PERMANENTLY ENLARGED

The AERO MODELLER

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THE NATIONAL JOURNAL OF MODEL AERONAUTICS

OFFICIAL JOURNAL
OF THE
SKYBIRD LEAGUE

The AERO MODELLER

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Vol. II No. 21 — AUGUST, 1937

ALLEN HOUSE, NEWARKE STREET, LEICESTER

FIRST NATIONAL JOURNAL OF MODEL AERONAUTICS

EDITORIAL

"I think that THE AERO-MODELLER *has improved immensely this month, and hope that you will keep up the good work."*

"The writer would like to compliment you on the very excellent issue for July—by far and away the best yet. May the good work continue."

"Many thanks for THE AERO-MODELLER *received. I think the enlarged copy was wonderful."*

"I may say that your journal has created a very good impression by its new policy, and has already won new support amongst our members."

—chosen at random from our mail, the above are typical of many kind remarks received regarding our ENLARGED SUMMER NUMBER; not only from our readers but from our advertisers; and, encouraged by this response, we are continuing all future issues of THE AERO-MODELLER *increased to the same size*—that is, by eight extra pages.

This means that, with the pages previously occupied by the Notes of the Air League of the British Empire, we shall now have nearly double *the amount of space available for flying model topics. Now we really* can *get down to this model-flying business!*

CONGRATULATIONS.

And now it's our turn to offer praise—to Mr. C. A. Rippon, who, in a letter to us, says that he "hopes to do better next time"—"next time" being the 1938 *Northern Heights Rally.*

Anyone who was at this rally will know that "Rip" is asking a good deal of himself: but we are quite sure that with such a good band of helpers as he is supported by he will keep his word. To Mr. C. S. Rushbrooke also we must offer equal congratulations for his excellent organisation at the Northern Rally held a fortnight earlier.

OUR COMPETITIONS.

Perhaps the subject for our first Competition was not too good a choice? Frankly, we were disappointed with the entries—so few, and a number not complying with the conditions. However, we have had a considerable number of entries for our Second Competition, and the full list of prize-winners will be found on the next page. Fully illustrated descriptions of the prize-winners' "gadgets" will appear in our next issue.

THE WAKEFIELD CUP.

As we go to press we have received some interesting "Stop Press" news—for which we have to thank Mr. H. York, press representative of the S.M.A.E.—from which it appears that America will not be sending a full team of representatives with its models. There will be full teams from several other countries, and we look forward to a really international meeting.

With the competition for the Bowden Trophy on August 2nd and the competition for the "Petrel" power-driven aircraft organised by "Practical Mechanics" at Brooklands Aerodrome on August 14th, we shall indeed have a busy month!

OUR NEXT ISSUE.

This will have as outstanding features full reports on the Wakefield and Bowden Trophies competitions —several *articles by readers describing their models —a full description of C. R. Moore's Viper II, the winner of the Coronation Cup for semi-scale flying models at the Northern Heights Rally—more readers' "hints and tips"—and the subject for Competition No. 4—so order your copy* now, *and look forward to August 20th!*

THE EDITOR.

CONTENTS

OUR COMPETITION PAGE

RULES FOR ALL COMPETITIONS

1. The competition is open to all Aero-Modellists who are readers of this journal.
2. There is no entrance fee.
3. Letters must be written in ink and on one side of the paper only, and must not exceed 400 words in length.
4. Sketches or photographs, if necessary, may be supplied; and will be returned if unsuitable (provided a stamped and addressed envelope is enclosed), but letters themselves will not be returned.
5. Cash prizes to the total value of £3 will be awarded each month, at the discretion of the Editor, whose decision on all matters arising from these competitions must be accepted as final.
6. To make the competition "monthly," all entries must be received by the 7th of the month following that in which the competition is published; we shall then be able to publish the results, together with the particulars of the next competition, in the following issue.
7. Entrants must state on the back of their letter—
   (*a*) Their name and address.
   (*b*) The name of the club to which they belong.
   (*c*) Whether they are under 16 years of age.
8. Each entrant must attach to his letter a competition coupon from the back page of the current issue of THE AERO-MODELLER.
9. Entries sent in without this coupon or the information called for in Rule 7, or received after the 7th of the month, will be disqualified.

