convenient clouds, would try to dive down into the blind spot behind and below the tail of the enemy machine, without being seen by its crew. Once there the two-seater would be at his mercy, because the rear gunner would not be able to fire at him without hitting the tail surfaces of his own machine. With luck and a few well-placed shots the observer would be rendered harmless, and the scout would then take up his position above the unprotected tail of his adversary, and, due to his superior manœuvrability, would be able to remain there in spite of any efforts made by the enemy pilot to dislodge him. By firing either to the left or right of the two-seater pilot's head the scout pilot would soon indicate in which direction he was expected to fly. The finish is obvious. It all sounds very nice and easy here, but the rear gunner in the supposed victim might, conceivably, have rather upset the plan by settling the nonsense of the scout pilot, and this would be quite possible in the case of the Hannoveraner, for both the pilot and the observer had an exceptionally wide field of vision and an enemy would find it difficult to approach unseen.

In the Hannoveraner the pilot sat with his eyes on a level with the top plane, and, by slight movements of his head, could see either above or below it; his downward view was good, due to the narrow chord of the lower wing. The biplane tail was narrower than a single plane would have been, and gave the observer a proportionately improved view.

In certain respects, however, the Hannoveraner was not such a "tough customer" as the Bristol Fighter F.2b, a comparable machine. For instance, the engine, an Opel-Argus, was only of 180 h.p., as compared to a 250 h.p. Rolls-Royce in the Bristol, and gave the Hannoveraner a top speed of only 96 m.p.h. In addition the observer had only one gun, as against the twin-gun mounting in the British machine.

These shortcomings did not prevent the Hannoveraner from doing very good work for the German Imperial Air Service. It was widely used for reconnaissance duties, artillery spotting, and as a two-seater fighter, being primarily designed for this last class of duty. A modified version, which was used for trench straffing and low bombing, and would now be classed by the Americans as an "attack" machine, was rumoured to be armoured round the cockpits. Often the Hannoveraner was used as a trainer for pilots who were later destined to fly the faster Halberstadt two-seater fighters, and was probably flown at one time or another by most of the leading German airmen.

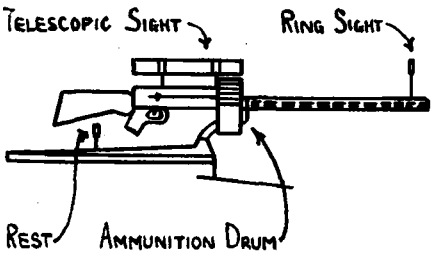
The pilot had a single Spandau machine gun mounted on the fuselage in front of him, and it was synchronised to fire in between the blades of the airscrew. This gun was actually a lightened form of the Maxim gun used by the German Army, the water-jacket being perforated to reduce weight and to allow for air-cooling. In this lightened form the Spandau weighed about 27½ lb. and fired at the rate of 450 rounds pere minute. Anthony Fokker, the famous Dutch designer of many of Germany's most successful war-time fighters, was responsible for this adaptation and also for the invention of the interrupter gear that was used in conjunction with it. This gear consisted of a system of gears, cams and rods, and was eventually adopted as standard by the German Imperial Air Service. Although quite satisfactory, it was not so efficient as the hydraulic Constantinesco synchronising gear used by the Allies. The first synchronised Spandaus were fitted in Fokker's monoplane E.1 scouts, and these machines, in the hands of such pilots as Max Immelmann, made life very unpleasant and precarious for the British and French airmen. On one such machine Fokker mounted three machine guns, but the arrangement must not have been very successful because it was not generally adopted. A later machine, the Pfalz D.III, appeared with a three-gun mounting, but the majority of them only had two guns.

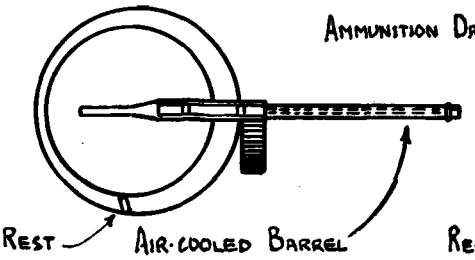
The observer of the Hannoveraner had a machine gun that was also an adaptation of an infantry gun. The air version was known as a Parabellum, but, due to lack of information on this type, it is not known whether this was also the name of the original.

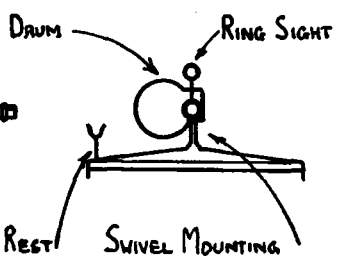
The concern responsible for the design and manufacture of the Hannoveraner was formed during the war for the manufacture of wagons and aircraft, and was known as the Hannover Waggonfabric Aktien Gesellschaft. It was situated in Hannover-Linden.

A fairly typical German machine as far as its construction was concerned, the Hannoveraner was unusual in so far as it had a biplane tail unit. This original design of the tail was intended to give the machine plenty of tail control and at tthe same time to keep the tail as narrow as possible in order to give the rear gunner a wide field of fire. The fuselage had four wooden longerons, with formers spaced at intervals on them, the cross section being almost rectangular at the gunner's cockpit and oval just in front of the tail. This primary structure was covered with square sheets of three-ply bent to shape and glued into position, the whole fuselage then being covered with doped fabric. The workmanship and materials were quite good, and comparable to contemporary British standards. The only internal

DETAILS OF THE HANNOVERANER C.L.III

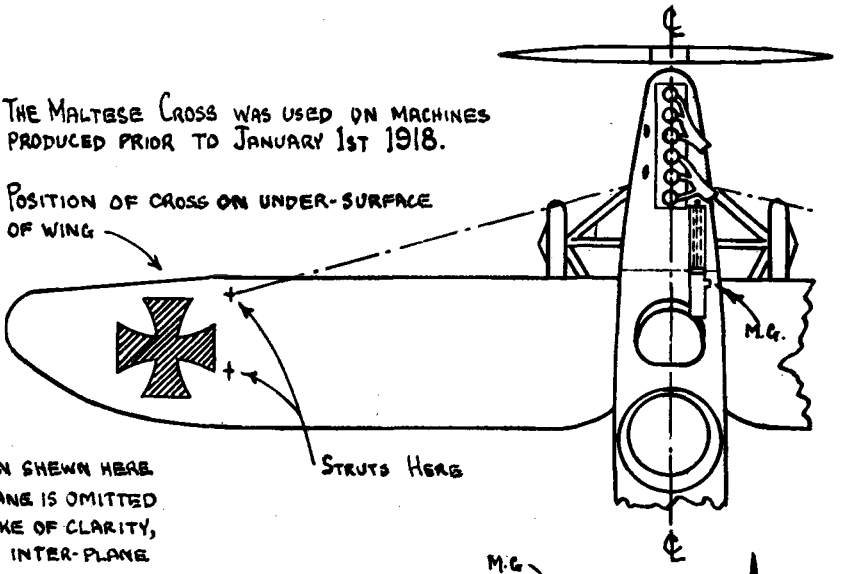






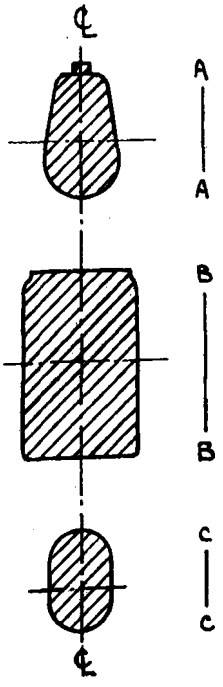
IN THESE THREE VIEWS OF THE OBSERVER'S ARMAMENT, A PARABELLUM REEL-BELT TYPE, THE SCALE IS TWICE THAT OF THE REST OF THE DRAWINGS.

THE MALTESE CROSS WAS USED ON MACHINES PRODUCED PRIOR TO JANUARY 1ST 1918.

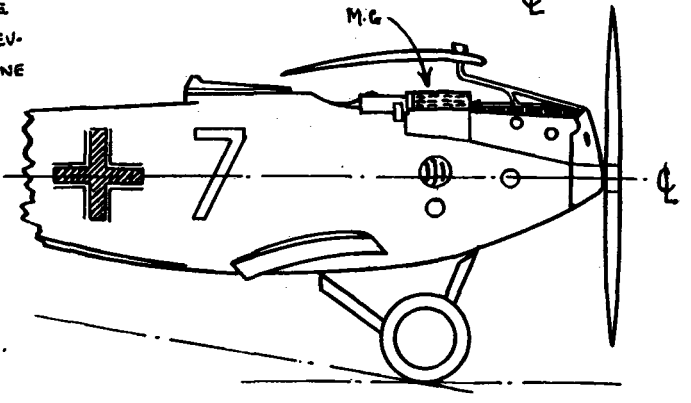


CROSS SECTIONS.

FUSELAGE.



IN THE PLAN SHEWN HERE THE TOP PLANE IS OMITTED FOR THE SAKE OF CLARITY, AS ARE THE INTER-PLANE STRUTS IN THE SIDE-ELEVATION. THE PILOT'S MACHINE GUN IS SHEWN



THE CAMOUFLAGE IS SHEWN APPROXIMATELY THREE TIMES SCALE SIZE.

TOP AND BOTTOM PLANES

SCALE IN FEET 3/16" : 1'

COLOUR KEY.

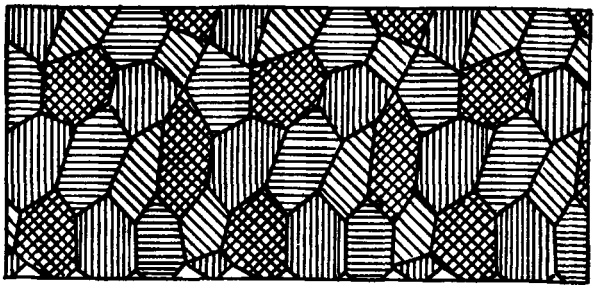
VIOLET

GREEN

GREY

BLUE GREY

TYPICAL GERMAN WAR-TIME CAMOUFLAGE.



J. A. BRAMAH 1939.

bracing consisted of diagonal wooden struts at a point midway between the rear cockpit and the tail, no wire being used. A vertical six-cylinder Opel-Argus engine of 180 h.p. was mounted on I-section bearers and was divided from the fuselage by a fireproof panel. The cowling consisted of light detachable metal panels. The main petrol tank was placed under the pilot's seat.

The wings, too, were of wooden construction and had hollow built-up spars and built-up ribs. Both top and bottom planes were fitted to the centre-section and fuselage in such a way that they could easily be detached and replaced in the event of damage—a very important consideration on an active service type. The spars terminated in a steel box-like structure with a patent quick-release joint. The aerofoil section was rather flatter than usual, and " wash-out " was only noticeable on the top plane, which had no dihedral at all, but the bottom plane had a dihedral angle of 2·7°. The ailerons were mounted on the top plane only and had a negative angle of incidence at the tips. Spring panels were fitted on the lower plane to permit of the inspection of the control cable and pulleys.

The outer wing struts were of circular steel tubing faired to a streamline section by the addition of wood, and wrapped with fabric. They had steel caps and were bolted to brackets on the wings. The centre-section, or cabane struts, were also of steel, but were given a streamline section by pressing. The undercarriage struts were similar to the centre-section struts and were wire braced. Landing shocks were absorbed by triple coil steel springs in fabric covers.

The tail fin was very smoothly faired into the fuselage in the typical German way, and was plywood covered, as was the lower of the two tail-planes, the top one being fabric covered. No provision was made for the adjustment of incidence either in flight or on the ground. The tailskid was of heavy steel and was quite rigid, a rounded shoe permitting sideways movement when the machine was on the ground. Two holes were cut in the fuselage just in front of the lower tail-plane, and were intended to be used as hand-holds when moving the aircraft, and to discourage mechanics from lifting it by the tail-plane the lower plane was fitted with barbs. This was probably a precautionary measure, taken to prevent the distortion of the empennage. Like the centre-section and undercarriage struts, the tail-plane struts were of steel, pressed to a streamline section.

The armament was described earlier in the article, and it is only necessary to add that the pilot had the usual ring and bead sight, and that his gun was fired by pressure on a trigger situated on the control stick.

These early machines did not have the wide variety of instruments that are found in the cockpit of a modern aircraft, and the pilot had to be content with an engine revolution counter, a compass and a barometer. He could also watch a revolving airspeed indicator which was mounted on the forward left-hand wing strut. His only other gadgets were the throttle lever and the petrol cocks, one being for the auxiliary tank which was mounted next to the radiator in the centre-section of the top plane.

The gunner had a folding seat, and provision was made in his cockpit for the carrying of wireless. A removable panel in the floor permitted the use of a camera when the machine was employed on reconnaissance duties. His cockpit was surrounded by a movable gun-ring, and racks were sometimes fitted on the outside of the fuselage for the carrying of small hand bombs.

The main dimensions are given herewith.

Span, top plane	39 ft. 2¼ in.
,, bottom plane	36 ft. 8½ in.
Length overall	25 ft. 5¾ in.
Height	9 ft. 2½ in.
Wheel track	6 ft. 0 in.
Chord, top plane	5 ft. 10¾ in.
,, bottom plane	4 ft. 2 in.
Stagger	2 ft. 7¾ in.
Tail-plane span, top	6 ft. 9 in.
,, ,, bottom	8 ft. 0 in.

The performance figures for the Hannoveraner are given below.

Climb to 5,000 ft.	7 min.
Climb to 10,000 ft.	18 min.
Climb to 13,000 ft.	29 min. 45 sec.
Speed at 10,000 ft.	96 m.p.h.
Speed at 13,000 ft.	89½ m.p.h.
Service ceiling at which the rate of climb is 100 ft. per min.	15,000 ft.
Estimated absolute ceiling	16,500 ft.
Air endurance—about 2½ hours at full speed at 10,000 ft., inclduing climb to this height.	
Military load	545 lb.

In flight the Hannoveraner tended to be slightly nose heavy with the engine off, and slightly tail heavy with it on. It also tended to turn to the left with the engine on, but this did not, apparently, make it tiring to fly, for it was light on the controls, except for the fact that the area of the elevator was rather insufficient at slow speeds.

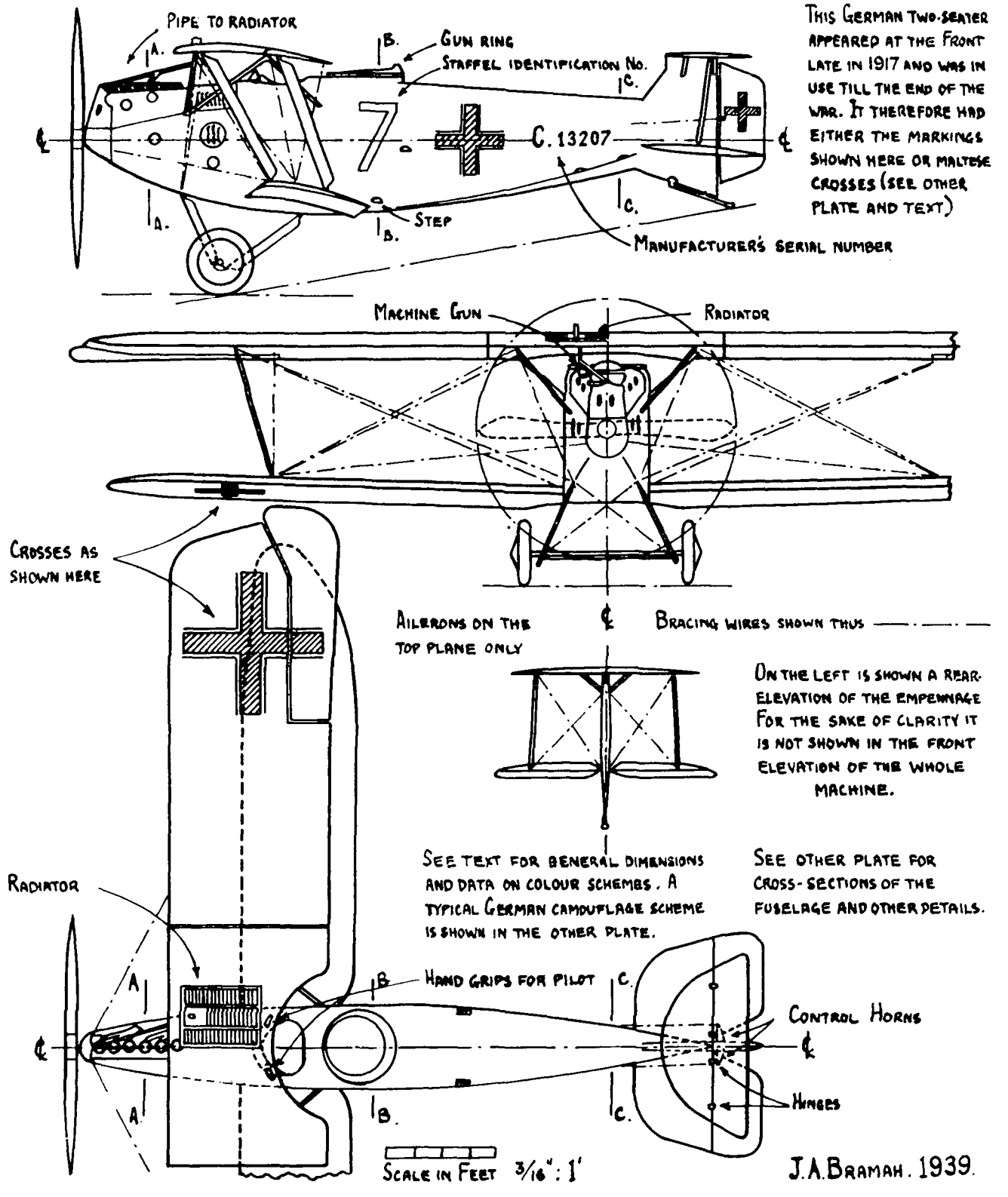
The view was particularly good for both members of the crew: the pilot sitting with his eyes on a level with the top plane, which was only a foot above the top of the fuselage.

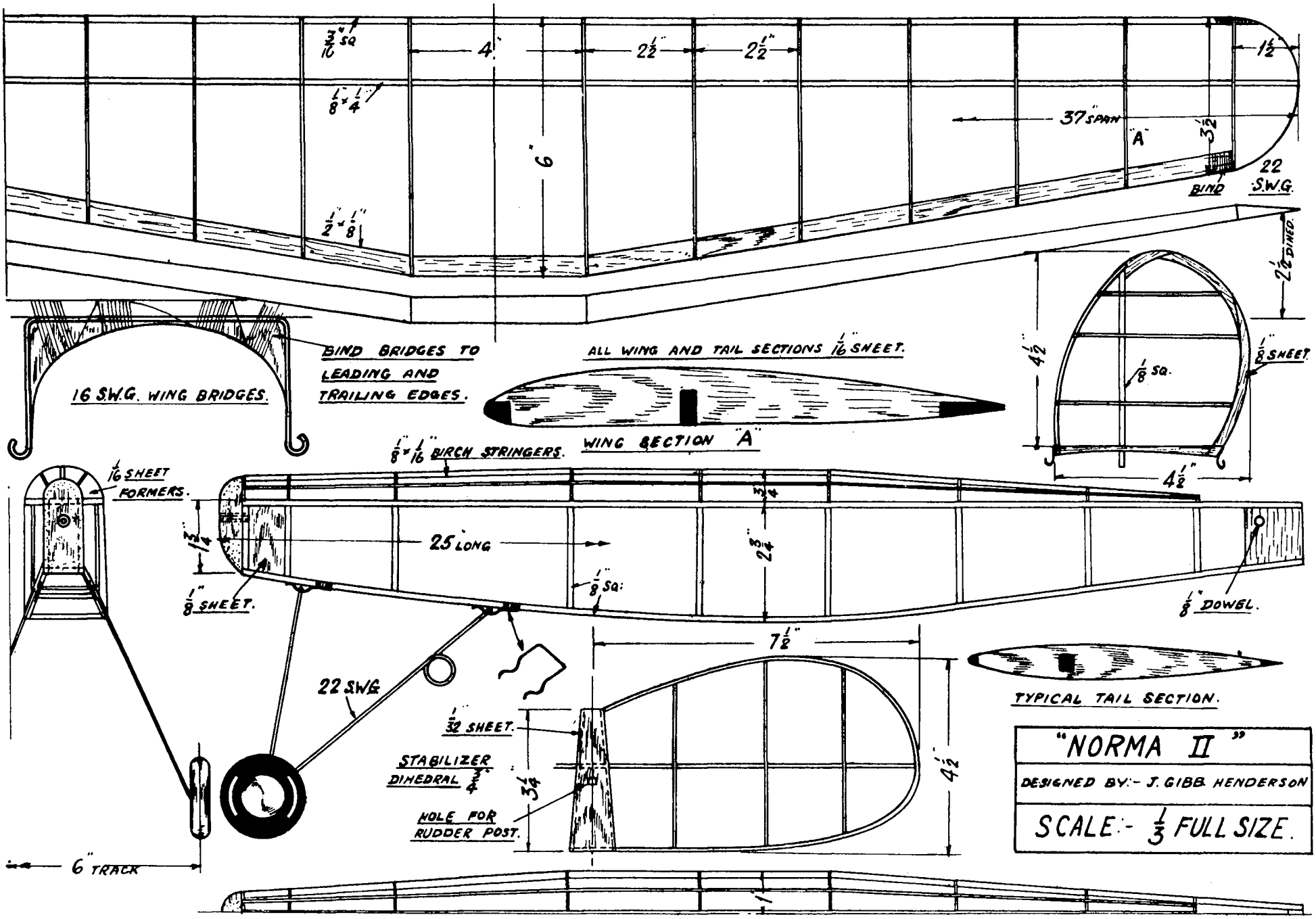
Important information, from the point of view of model makers, is that on the various colour schemes that were used on this type. The plate of details accompanying this article shows a typical German camouflage design, and this was dyed on the fabric before it was put on the aircraft. The camouflage appeared on all the upper surfaces and on the fuselage, the under surfaces being a light blue or cream. As has been mentioned in previous articles by the author, the German airmen often had their machines painted just as they pleased, and colour schemes were varied, to say the least. It should be noted that the Maltese cross was used on machines produced prior to January 1st, 1918, and that after that date the plain bar cross was used. The crosses appeared on the upper surface of the top plane and on the lower surface of the bottom plane, on the sides of the fuselage behind the rear cockpit and on the rudder. All details were black, and the airscrew was either painted grey or was varnished, when it presented a striped appearance, due to the laminations of the wood.

An attractive colour scheme used by the author on a model of the Hannoveraner is as follows. The wings and tail-plane—orange. The fuselage—green, with the Maltese crosses on a white background. All details—black. The large number on the fuselage by the pilot's cockpit, and the wheels—white.