Competition No. 1

Owing to the poor response to this competition, it must in effect be cancelled. A consolation prize of 10s. has been awarded to L. Antheunisseu, of 2 Ysvogelplein, The Hague, Holland.

Competition No. 2

This competition was for "Gadgets," and has produced a considerable number of very interesting entries—though none from boys under 16 years—and the £1 which would have been awarded in this class has therefore been divided and awarded as two further "second prizes" of 10s. each.

The results are as follows:—

1st Prize, £1, S. B. STUBBS,
86 Chain Lane, Littleover, Derby,

for a propeller winding gear with a counter which records the number of turns put into the rubber motor.

Four Second Prizes, each of 10s.

G. DUNMORE,
22 Kingsway Road, Leicester,

for an "enlarger" for marking out wing ribs to any size.

F. FOSTER,
"Tryfan," Northend, Ditchling, Sussex,

for a parachute release.

S. E. CAPPS,
18a Crown Road, Twickenham, London,

for an apparatus for bending bamboo.

G. BRUCE,
20 Raeburn Avenue, Dartford, Kent,

for an apparatus for winding up a rubber motor inside the fuselage without risk of damage if the motor breaks.

Three Consolation Prizes

(Each of a 2s. 6d. kit, presented by Messrs. Aero Kits, Sheffield).

D. D. BEASLEY,
221, St. Ann's Well Road, Nottingham.

W. T. D. ARNAUD,
2 Quarryhall Terrace, Hamilton, Lanarkshire.

H. BOYS,
20 The Avenue, Whitley, Coventry.

Fully illustrated descriptions of the prize-winning entries will appear in our next issue.

Competition No. 3

This is for photographs of Model Aircraft in flight (including gliders, if free from any landing devices). Closing date, August 7th.

For entrants over 16 years of age.

First prize, £1.
Two second prizes of 10s. each.
And—special this month—3 copies of Mr. D. A. Russell's book, "The Design and Construction of Flying Model Aircraft."

For entrants under 16 years of age.

First prize of 10s.
Two second prizes of 5s. each.
Three 2s. 6d. kits presented by Messrs. Aero-kits (Sheffield).

GET THAT PHOTO TAKEN NOW AND ENTER IT BY AUGUST 7th. REMEMBER—YOUR PHOTO *MUST* BE OF A MODEL AIRCRAFT IN FLIGHT.

CUT THE COUPON FROM THE BACK PAGE AND ENTER NOW!
NO ENTRANCE FEE REQUIRED

WAKEFIELD WHAT-NOTS ! !

By C. S. RUSHBROOKE

DURING the course of conversation with the Editor at the recent Northern Rally, I was invited to give my views, forecast, and general hints and tips on this year's Wakefield Cup contest. Having duly promised —with many blushes at the honour bestowed upon me— I have had time since to realise just what a task I have undertaken, and any brick-bats that are slung my way must have the corners rubbed off on the altar of "higerance." Remember, these are purely my own views on things—and believe me I know I differ a lot to the majority.

Still, anyone who can stand my literary style and rotten English may be able to find a few grains of wisdom mids the tripe (owners of microscopes please advise the Editor of their willingness to loan out !). Though on the late side for use in this year's affair, some of the tips given here may be of use on future occasions—and anyway, we do build other stuff than "Wakefields."

Suppose we start off with what my ideals for this year's model would be. This is rather funny—or is it?—as I had my leg well and truly hauled over last year's lateness, my 1936 bus having been finished the night before the Trials, and had a most wonderful performance—as a stunter ! Who remembers the black and orange atrocity trying to make both ends meet, Daschund fashion ! And now, 1937 is upon me and I haven't even had a chance to start a new job. Really though, I have had such a busy time in many ways, I have had no chance to really get down to it—and I have no intention of trying a rush job, past experience having proven how likely that practice is to lead to failure.