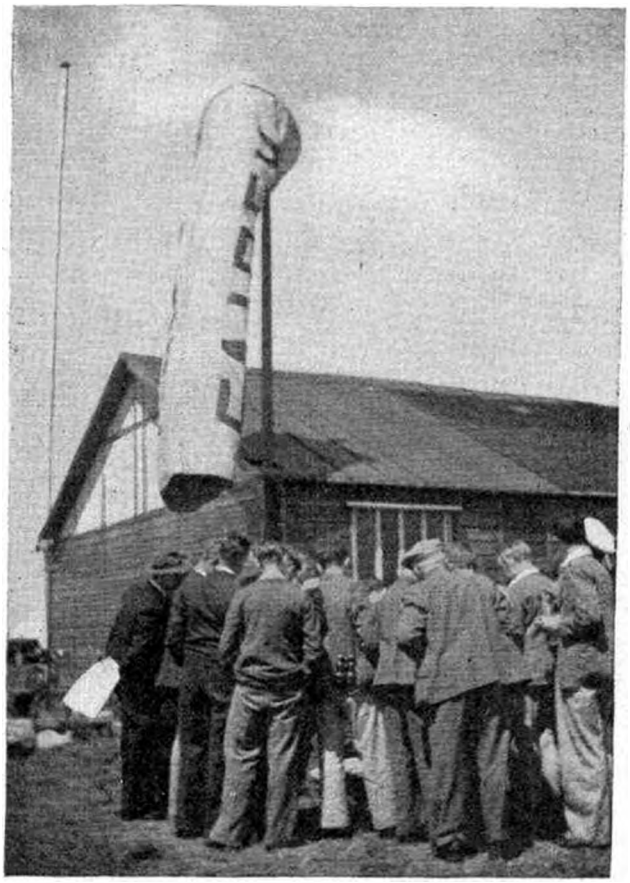
As usual, this article concludes with a reminder for modellists that care in painting a model more than compensates for any additional time spent on the job.

3-VIEW PLANS OF THE HANNOVERANER C.L.III




3/16" SQ
4"
2 1/2"
2 1/2"
1 1/2"
1/8" x 1/4"
37" SPAN
"A"
3 1/2"
6"
22 S.W.G.
BIND
1/2" x 1/8"
2 1/2" DIHED.
16 S.W.G. WING BRIDGES.
BIND BRIDGES TO LEADING AND TRAILING EDGES.
ALL WING AND TAIL SECTIONS 1/16" SHEET.
WING SECTION "A"
4 1/2"
1/8" SQ.
1/8" SHEET
4 1/2"
1/8" x 1/16" BIRCH STRINGERS.
1/16" SHEET FORMERS.
1 3/4"
25" LONG
3/4"
2 3/4"
1/8" SQ.
1/8" SHEET.
1/8" DOWEL.
7 1/2"
22 SWG.
1/32" SHEET.
STABILIZER DIHEDRAL 3/4"
3 1/4"
HOLE FOR RUDDER POST.
4 1/2"
TYPICAL TAIL SECTION.
6" TRACK
"NORMA II"
DESIGNED BY:- J. GIBB HENDERSON
SCALE:- 1/3 FULL SIZE.

AT THE SIGN OF THE WINDSOCK



THE new photograph for our " Windsock " page is reproduced above. What are they all looking at? Perhaps it is one of our advertisers' latest catalogues—many of them attract quite as much attention as this, for they are so interesting to read. Actually, this group of people was gathered round a petrol 'plane at Fairey's on the day of the Wakefield Trials, and the photograph was taken by a member of our staff, Miss Mason.

* * * * * *

As previously mentioned on these pages, the Model Aircraft Trade Association is now in full operation, with a growing membership. The badge of this Association is frequently displayed in many of our advertisements, and we are pleased to state that recently THE AERO-MODELLER was officially recognised by the Association as the Official Journal of the M.A.T.A. THE AERO-MODELLER is, of course, a member of the Association, and is supporting it in every way possible. No cut price advertisements will be carried by THE AERO-MODELLER, and the attention of all advertisers is drawn to our editorial and business notes, which are on page 516 of this issue. Not all of our advertisers are members of the M.A.T.A., and *non*-membership in no way indicates that their goods are inferior to those of members of the Association. On the other hand, one of the rules of the Association is that all materials offered to readers of this journal will be up to a definitely agreed high standard, and thus in dealing with members of the M.A.T.A. readers are guaranteed first-class supplies.

And now for the latest news from some of our advertisers. Too late for review in our last issue we received a kit of the near scale biplane recently introduced by Vimana Aero-model Supplies Dept., 268 Goswell Road, E.C.1. A large photograph of the built-up model appeared in this firm's advertisement on page 409 of our June issue. The kit is well put up, and contains full supplies of first-grade balsa, together with ample supplies of adhesive, dope and tissue. The make-up of the metal parts exhibits the care of an engineer in several respects. The airscrew is completely finished and polished, is brass bushed, and provided with ferrules at each end—it is accurately balanced. The propeller shaft is made of hardened steel, and is provided with two colleted bearings for insertion in the nose block, and is provided with a well-made universal joint, to which the rubber motor is attached. Premier bobbins are supplied in the kit, and a supply of Caton's latest type round rubber. A free-wheel is also provided, the parts being already shaped. Shaped brass ferrules are provided for fixing of the struts, the bamboo legs of the undercarriage are already shaped, and a pair of celluloid balloon type wheels are included with the necessary wire for the undercarriage.

Two large full-size scale plans are provided, on which all parts are shown fully detailed. The wing ribs are not cut out but built up—quite an interesting method of construction, which looks quite well from the photograph of the finished model shown in the advertisement. The front of the fuselage is covered with silk which adds to the strength, and it enhances the attractiveness of the model's appearance. The span is 45 in., the length 88 in., and the finished weight is approximately 10 oz. The model is guaranteed to give a performance of over 60 sec. R.O.G. Altogether an attractive model, which should appeal to the connoisseur.

* * * * * *

On page 453 appears an advertisement on behalf of Messrs. Guiterman, of 85/6 Aldermanbury, London, E.C.2, who are advertising a comprehensive range of models. We have recently had several of these for examination, and find them all well set up and nicely made. Several new types of petrol 'plane kits are available, together with many modern types of flying scale models. These kits are distributed to dealers throughout the country, but in case readers have any difficulty in obtaining their requirements they should communicate direct with Messrs. Guiterman at the above address.

* * * * * *

Messrs. Guillow, of 2/5 Dingley Place, City Road, London, E.C.1, advertise on page 476 a wide range of models and accessories. They are also offering several gliders, which should be of interest to traders. Models range from the 86 in. span Taylor " Cub " at 4s. to a 50 in. span model of the Hughes " Northrup," at 16s. 6d.; the length of this model is 33½ in. Kit includes a preshaped cowl ring, rubber tyre aluminium wheels, and flexible controls are featured. This model should prove very interesting to builders who go in for light large type models.

Also on page 476 is an advertisement for the Kanga Aero-model Supplies, 1 Colonnade Passage, New Street, Birmingham. Kanga carry a wide range of petrol accessories and several petrol models of well-known design and tried performance.

* * * * * *

Super-Scale Models of Uppingham, Rutland, whose advertisement appears on page 511, ask us to express their regret for the delay in supply of one or two accessory parts for the 50 in. span flying scale model of the Westland " Lysander," which they recently introduced, but owing to the large demand on the introduction of this model supplies were temporarily exhausted. We understand that full kits are now available for both this model and the Miles " Kestrel Trainer." Super-Scale Models specialise in high-grade kits, and will shortly be introducing further models.

* * * * * *

Cloud Model Aircraft, 304 High Street, Dorking, Surrey, as is well known, usually occupy our back outside page cover each month. This month they are temporarily removed to our centre pages, where they display a veritable catalogue! This enterprising firm offers a wide range of models and accessories, from gliders at a few pence, to a wide range of petrol 'planes and engines.

* * * * * *

Occupying the back page in the place of Messrs. Cloud Model Aircraft is an advertisement on behalf of the Baby Cyclone 6 cc. petrol engine, sponsored by Atlas Motors, of 14 Oswald Place, Dover, Kent, who are the sole distributors in Great Britain. This popular engine was one of the first to be introduced into this country, and has a world-wide reputation for power and reliability. Ample supplies of all parts are kept in stock, and immediate delivery is guaranteed by Atlas Motors, who also undertake overhauls and repairs at short notice. A recent introduction of this firm is the Atlas C.D.C. Super. coil. We understand that a slight difficulty occurred with the first few coils which went out, but are assured by Atlas Motors now that every coil will give a high-class performance with 100 per cent reliability, and all their supplies are now guaranteed for six months.

* * * * * *

On page 453 appears an advertisement of the Chingford Model Aerodrome, of 155 Station Road, Chingford, London, E.4. This firm distribute a wide range of Megow kits and also offer the " Astra " and the " Wilfly " of their own manufacture. Both these are semi-scale high-wing cabin monoplanes, and the kits are offered at an attractive price. A full range of accessories is offered, together with an interesting range of *British*-made hand-carved propellers in sizes from 14 in. to 18 in.. diameter. This firm only supplies the trade, and with its catalogue offers a very useful order form for the use of traders, in which all prices and discounts are shown.

* * * * * *

On page 494 appears a photo of the X 'Plane Major, a duration 'plane with a 48 in. wing span, designed by Mr. L. B. Mawby, an experimenter and flyer of some 28 years' experience. It is one of a series of six model 'planes called " The X 'Plane Series," ranging from the X Baby, with an 18 in. wing span, to the X 'Plane Major, and is marketed by Messrs. C. J. Herapath Ltd., of South Ealing Road, London, W.5.

Mr. Mawby has succeeded in obtaining the coveted hoinour of the Empire Record for Model Gliders, with the time of 36 minutes 31 seconds, using the X 'Plane Major converted into a glider by the removal of the undercarriage, rubber motor, prop., etc., and affixing of a suitably weighted nose piece and launching hook.

Messrs. Herapath Ltd. have a wide range of models and kits on view at their showrooms, which should well repay a visit.

* * * * * *

Messrs. Jones Bros., whose advertisement appeared on page 493, offer a large range of models and accessories at their address at 56 Turnham Green Terrace, and offer the very useful service of balsa wood cut to any size. Petrol model builders, please note!

CLUB NEWS

By CLUBMAN

A group of Father Amiard's pupils at his school at Flers.

WELL, lads, all the excitement is over for the time being, and having dealt with the vital competitions elsewhere, I will content myself in wishing the lads all the very best in America, and at Faireys in July. I think we have a team in both events that we can be proud of, and I have no doubt that, given ordinary luck, they can bring home the bacon. Go to it, boys!

An important item this month is the correction of the list of clubs that appeared in last month's issue. (No, you can't blame me for it, I didn't do it). Anyway, I have the task of putting it in order, but believe me, it's largely your own fault that so many mistakes have crept in. The staff had to work very largely on old details, and in spite of repeated appeals to you to send in the correct details concerning your club and officials, very few of you took the trouble to answer—but have you all got up on your hind legs and bleated when a mistake has been made! However, will all those who have been incorrectly listed *please* send in the correct details *immediately*—and I don't mean any old time, it must be in by June 30th. Any corrections received after that date will not be considered. If you can't look after your own interests just that amount you are not to be considered. So, now's the time!

I would again jog your memories on a subject I mentioned in an earlier issue. Please include times when reporting competitions, and for goodness sake remember what you wrote in your previous reports. I have to go over these things time and again, and I find on many occasions that the same thing was reported the previous month. Goodness knows, my job is hard enough without having to weed out these items.

I am still without the list of results of both the M.E. No. 1 Cup and Short's Cup events, so it is impossible this month to give the list of Plugge Cup positions. However, I do know that Mr. H. Hill, of the Lancashire M.A.S., won the former event with a terrific score, one flight being over fourteen minutes, and I understand that Dennis Lees, of Halifax, a junior member by the way, won the seaplane event, though I have no details of his times. Congratulations, chaps.

One last item before getting on with the news. Many people still do not know what the S.M.A.E. is, who is in it, and where to apply for particulars. Many requests come into this office for handbooks, and I would point out that the Secretary, from whom all information can be obtained, is Mr. E. F. H. Cosh, of 85 Maple Crescent, Sidcup, Kent. You know, I think sometimes that most of you go round with your eyes shut!

We start off this month with some interesting items from abroad, and I would repeat my earlier requests for news of aero-modelling in other countries. If you have any friends overseas, get them to write you about conditions, etc., in their vicinity, and let me have them to pass on to all the other enthusiasts in the old country.

Two photos are sent in by the LIGA DE INICIAQAO E PROPAGANDA DA AERONAUTICA in Portugal, and show a few models seen at an exhibition staged in Porto. The models are very interesting, and show good workmanship, whilst the method of display is worthy of noting. Some exhibitions I have seen here would have been far improved by a little thought and imagination in setting out.

A very old friend of mine—and yours—is the Rev. Father Amiard, who honours us this month with some news of the French aero-modellers' activities. Mainly he deals with a proposed Franco-English meeting he wishes to stage at Flers, but since receiving his letter, I understand that the meeting has been postponed until September, to prevent clashing with an important English event, so I will give you full details nearer the time.

The first indoor flying meeting was held in Amiens, and about seventy modellers competed. M. Vincre was the winner with a flight of 10 min. 27 sec.—and collected three cups. M. Chabot was runner up. Fr. Amiard, who competed, was 19th, but he was very pleased with his effort, considering that this was his first indoor model.

Three photos sent in show two very interesting models built by French enthusiasts, and a small section of the model club organised by Fr. Amiard at his school. The enthusiasm of these lads I can personally vouch for, and I would like to record here in print my appreciation of the fine work the "Amiable Amiard" has done in cementing the friendship of the French and English aero-modellers.

Our third overseas correspondent is Mr. V. O. Anderson, President of the VANLOSE MODEL FLYVE-KLUB in Copenhagen. This club is 50 strong, and of a high standard. An idea sent in by Mr. Anderson is worthy of consideration, and is that an exchange system

be instituted for blue-prints, etc., between them and English clubs. Now then, fellows, here's the chance to broaden your outlook and friendly circle. The address is: Aalekistevej 108 B, 11 Copenhagen-Vanlose, Denmark.

To get back to our own shores again, I have an interesting letter from the secretary of the recently inaugurated NORTH-WESTERN AREA of the S.M.A.E. scheme. I am asked to deal fully with this to encourage the other selected areas to form the necessary groups soon, which is essential to the success of the scheme. Twelve of the twenty clubs included in this area were represented at the inaugural meeting. (I understand that the rest have since forwarded their support and signed on the dotted line).

Opening with a full explanation of the scheme by Mr. C. S. Rushbrooke, who has been largely instrumental in the preparation of the system, officers were elected as follows: S.M.A.E Delegate, Mr. Rushbrooke (L.M.A.S.); Deputy Delegate, Mr. Greenhalgh (B.M.A.S.); Chairman, Mr. J. B. Parkinson (W.M.A.C.); Vice-Chairman, Mr. Rushbrooke; Secretary and Treasurer, Mr. L. J. Hodson (W.M.A.C.).

Mr. Rushbrooke took the chair for this meeting, and read and explained the area rules. All clubs represented agreed to the majority vote scheme. The form assigning responsibility of delegate to Mr. Rushbrooke was signed by all the represented clubs secretaries. It was agreed that Mr. Rushbrooke should enquire of the S.M.A.E. as to the method of defraying this area's expenses. Mr. Snape proposed that a fund be formed to defray this area's expenses until such time as official information shall be obtained. Mr. Snape proposed a minimum subscription of 1s. from each club. Mr. McDougall proposed that a sum of 1s. 6d. be paid by each club represented for the above purpose. A vote was taken and the second proposition accepted unanimously. A vote of thanks was proposed by Mr. Daniels to Mr. Rushbrooke for offering to defray the delegate expenses as far as possible and until such time as official information on this matter is obtained, and accepted unanimously. Mr. Greenhalgh proposed that such routine work as appointing timekeepers, officials, approved grounds, etc., be handled by the area group meetings, and that the delegate shall submit to the S.M.A.E. Council this finding for confirmation. This was accepted unanimously.

I am pleased to welcome the formation of this area, and can see that, handled properly, great good can come of a system whereby all clubs get a real say in matters. It is unfortunate that the proxy system failed, but this was inevitable with the enormous increase in the number of clubs.

Mr. D. J. Dando, of 11 Whitepost Hill, Redhill, Surrey, is anxious to get in touch with an enthusiastic aero-modeller in his district, to co-operate in the formation of a club in that area, probable title, the "East Surrey M.F.C."

Mr. I. Cameron won the gliding event of the LIVERPOOL M.A.C., second and third being Messrs. Haisman and Blundell respectively. This club, by the way, I understand, are applying for reaffiliation to the S.M.A.E. purely on the success of the N.W. area. Some good has come already it seems!

Ft./Lt. W. A. E. Featherstone, of the WOKING AND D.M.A.C., won the first of two gliding events with an average time of 45 sec., whilst Mr. Gunner won the second with an average of 40 sec. The rather low times were evidently due to inexperience with the winch launch methods. I saw the first machine at Faireys, and can confirm that this is a fine piece of work. Mr. Gunner also won the Wakefield development event with an average of 77 sec. The Woking chaps are to be commiserated with on their pet swamp—only the best models clearing same—after which the members have to paddle for 'em.

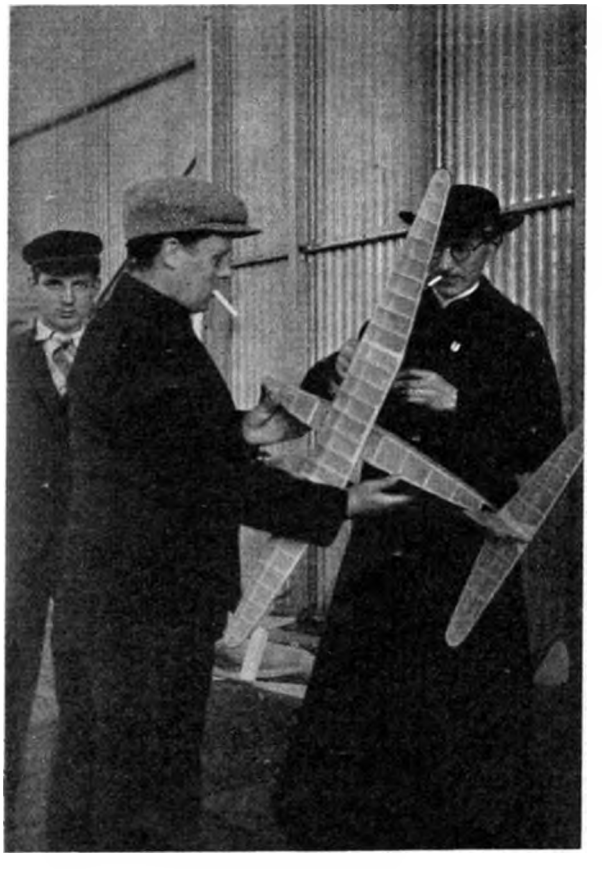
R. W. Higson, of the MACCLESFIELD M.A.S., has been having a good time at the recent rallies held up north, getting firsts at both Halifax and Southport. Others to do their stuff are the club sec., K. W. S. Turner and J. Eifflander—in fact, at these two meetings they collected two firsts, two seconds, a fourth, and a fifth. Not bad going my lads!

A letter from Streatham—but giving no club title, so it can apply to any of a dozen, I suppose!—informs me that Mr. Pribyl holds the H.L. record with 7 min. 10 sec., the R.O.G. figure is 4 min. 48 sec., held by Mr. D. R. Taylor, while Mr. R. Silverton has raised the biplane figure to 75 sec. (I bet Mr. Taylor gets the bird from his club mates for his omission!)

The BOLTON M.A.S. are holding an open rally on July 30th, at which five events and a ladies' competition —doesn't that count as an event?—will be run. One member is very indignant that a neighbour should have asked for the loan of his engine to power his lawn mower!

The GRIMSBY AND D.M.A.C. are now affiliated and going great guns. A photo sent in shows a group winding up in readiness for a flight, and from the angle

Father Amiard assists a member of the local club at Flers. This photo was taken last year at a meeting organised by "The Amiable Amiard," which was attended by a number of English aero-modellists.



I would incline to think that thermals are available on this site. Nice hill, what! Mr. Perry has raised the club glider record to 58 sec.

Mr. Hall, of the HORNCHURCH M.A.C., won a free flight for the best time of the day at an Empire Day display on the local aerodrome. The Jenson Cup for gliders was won for the second year in succession by P. Jenson, with a total for three flights of 147.6 seconds, breaking the club record at the same time with a flight of 87.2 sec. A new cup has been presented for the best flight of the year.

The fifth annual exhibition of the LINCOLN MODEL ENGINEERING CLUB was held at the Lincoln Technical College, from May 1st to 6th inclusive. Large crowds assembled to view, with keen interest, the wide variety of models on display, which included many excellent examples of steam locomotives, ship models, and, of major interest to the "fliars," a fine show of model aeroplanes of all sizes and types.

In the rubber class there were a number of "Wakefields"; also many smaller craft of all sizes and designs. An interesting glider of original design, some 800 square inches wing area, was much admired, and a planked Gull winged machine, of original design, was a great attraction.

In the Scale Model Section a fine uncovered Gull Winged Stimson Reliant was the outstanding feature.

The petrol section was strongly represented, the outstanding model being a scale model "Hawker Hurricane," built by Mr. D. J. Miller (the subject of a recent article in THE AERO-MODELLER). A "Quaker-Flash" model was also on show, and this has since shown much promise on its trial flights. Another exhibit was a modified "Cyclonic," which on May 21st completed its 56th flight, at Cranwell Aerodrome. A photo sent in shows some of the exhibits.

Mr. W. Stanley, of the PETERBOROUGH M.A.C., has had bad luck. On May 7th he hand-launched his glider, when it connected a thermal and careered off for a flight of 4 min. 25 sec., breaking the existing British record by 75 sec. Unfortunately, this club is unaffiliated, and therefore its timekeepers are not official recognised, the rules stating that record attempts shall be timed by official persons. Just too bad, I calls it—and another reason why all clubs should be affiliated.

ALDERSBROOK M.A.S. have rented a vacant garage as a club-room, the members donating according to financial ability towards the cost, and each member having a key.

From the EALING AND D.M.F.C. comes news how Mr. Mawby made his record-breaking flight, and I think it is worth putting in just as sent, so for a change, the blue pencil is held over. Here it is:—

"The high spot in our report this month is Mr. L. B. Mawby's record glider flight of 86 min. 31 sec. The following is an account of how it all came about and how it might never have happened, that is, of our friend the Clubman does not start mucking about with it. 'Ow are yer, chum?

"On Sunday, May 7th, we held our gliding competition, and owing to the lack of practice with winch launching, the times put up were not very good. After totalling up the results at the end it was found that Mr. Mawby and Mr. Gilbert had tied for first place, and a further one flight each was allowed to decide the winner.

"Mr. Gilbert made his flight of 21 sec., and then Mr. Mawby took off. Right from the start it looked like being a good flight, but all thoughts of a record were far

away. During this competition a thunderstorm had become visible to the left of the park, facing wind, and several rubber models were making flights of four and five minutes.