What ! Those "ideals." Let's take the machine bit by bit. I suppose I am in the swim when I say the best idea is an oval section fuselage, preferably veneered. This is none to simple a type as many have found—I've seen some weird and wonderful contraptions, the main trouble seeming to be keeping the formers in line whilst covering with the sheet balsa. The best stunt I have seen is to assemble the formers on a removable, central jig, an idea I believe taken from an American kit set. The classic example of this was the petrol model fuselage built by a pal of mine—a broomstick being used as a central core upon which the whole was assembled, the jig being mounted so that the work was rotated whilst being covered. Ah, such thoroughness is not given to us all—seems to have given me a very wide berth !

A good variation of the oval type is to be found in Zaic's 1937 Year Book. This has two flat sides, with semicircular top and bottom formers making the section pear shaped, and in my opinion is much simpler to construct. There is another point in that the weight is concentrated below the C.G., which should help in the stability section.

I'm confident that this year many people will realise a factor that we in the frozen North have been plugging for years. Darn clever these Eskimos ! I refer to the greater use of sectional materials, and I can speak very feelingly on this subject. Having spent a number of years in the building trade, I have a fair idea of the strength to be gained with a small angle section here, or a light tube there, and I think I can claim to be one of the first to make extensive use of the various sections to be obtained to-day. I'm willing to guarantee that a fuselage constructed from L and T section balsa is twice as strong, yet noticeably lighter than a corresponding fuselage built from ordinary stick stuff. Methinks there will be plenty of opening there for the storming of the correspondence columns !

There is a bit more constructional detail in the building of a fuselage using these materials, but who minds putting a bit of work into something that is going to well repay the time and trouble spent on it? I have made a number of fuselages on this principle, and have sketched the joints I found the best to employ. You will notice that the advantage is taken of the greatest glueing surface.

Well, so much for the fuselage. What of the wing? I suppose there is as much controversy on this question as the other classic—to gear or not to gear (as the Scotsman debated when down to the last acid drop !). Subtle, huh !

In spite of numerous arguments, I still think the taper wing has it, if only from the constructional strength. Granted there is a lot more work in laying out a set of ribs for a wing of this type, but I think that is where a great deal of the fun in this game comes in—overcoming a difficult job successfully. I'm no mathematical genius—figures (of that kind) giving me a pain in the neck—but I do like messing around with a difficult bit of construction. The easiest method of obtaining a set of tapered ribs is undoubtedly the two template trick, e.g. templates cut to the largest and smallest sections, clamping a number of balsa slips between them, and shaping down. This method is also illustrated in the Year Book, and I should like to state here that this system was in use in the Lancs. M.A.S. five or six years ago ! Fools rush in where angels . . . .

Sweep-back may be an advantage in some instances, but I, personally, see no great call for it, correct dihedral and incidence being of the greatest importance in my opinion. Taper wings should not be too narrow at the tips, anything below around $2\frac{3}{4}$ in. being of little use, whilst the aspect ratio should be kept within limits —my preference being 11 or 12 to 1.