" After circling in the park for three minutes the glider began to climb rapidly and pass out of the park. Visibility on our ground is restricted except for a gap in the bottom corner, where one can see right out over Brentford Gas Works and Kew Gardens. Still circling and climbing the glider arrived over the gas works, and here it seemed to remain circling with monotous regularity until it finally melted into the blue, and was seen no more. News came later in the week that the glider had landed on the riverside at Ham, having covered a distance measured in a straight line, of seven miles. Needless to say, we are very pleased with this record, and we are equally pleased to be able to state that we have collected the sum of £1 4s. towards the Wakefield Fund."

So that's how records are made, is it? I'm going out to buy me a nice large gas works!

Here, at last, is a report from the CAMBRIDGE M.A.C. The above club, started last August, now has a membership of 65.

One member, Mr. Thompson, started " thermal hunting " when, on April 2nd, his " White Wings " vanished in the blue. On Easter Saturday, Master Lunniss, junr., lost his " Firefly," unofficially timed 4½ minutes, then it disappeared in a cloud. Next day, Easter Sunday, a " Fairey Facula," owned by Mr. A. Hayden, flipped about for four minutes, when it hit a factory chimney and was brought back to earth.

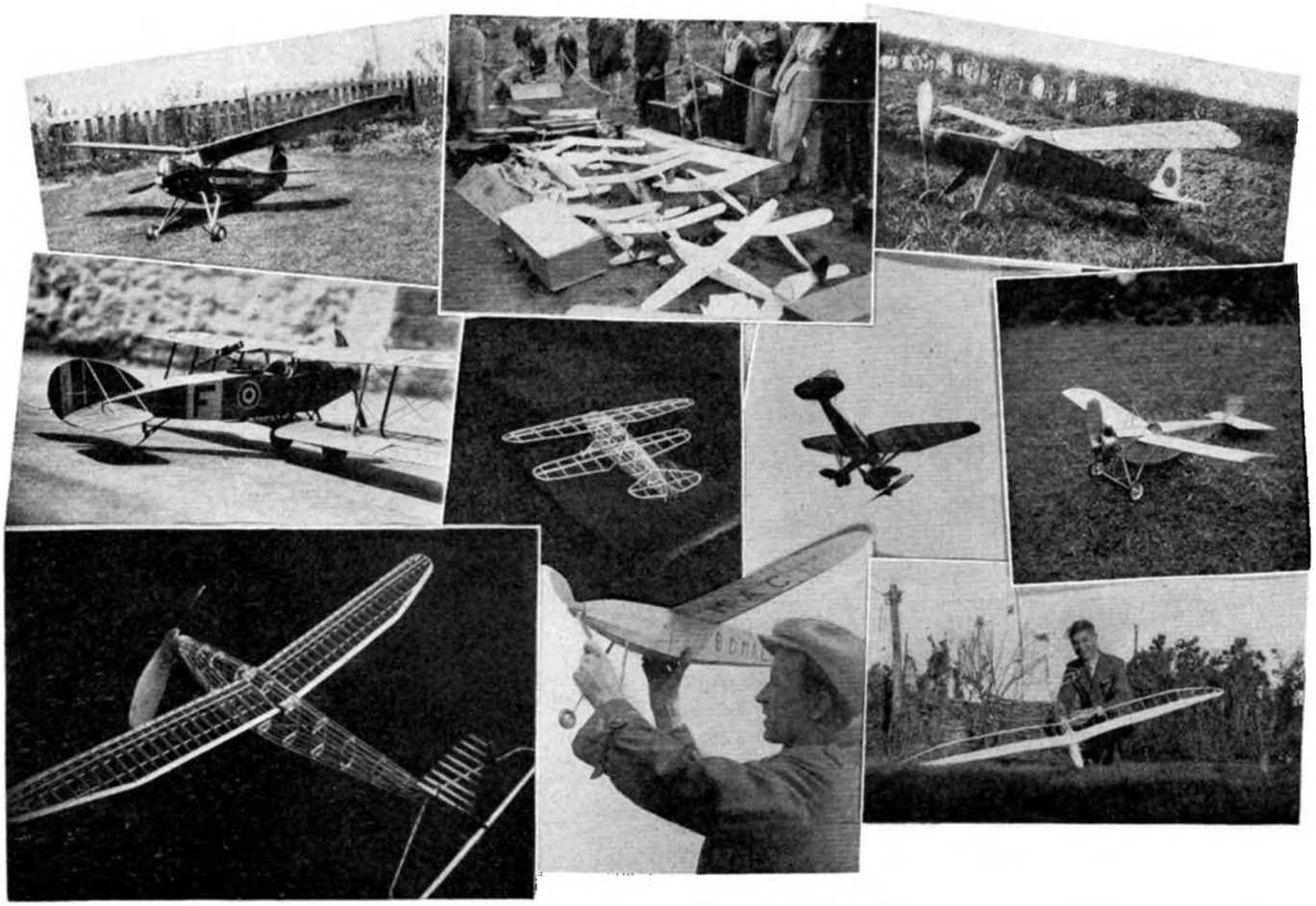
The NEWCASTLE (STAFFS.) AND D.M.A.C. have been having whoopee with ground crack-ups after landing—it's funny how nearly all the damage is done after landing—but are now getting ready for the various rallies to be held in the district. Much weight has been lost retrieving models! Pole flying has been introduced this past winter, and proved very interesting.

During the past month a weeding out process has taken place in the SWINTON AND DISTRICT M.A.C., and they are now finding that things are working much smoother. At the last indoor meeting of the L.M.A.S. they again did extremely well, the chairman being second with 102·5 sec., and the secretary third with 87 sec.

They visited the Southport Rally, and along with many other clubs, found that models kept intact better in calm weather. Five machines crashed, only Mr. F. Sanderson getting three flights, although Mr. Warburton did well with his only flight. This being the first rally the club has attended, they are all agreed that they are " the stuff to give 'em."

May 7th seems to have been a good day in most places, and the SHEFFIELD S.A.M. had the luck to be with the favoured fliars that day. A competition for the " Independent Cup " was won by Bob Hemingway with

" You had better carry out your flotation test now, Mr. Pothunter."



Top. (Left) An Ohlsson-powered "T.C. Coupe" built by Mr. D. Bird, of the Leamington and Warwick Club. (Centre) A group of models on show at the recent Southport Rally. (Right) A "Fairey Facula" built by Mr. E. G. Bartlett, of West Stafford.
Next line, on left. A "Bristol Fighter" built by a member of the Manston M.A.C. Next a partly finished "Gulfhawk" built by Mr. Dawson, of the Devon and Exeter Club. Next, a "Westland Lysander," complete with stub wings and bombs, built by Mr. Roy Stephens, of Cardiff. Bottom left. A "Wakefield" model built by Mr. Rawby, of Ashford. Centre. Mr. J. Sinclair, of the Blackburn Club, launches his "Mercury," and, bottom right, a "Kirby Kite" glider built by another member of the Manston and District M.A.C.

an average of 156.2 sec., second being K. Marshall with 148 sec., and third Mr. H. Slack with an average of 101.25 sec. H. Platts had bad luck in this event, losing his model on the second flight after clocking 3½ minutes, while Hemingway did 4 min. 20 sec. A gliding event held the same day resulted in K. Marshall winning with a time of 58 sec., and Hemingway following with 37 sec.

This club raises two grouses that I would deal with here. Firstly is the plea that I will be able to include more of their reports, as the poor Press sec. has been getting it in the neck lately. Well, Sheffield, I'm sorry that I have to cut any reports, but everyone must have their turn, and I don't really think you have any grouse, as I have always reported the salient points in your news. Naturally, you cannot know just what cutting has to be done, but I can tell you straight, and there is no exaggeration when I say that if the present number of reports were not cut, *over half* the pages of THE AERO-MODELLER would be taken up with club news—and I doubt if you or anyone else wants quite that. The fact that you are now one of the largest societies in the North does not necessarily mean that your news is of any more importaice than a smaller club's, and I must ask you to take my word for it that you are all treated on the same basis, whether large or small. Fair's fair, tha knows!

The second item I reproduce in full, as I feel that it is worthy of enlargement.

"While on the subject we should like to mention that so far this year there has not been one S.M.A.E. decentralised competition that we could enter. This has been solely on account of the bad weather. It is felt in the club that if the competitions were not held quite so early in the year we should have a better chance in competing against the men in the Sunny South. Probably the lack of northern enthusiasm for the Wakefield Fund is due in some measure to the fact that the S.M.A.E.'s 1939 programme has so far failed to create interest."

Well, all I can say is that facts do not bear out your criticisms, Sheffield. Granted the weather has been chronic for most of the S.M.A.E. decentralised events, but this has held good all over the country, and as for "competing against the men in the sunny south"—well, I guess the Halifax and Lancashire chaps can answer that alright. To do well in these events means getting down to it, no matter what the weather, and if you think that things must be put off until *you* feel the weather

is O.K., how on earth are we going to cram everything into the season?

As regards the Wakefield Fund, facts again disprove you. I think I am correct in stating that the largest amount forthcoming from any club is from a northern society, and the north generally has certainly done its bit towards this worthy item. I'm afraid you have confused your own lack of enthusiasm. Willingness to support anything of this nature must be undertaken without any thought as to the probable outcome of things to your own advantage, and to find two North Country men in the Wakefield team is surely compensation for the efforts made. No Sheffield, I'm afraid you have asked for it this month, and, at any rate, you can have no grouse over the amount of space devoted to yourselves—unless it is the lengthyness of it!

A new club desiring notice this month is the WALSALL M.F.C., the secretary being Mr. U. Burton, of 2 Hatherton Road, Walsall, Staffs.

A really good, concise report comes from the WEST SUSSEX M.A.S., and I give it complete:—

"Jack Richardson, club record, H.L. 5 min. 20 sec., with streamlined Wakefield.

"R. Waring lost his glider day before M.E. Cup, 6 min. 58 secs., off 60 ft. towline.

"Flew converted Wakefield job on the Sunday and topped club's list with 114 sec. average.

"J. Richardson second, 75 sec. average.

"Frog Junior, J. Robinson, average 79 secs.

"Seaplane competition, R. Warring first, average 115 secs., best flight of 2 min. 6 sec., new club record; J. Thompson second; K. Byatt third.

"One member fell into tank trying to grab model that had overturned!

"Mr. Shanks has produced club's first 'pusher.'

"In seaplane competition wind changed direction and tank had to be towed right across the drome and refilled. Good work you "water-babies!"

Now, lads, there's meat in that, and makes my job a lot easier. Not that you mind!

The President of the STONEYGATE M.A.C. has presented the club with a trophy for petrol model flying. K. Stothers recently flew his glider to a new tow-launch figure of 5 min. 10 sec., and application has been made for the British record. A photo shows this model. The flight ended in a tall tree, and after words with the farmer—and two hefty dogs—he was allowed to climb the tree, rip his pants, and reclaim the model! We do see life, don't we?

The IRISH JUNIOR AVIATION CLUB held a model day in Phœnix Park, Dublin, at which five events were held, and about 70 entries were received. The weather was very mixed, but this did not deter the competitors. Best time of the day was shared by Messrs. Carroll and Croft, the complete results being as follows:

CONCOURS D'ELEGANCE.

(1) J. B. Bellew, I.J.A.C. (Zenith).

SCALE FLYING.

(1) E. Metcalf, P.M.M.F.C., De H. Hornet Moth.

DURATION UNDER 3 OZ./SQ. FT. WING LOADING.

(1) W. Fitzsimmons, Baby Gnome, 57·53 secs.
(2) Miss N. Charles, Baby Gnome, 55·33 sec.

DURATION 3—5½ OZ./SQ. FT. WING LOADING.

(1) J. A. Carroll, I.J.A.C. Club Super Duration, 84·7 sec.
(2) E. Metcalf, P.M.M.F.C., Korda, 64·7 sec.
(3) J. W. Maher, I.J.A.C., "Amos," Own Design, 64·15 sec.

DURATION OVER 5½ OZ./SQ. FT. WING LOADING.

(1) H. Charles, L.M.A.S., "Korda," 79·6 sec.
(2) N. Rankin, I.J.A.C., "Korda," 56·05 sec.
(3) G. O'Connor, D.M.F.C., "Korda," 36·3 sec.

SPECIAL PRIZES.

Caton's Guinea for best flight of day, divided between
J. A. Carroll, I.J.A.C ... ... 102 sec.
B. Croft, U.M.A.C. ... . 102 sec.

Lord Mayor's Cup for best flight of I.J.A.C.:—
J. A. Carroll ... ... 102 sec.

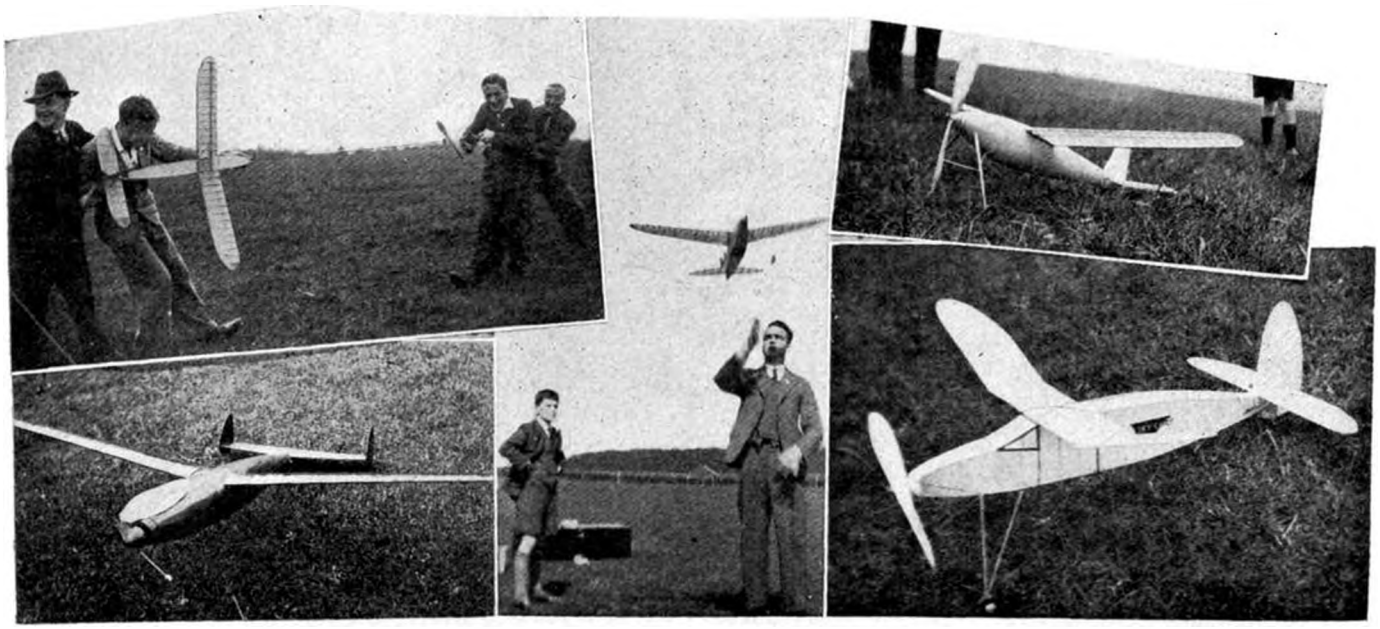
Mr. B. A. Mason, Chairman of the CHIGWELL AND D.M.A.C. was lucky to get his model back recently, when, after a flight of 5 min. 30 sec. O.O.S., it was recovered from the railway station, on which it had landed. One member, unfortunately not yet insured with the N.G.A., flew his model through an open window, fortunately without damage to property—but the model is not so well off!

Mr. J. O. Young, the most successful member of the HARROW M.A.C. this season, won the first round of the six competitions for the club Major Cup. A goodly show of seaplanes turned up for the second Pinera Cup competition, but no outstanding times were put up. A well-finished model by N. Blacklock was unfortunately damaged early in the contest.

The RUSHOLME (Manchester) AND D.M.F.C. are pleased to report acceptance as an affiliated club.

Yet another new club is the BRENTFORD AND CHISWICK M.F.C., contact being effected through Mr. A. Baker, of 526 High Road, Chiswick. On his second flight with the first model 'plane he has built, Mr. Baker lost his creation, this being recovered later from a clump of trees!

Tree climbing seems to be a very necessary attribute



(Top left) Members of the Warwickshire Club show how to wind up a model! (On right and bottom left) Two "Wakefield" models built by members of the Fife M.A.C. (Bottom right) The record-holder (club) of the Victoria M.A.C., built by Mr. H. Brown, and (centre) Mr. Wuwitt, of the Warwickshire Club, launches his "Judge" Wakefield model.

for members of the CHINGFORD M.F.C., whose ground is bounded on one side by Epping Forest. Weather has spoilt many contests this year, but Mr. Just managed to put up a flight of 171 sec. to win the President's Cup. Mr. Jardine won the light-weight honours, with Mr. Mitchell carrying off the heavy class on his first competition in the club. Great disapproval is expressed with the new winch launch gliding rules, but I am afraid that the opinion expressed that this is O.K. from a hill side, and no good off flat ground, is rather reversed in practice, many good flights being made at Faireys, which goodness knows is flat enough.

The BOLTON M.A.S. forward a programme of their forthcoming annual rally, which takes place on July 30th at Harry Holm Farm, Affetside, commencing at 11 a.m. Five events are scheduled, with an extra in the shape of a ladies' event if circumstances are favourable.

P. T. R. Peach, of the NORTHAMPTON M.A.C., won the N.M.E. Cup recently with a time of 125 sec., Messrs. Goodman and Crowley being the runners-up. A. Goodman has been doing well with his 6 ft. glider, whilst Messrs. Barker, Luck and Page have been experimenting with "Tse-tse" models, but find them very unstable.

The FIFE M.A.C. recently held an inter-club competition, which resulted as follows:—

1. D. S. Colvin, Edinburgh, 60·03 sec.
2. P. Montgomery, Fife, 47·41 sec.
3. A. Allen, East Fife, 30·2 sec.

The list of club records is pretty formidable, and I would suggest that a claim is sent in for the H.L. Gliding figure shown, as being affiliated, I take it this flight was timed by official timekeepers. Here's the list:—

1. Open class fuselage H.L., P. Montgomery, 10 min. 28 sec.
2. Wakefield H.L., W. Murray, 4 min. 17 sec.
3. Glider tow-line, P. Montgomery, 2 min. 55 sec.
4. Glider H.L., P. Montgomery, 7 min. 10 sec.
5. Twin-pusher H.L., W. Murray, 1 min. 45 sec.
6. Spar H.L., P. Montgomery, 8 min. 25 sec.

The new WELLINGBOROUGH M.A.C. have "furnished" their club-room (chairs 6d. each, table 1s. 6d.), and are now getting settled in. The club record is low at the moment, but it is hoped to bring this to reasonable dimensions later on.

The NORTHERN HEIGHTS M.F.C. is very pleased with its successes this year, and with just cause. Many successes have been gained in decentralised competitions, and now with Bob Copland in the Wakefield team, and three members in the King Peter Cup team, they will have something to crow about. A very promising youngster, Weaver, has shown some of the lads the way home in winning the club gliding competition. A new cup for pusher type models has been presented by Mr. and Mrs. Hall.

Mr. T. J. Lance, of the BRIGHTON DISTRICT M.A.C., won the Vice-President's Trophy for Wakefield models, the previous holder, Mr. Lucas, placing second. Mr. Towner's entry showed exceptional climbing powers, and great things were expected of it at the Trials. The South Coast Gala Day, organised by this club, will take place on August 20th, at Portslade Downs, from 11.30 a.m. till dusk. Four competitions have been arranged, and Mrs. Thurston has kindly consented to present the prizes.

Mr. Pettican, of the WINDSOR (M/cr.) M.A.C. won a recent H.L. competition with an average time of 127·4 sec., with Mr. Archer following with 11·4 sec. Archer lost his model on his first flight, clocking 5 min. 41 sec. O.O.S. Mr. Seddon also lost a model that day after 9½ minutes. In the M.E. Cup event, the only Windsor entrant, Mr. Parkinson, clocked an average of 133·86 sec., but owing to wind, etc., did not use all the 600 ft. of line for fear that the model would be posted "missing."

The WOLVERHAMPTON M.A.C. have introduced some new rules, main being the raising of the entrance fee to 5s., and junior minimum age now at 14. This was done to prevent the swamping of the club by too large a junior membership.

The SWINDON M.A.C.—a new club with things seemingly well in hand—wish to know how to balance a prop. when the free-wheel and other gadgets are added. Add gadgets on the other side, my lads! Enthusiasm is evident here, when two members will cycle six miles in pouring rain to attend a meeting.

Mr. King, of the WARWICKSHIRE M.A.C., has raised the biplane figure to 63 sec., whilst Mr. Huwitt does not intend to lose his hold on the President's Trophy. Two photos sent in show Mr. Chaney " winding up " (it's a job to know whether it is he or the model that is getting the worse treatment), and Mr. Huwitt H.L.ing his model. Much satisfaction is felt at starting the season with a small credit balance in the bank! Wish I could say that!

Another photo is sent in by Mr. R. A. Wilkes, of Ipswich, and is of the Italian A.P.6, plans for which recently appeared in this magazine.

The HUDDERSFIELD A.M.S. report :—

" Oh, what a tale I must unfold,
Of windy days and wrecks untold,
Of Clifton Common and its gale,
Of our coming auction sale.
Of losses on our Wakefield dance,
As irate members start to prance.
And of conscription, marching on,
To take our members, one by one."

I regret to have to announce the death of their President, Lt.-Col. Sir Emmanuel Hoyle, Bt., O.B.E., J.P., which occurred at his residence on May 9th.

Mr. G. H. Gibson, of the HIGH WYCOMBE M.A.C., sends in a fine photo of a model he has built from details supplied in the May issue. This is of the small petrol 'plane by Capt. Bowden, and is a fine piece of work.

A club has been formed at Sevenoaks, and will be known as the SEVENOAKS AND D.M.A.C. Membership stands at 86, and prospective members are asked to get in touch with Mr. F. Dabmor, Windmill Farm, Chipstead, Sevenoaks, Kent.

Capt. Horner, of the LANCASTER M.A.S., has raised the club biplane record to 63 seconds, and reports that the club is progressing well.

Flying activities of the DEVON AND EXETER M.A.C. have been curtailed by weather—and the inability of certain members to get up on Sunday mornings. These slackers are appealed to to buck up and support the regulars. A photo forwarded shows a nicely built Curtiss " Gulfhawk " built by Mr. Dawson.

The ROTHERHAM M.F.C. write in appreciation of a lecture given them by Mr. C. S. Rushbrooke, between 60 and 70 people being thoroughly entertained by the pictures and talk. (Did you tell 'em any of your " specials," Rushy?)

Mr. G. Smith, of the OSSETT AND D.M.F.C., won three classes in a recent programme, the other placemen being Messrs. G. C. Wilby, D. Evans and D. Alvey. The Junior Cup and the Lister Cup were won by Alvey and Smith respectively.

The highlight of the LANCASHIRE M.A.S. report this month is the success of Mr. H. Hill in the M.E. No. 1 Cup competition for gliders. Contacting a thermal on his first flight, he clocked 14 min. 38 sec., and went in to total 1,168·7 sec. and win the National Trophy. Now I see that this chap, together with another Lancs

member, A. Tindall, is in the King Peter Cup team to meet the international competition in July. Nice work, fellows!

Many successes have been met with at the Halifax and Southport Rallies, nine places being collected at these two meetings, with Rushy collaring the championship at Halifax—much to his astonishment. A new Junior Championship Trophy has been presented to the club, and has already had a large influence on the junior support of competitions.

Mr. D. Gilby, of the OXFORD M.F.C., won the first prize at a recent competition, averaging 116 sec., Mr. W. Smith placing second with 108 sec. and Mr. Courtney third with 96·4 sec. K. Taylor was the best junior with 52 sec. This club gave a fine display at Upper Heyford Aerodrome on Empire Air Day, and a photo sent in shows part of the exhibition staged.

The LIVERPOOL M.F.C. indoor cup competition was won by G. C. and K. H. Wilkinson, with 56·9 points, next being Mr. A. Lawrenson with 37·3 points, and third Mr. J. Sheriff with 36·1 points. Marks were awarded for general efficiency, the winner attaining a duration of 62·9 sec. on a three-foot pole, and carrying a load equal to its own weight (4 oz.) for over 25 sec. At the Southport Rally Mr. Dow won second prize in the flying scale class with his Caudron, a photo of which is reproduced here.

Mr. G. W. Rose, of the NORTH COVENTRY M.A.C., has lost the lower half of his composite flyer, the model clearing off after a flip of 7 minutes O.O.S. Anyone who hears of this model are asked to get in touch with him.

The WESTWOOD M.A.C. staged a show at Leconfield R.A.F. Station, and the show proved highly successful, with over 40 models on show. This club is now affiliated, and has an array of nine trophies.

A/A Edwards broke the club record of the HALTON M.A.C. with a flight of 4 min. 3 sec. in a recent competition, which he won with a total for three flights of 413 sec., A/A Davey being second with 312 sec. and A/A Dubois third with 219 sec.

There comes news this month of an amalgamation of two clubs in the Letchworth area, the new club now being known as the LETCHWORTH M.A.S. Some good flights have been made recently, the best being Mr. H. Males's flight of just over 5 min., breaking the club record.

The RUGBY F.C. announces that it is not yet dead, but, like Johnny Walker, still going strong. It is hoped to enter a model in the *Flight* Cup competition at Cranwell.

The well publicised open contest for petrol model enthusiasts, organised by the HAYES AND D.M.A.C., was rather disappointing to the sponsors, only eight models turning up. This is rather surprising considering the enormous number of requests this club gets to use the ground, and brings me to think the applicants only want to muck about, and not do any serious flying. Well, all I can say is, it's not fair to the club who have the responsibility of the ground.

However, a further date has been fixed for July 30th, and I trust they get better support this time. One very necessary restriction will be enforced, and that is insurance and registration with the S.M.A.E. Two individuals were prevented from flying on the last occasion through non-compliance with this rule.

J. Marshall turned in some good times in the White Cup competition, and his time of 384 sec. breaks the British R.O.W. (Tank) record. In the Fairey Cup Wakefield competition Mr. Ives placed first with an average of 122 sec., Marshall second with 102·8 sec., and Gathercoll third with 99·6 sec.

A spot of unpleasantness was caused at a recent competition held by the WAKEFIELD (Yorks) M.F.C., when it was claimed that neither of the winning models in two competitions—both, incidentally, by the same entrant—were eligible for their respective classes. Pity this sort of thing should occur, and I would suggest that in future models are checked before flying, the onus then being on the officials who pass the models. The Press secretary is claiming an unofficial record for having stuck three different models in three different overhead wires in three successive weeks! Nice going, Denison!

The fourth East Anglian Rally staged by the CLARE AND D.M.A.C. will be held on September 2nd at Stradishall Aerodrome, near Bury St. Edmunds, commencing at 2.15 p.m. A large number of competitions are to be held, but I see that these are mainly confined to modellers living in East Anglia. May I suggest that it would popularise your event more if it was thrown entirely open, in common with other rallies.

Big news from the BURNLEY M.A.C. this month is their affiliation to the S.M.A.E. Roll in, boys! The first competition day of the year resulted in K. F. Moffat winning both the Open Duration and Wakefield events, with times of 62 sec. and 67 sec. respectively, with S. Batty winning the stated time event. The club secretary, after chasing his model for miles cross country, had to bribe a gang of lads to return his model, and then they pinched the wheels. Nice people—with no manners!

K. B. Evans, of the YEOVIL AND D.M.A.C., is out of bed again! Here's his latest effort:

"S.M.A.E. Model Eng. Glider Contest. Great flying by our lads, all of whom repeatedly recorded flights of over 50 sec. M. Waterman had one of 2 min. 23 sec., thus winning our glider trophy contest, which was held concurrently.

"May 21st. Seaplane contest.

"Off the village duck pond,
We tried to fly our 'planes,
But, sad to relate, our efforts were in vain.
Morris Waterman, who name belied
his art, bashed his blinking bus on ground,
and, blast!—it fell apart.

Evans, who tried to reach such places,
Watched his bus do dirty paces,
Until, at the bottom of the lake,
Did faces at the mermaids make.

Fox, who from his little flat box
produced, we found, a certain winner
Until he did his second flight.
And boy, oh boy, was it a spinner!

So, underneath the spreading chestnut tree
There you'll find we bright boys three,
Patching up our models, singing he, he, he
(we don't think!)
And at the Wakefield we hope to be."

(Top left) Mr. A. Goodman with his "Fleetwing" petrol 'plane which placed second in the Northampton Club Cup competition. (Next) Mr. K. Stothers, of the Leicester club, with his glider which recently made a record flight of 5 min. 10 sec. O.O.S. Full-size plans for building this model are given with this issue. (Next, and centre right) Two photos from the exhibition recently held in Portugal. (Top right) An interesting model built by a French enthusiast. (Centre left) Models at the recent Lincoln Exhibition. (Bottom left) A corner of the competitors' enclosure at the recent Irish Model Aviation Day. (Centre bottom) Mons. Guillemard with a nice-looking model. Visitors to Flers will remember him. (Bottom right) Members of the Grimsby Club.

Records have been going by the board in the SALISBURY AND D.M.A.S. Mr. Read has put the gliding figure up to 131·5 sec.; the biplane mark is now 88 sec., by Mr. Hill; and the low-wing class stands at 69 sec., made by Mr. Thomas. A duration event, postponed owing to bad weather, was won by Mr. Neale with an average of 77 sec., with Mr. Hill runner-up. Major Hughes won the gliding event with an average of 55 sec.

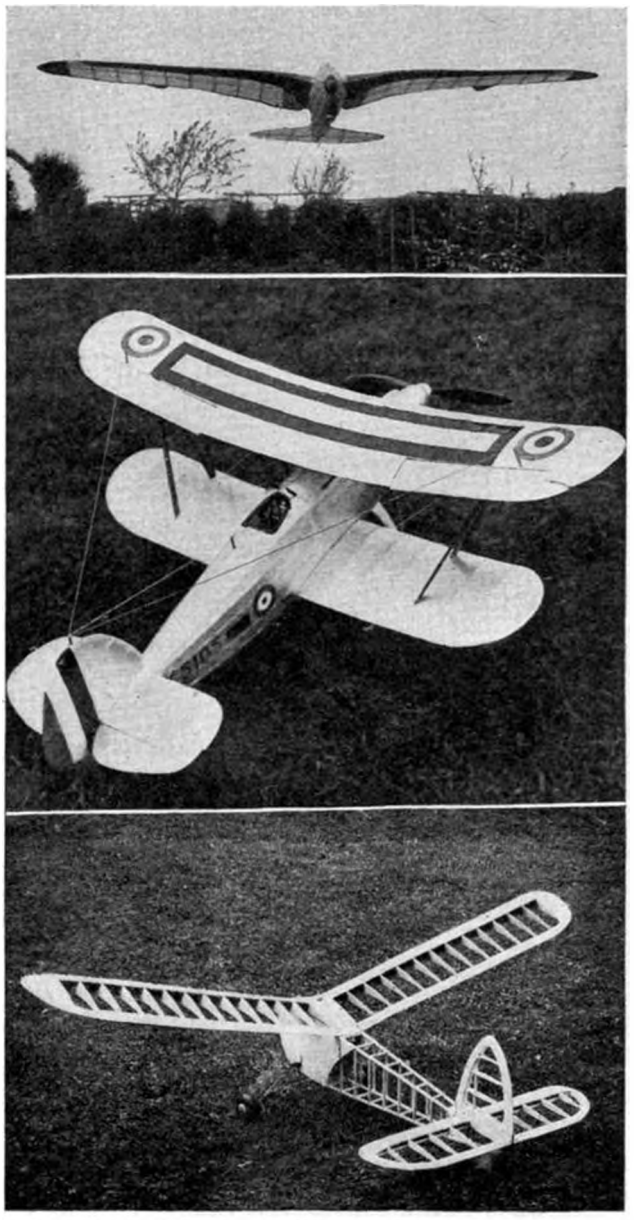
The BUSHEY PARK M.F.C. have held one or two successful meetings lately, and the H.L. record has gone to S. A. Taylor with 115·5 sec., and the R.O.G. to F. Drake at 102 sec. A photo shows a fine framework view of a model built by B. Hennesey, of this club.

The SLOUGH AND WINDSOR M.A.C. are now affiliated, and thoroughly installed in their new club-rooms, a bungalow of two rooms and a bathroom. I am told that the two rooms are allocated, but no mention is made of the latter room's function. Are you micrefilming next winter?

The BRISTOL AND WEST M.A.C. have been having "fun" with gliders and seaplanes. Their one consolation regarding the former is that next year the K.P. Cup is for rubber-driven models! I am told that the secretary lost his biplane-cum-seaplane on a flight that breaks the British record held by a fellow club member, but unfortunately there is no time given. The model landed 25 miles away. Nice chasing, Needham!

Messrs. Reynolds, Stevenson and Filmer won free flights in a recent competition of the WHITSTABLE, TAKERTON AND D.M.A.C. This was for scale models, and the judging was based on workmanship and finish. An exhibition staged at a local cinema has caused much interest, and it is expected that many new members will materialise from this.

The HINCKLEY M.A.C. are extremely lucky, having been given permission to use a 99 acre field. The club record was smashed on Whit-Sunday by D. Ghent with a time of 5 min. O.O.S.



(Top) A fine glider designed by our Italian correspondent, Dr. Fidia Piatelli. The A.P.6, and built by a reader. Plans are available from our Leicester office, 3s. post free. (Centre) A Hawker "Fury" built by Mr. Ronald Haynes, and (bottom) a "Puffin," designed by Major C. E. Bowden and built by Mr. Gibson from plans published in our May issue.

A club not quite so lucky are the DAGENHAM M.A.C., who have had to suspend flying in the park, but have hopes of convincing the local Committee at a demonstration to be given. May I hope that you are reinstated. Mr. Baines has been doing some good times with his 18 oz. glider.

Results of a competition staged by the STOCKPORT AND D.M.F.C. were:

	Av.
1. G. Newton	97·4 sec.
2. C. Hodgekinson	76·8 ,,
3. H. Newton	65·2 ,,

Two models lost recently clocked 4 min. 89 sec. and 8 min. 55 sec., both O.O.S. and lost.

The LEAMINGTON AND WARWICK M.A.C. have started a Wakefield Fund effort, by which it is hoped to raise at least £1. That's the idea, fellows! A photo sent in shows a fine T.D. Coupe petrol model built by Mr. D. G. Bird.

The Cumulus M.A.S. has now been affiliated under the title WANSTEAD M.A.S. Two club records to be broken are the H.L. glider at 8½ min., and the H.L. figure boosted up to 7 min. 25 sec., both by Mr. Hilton. Many fine jobs have appeared this season, notable being a mid-wing by Mr. Cornwall, which is extraordinary, owing to the fact that the model flies best with the wing at a negative angle of attack. Mr. Haines—the club mass-productionist—is leaving the district, much to the regret of the Wansteadites.

The full results of the Southport Rally are to hand, and it would seem that the Lancs boys once again had a real day out. The wind spoilt an otherwise good day, and the organisers are to be congratulated on a good show under difficulties.

The results were as follow:

UNDER 150 SQ. IN.

	Av. 3 flights.
1. F. Bailey (Lancs)	95·8 sec.
2. A. Tindall (Lancs)	86·2 ,,
3. A. W. Shaw (Lancs)	70·3 ,,

OVER 150 SQ. IN.

	Av. 3 flights.
1. R. W. Higson (Macclesfield) ...	79·0 sec.
2. G. B. Vanner (Furness)	69·7 ,,
3. J. G. Eifflander (Macclesfield) ...	67·5 ,,

BIPLANE.

	One flight.
1. F. Bailey (Lancs)	95·0 sec.
2. J. A. Taylor Lancs)	58·0 ,,

FLYING SCALE.

	One flight.
1. E. Meredith (Chester)	24·0 sec.
2. —. Dow (Liverpool M.F.C.) ...	10·2 ,,
3. W. Thorpe (Lancs)	9·5 ,,

Members of the SHORTS M.A.C. had difficulty with the winch launch method for gliding, but F. Dewell made a commendable showing. D. Gee made the best effort in the seaplane event, with an average of 69·4 sec. and a very realistic take-off.

A speed indoor model of the WARRINGTON M.A.S. has been misbehaving itself, pulled the pole over and stuck itself in the rafters! The builder is now speaking of building an American 90 m.p.h.'er—and the members wish to know of someone with a couple of suits of armour for the poor timekeepers. I am invited to the rally this club is organising on June 11th, but I must decline this time, as I shall be at Cranwell. Sorry! The Press secretary of this club bets me that the Germans will walk off with the K.P. Cup. Afraid I don't bet unless the odds are 100 to 1 in my favour though!

The CHELMSFORD S.M.E. members had some fun wind-dodging on their first competitions day, many models landing in the trees. Mr. Dann clocked 159 sec. with a glider, and hopes are held for the K.P. Trials with this model.

An amusing report from the CARDIFF M.A.C. (sorry, I can't put it all in) gives news of mad inventors who can't fly their models, but win cups all the same. Dai

SMALL TRADER'S 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.

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

ROTHERHAM.—L. R. Cooper, 6 Doncaster Gate: Complete stocks of balsa wood and spares for the aero-modeller. Agents for Megow, Sweeten, Veron, Normac.

PLYMOUTH.—The Cabinet Supplies, 56 Union Street, Phone 3914, have a large selection of aeroplane kits from 9d. up. Agents for Studiette and Joy-Plane Products. Best quality balsa in all sizes. Rubber, tissue, etc.

WIMBLEDON.—Come here for rubber kits and balsa, an engine for a 'plane, or a boat: we'll do it. And then tell your friends it's from "Colins," 172 Merton Road, Wimbledon.

BIRMINGHAM.—South Birmingham aero-modellers please note! Get your materials and kits from Longbridge Model Aero Supplies, 1667 Bristol Road, Rednal (Parsons Timber Yard).

CHESHAM.—Bucks. Model Aero Stores, Berkhamstead Road. Balsa any size to 6 in. width, true run bobbins, Caton's rubber, tissue, cement, Avan props. Kits. Mars from 2s. 6d. to 8s. 6d. Cahill's Clodhopper 8s. 6d.

CHINGFORD, E.4.—Super flying job "Astra," 5s. 6d. complete. High wing, 26½-in. span, ribs cut. "Wilfly," 36-in. wing span, 10s. 6d. complete. Megow's 9d.-35s. stocked. Postage 6d. G.S., 155 Station Road.

NOTTINGHAM modellers can be sure of getting good quality materials at the right price, with the addition of personal service, at the City Lamp Stores, 3 Alfreton Road.

FINSBURY PARK.—E. C. Addellsee, 159 Stroud Green Road, N.4: Stockist of model aero sundries, "Joyplane," balsa, cement, dopes, etc.

PLUMSTEAD.—B. H. Ayre, 193 Plumstead Common Road, Plumstead, S.E.18: All "Slick" and "Studiette" products in stock. Full range of Megow, Guillow, Comet, Peerless, Burd, Aero-models, Scalecraft, Cleveland kits; balsa strip, sheet, block. 50 in. H.W.M., semi-scale, 4s. 6d. dry. Call and have a chat, or 'phone Wool. 2157.

LEWISHAM Model Aircraft Supplies, 11 Ladywell Road, Lewisham, S.E.13: Full stocks accessories and kits from 9d. to 35s. Flying Quaker, 35s.; Quaker Flash, 30s. Skilled model builder in attendance.

SOUTHAMPTON.—Lamerton's, 27 Bridge Road, Woolston. Large selection of Aero-model, Amco, Keelbild, Veron, etc. Rubber, gas, and glider kits. Prime quality balsa (over 80 sizes stocked), props., wheels, cement, metal fittings, etc. Prompt attention to post orders.

SURREY Signs, New Broadway, Hampton Road, Hampton Hill: 32 in. wing-span Endurance kit, 2s. All "Cloud" kits, and good variety of others in stock. Balsa wood, dopes, tissue, etc. Dunlop rubber props. from 3d.

HERTFORD.—Model Aircraft Supplies, Railway Street. Largest stocks of kits in East Herts.; Megows, Clouds, Aero-models, Veron, Club, Comets, and famous Clodhopper; also Caton's rubber, Joy cement, etc.

BATTERSEA.—E. J. Bannister, Model Aero Supplies, 46 Battersea Bridge Road, S.W.11 Aero-modellist since 1912! Kits and everything the modeller requires. We give assistance and advice free. Buses 19, 39, 49 pass door. M.A.T.A.

KENSINGTON.—S. L. Langley, 151a Lancaster Road, Kensington North, W.11; also at 25 Silchester Road, W.10. We stock all Joy products, best balsa wood, tissues, etc. Many kits in stock.

PLAISTOW.—Norman Jaggers, 617 Barking Road, and 346 High Street, E.12, for clean, accurately cut balsa and sundries, Megow, Studiette, C.M.A., and Cloud construction kits stocked. Write or call.

WILLESDEN.—Balsa, accessories, kits, etc., Jeffreys, 984 Harrow Road, N.W.10. One minute Kensal Green Station (Bakerloo). 18, 18a, 18b buses, 662-664 trolley-buses stop at door. Phone: Ladbroke 0089.

BALHAM.—63 Bedford Hill. King's for model aero supplies. King Alpha, 38 in. span, 4 oz., duration kit, 9s. 6d. Cut-out ribs, etc., 2 minutes' duration, prints only, 2s. Also Wakefield design print, 3s. Winner of many competitions. Send now. Trade supplied.

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STAFFORD.—There is not much we cannot make in Staffordshire, including good models, because our motto is "to satisfy the expert and help the beginner."—Aircraft Models, South Walls.

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CLAPHAM.—Retail agent for all "Joyplane" products: Messrs. Wakeling's Sports House Ltd., 7 Clapham Park Road, London, S.W.4.

LEEDS.—Retail agent for all "Joyplane" products: Mr. M. F. Richer, "Chez Nous," North Lane, Roundhay, Leeds 8.

LONDON.—Mr. Cox, North Circular Road, Neasden, N.W.2. Agent for all model aircraft supplies, particularly "Joyplane" products, kits, etc.

Lewis won with an average of 54 sec. Waite next with 28 sec., and the third man was Watkins, with 21 sec. Tch, tch, what times—but then, I didn't tell you the weather was l——y. Mr. Kale broke the club record with a flight of 197 sec. O.O.S., landing on the local paper mills—and the employees were surprised to see such thin paper! Mr. Chant was tickled over my yarn of his "Pub-crawler," but I am informed that the pubs do not open in Welsh Wales on Sundays! I'm afraid the M.F. and Clubman will never go there for the week-end.

A new club record for Wakefield types was the 9 min. 10 sec. made by Mr. D. Elmes, of the ILFORD AND D.M.A.C., while Mr. R. Haines raised the light-weight figure to 6 min. 4 sec. Mr. D. Hogg has raised the biplane figure to 75 sec., whilst a fine flight of over 12 min. was unfortunately not officially timed. This club have passed a rule that all duration models shall carry the name and address of the owner on it, this binding him to pay any reward for the return of his model. Anyone not complying with this rule is fined 1d. The club is holding an open invitation meeting on June 11.

With which I will strike my tent and away to the woods and pick violets. (Yes, I know the end of that one, too). Keep those reports as short as you can, fellows, as I don't like to cut them too much, but at the same time it is very necessary sometimes. Till next month I am, sincerely yours,

THE CLUBMAN.

BUSINESS AND EDITORIAL ANOUNCEMENTS

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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 Society 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.

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DRAWINGS should be in Indian ink on white card or linen tracing cloth. Actual size is not important, but the length/width ratio should be 10:7 (for full-page reproduction) and 4½:7 (for half-page reproduction).

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EDGWARE.—Accurately camouflaged metal "Battle," "Hurricane," 1s.; Douglas D.C.2, D.C.4, W.A.C.O., 1s. 6d.; "Frobisher," "Albatross," "JU. 86," "Whitley," "Singapore," "Ensign," 1s. 9d.; "Mayo Composite," 3s.; "Gladiator," "Gull," "Envoy," 1s.—Seacrafts, 71 Farm Road, Edgware.

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CAMBRIDBE Model Aircraft Suppliers, 33/37 East Road. Sole agents for "Joy" (cements and dopes), tissue, props., balsa wood, etc. Write for catalogue, 3d. each. Largest stockist in Cambridgeshire. Trade supplied. Phone 2365.

WHETSTONE, LONDON, N.20.—Whetstone, Barnet and Finchley, take notice! Your local dealers for balsa wood and model aircraft sundries are Pollard Bros. Ltd., 427 Oakleigh Road North.

NEASDEN.—Messrs. J. Cox, 580 North Circular Road, Neasden, N.W. Stockists of Model Aero sundries, "Joyplane" balsa, cement, dopes, etc.

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MEMBERSHIP FORM for NATIONAL GUILD of AEROMODELLISTS

For Office Use
M. No.....
Date Joined.....
Petrol M.....
Rubber M.....
Reg. No.....

FORM No. 1

*Christian Name*_____ *Surname*_____
(Block Letters)

*Address*_____

Whether:- RUBBER MODELLIST / PETROL MODELLIST (cross out whichever is inapplicable.)

Herewith attached 6d. P.O. No.....for enrolment as a Rubber Modellist
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*Club (if any)*_____

*Make of Petrol Engine(s)*_____

NOTE ***The above two forms should both be completed and returned to:—Mr. Dudley Ship, Hon. Secretary, 44, Holdenhurst Road, Bournemouth.***

FORM No. 3

TO BE HANDED TO YOUR NEWSAGENT

*Name of Newsagent*_____

*Address*_____

Commencing with the August, 1939, issue, please deliver or reserve for me "The Aero-Modeller" until further notice.

*Signature*_____ *June, 1939*

*Address*_____

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