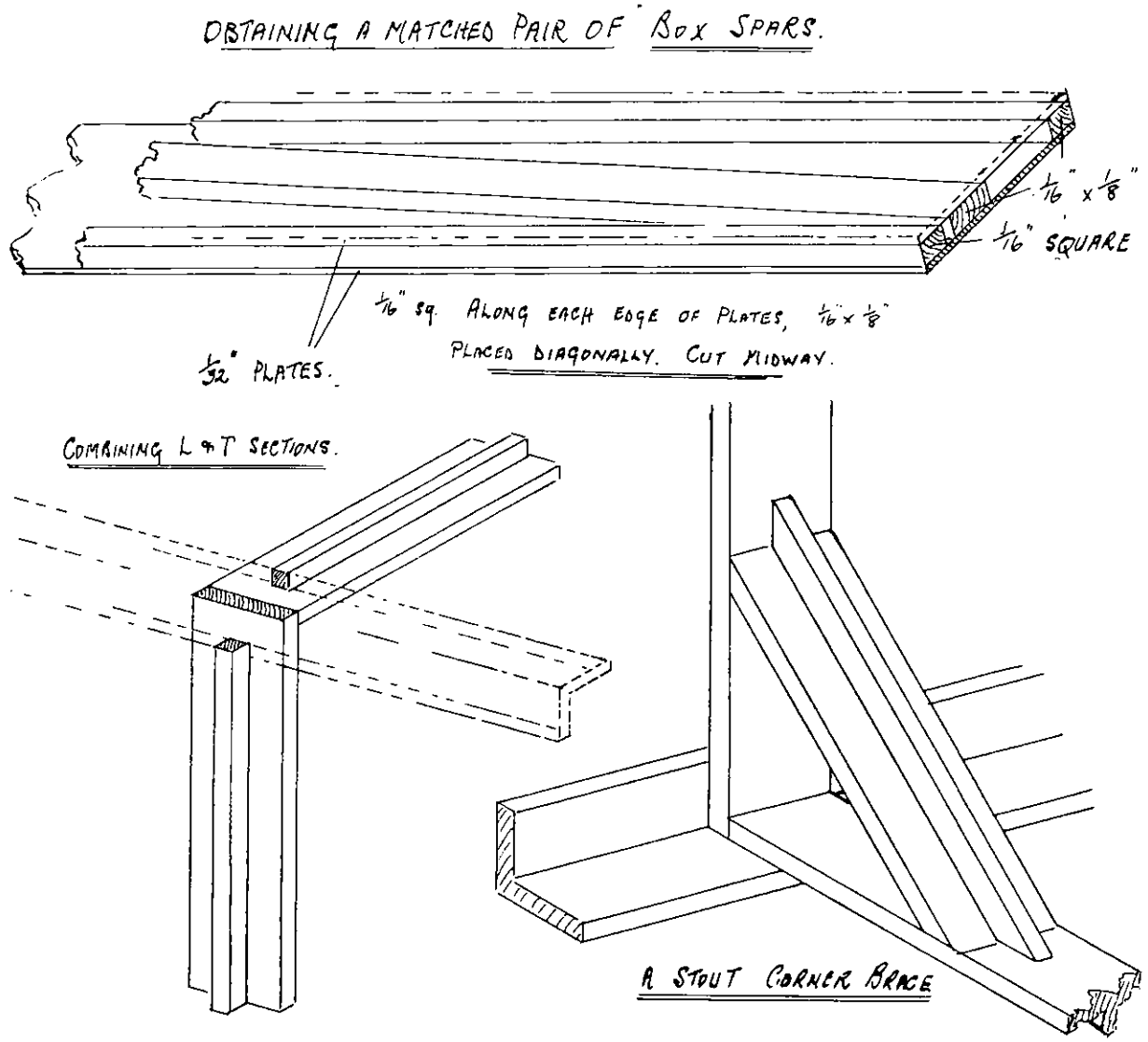
And what of the airfoil me hearties? Here is a pretty problem indeed, and one that has increased the sales of midnight oil enormously. Most of us adopt a follow-my-leader attitude, I'm afraid, but what else are we to do? What is needed is some real information on the behaviour of various sections at model flying speeds. What about it D. A. (Mathematicus) Russell—what about giving that wind-tunnel some work on these lines? I'm sure it would be greatly appreciated by many.

From practice and observation I should say the best sections in use to-day are the R.A.F. 32 and N.A.C.A. 6412, the latter having a remarkable non-stalling climb. But when all is said and done, we are working very much in the dark at present, and until some real research work is done on this subject we must be content with a hit and miss result.

My method of wing construction is to use a good box spar, deep as possible, and tapered, fairly hefty leading and trailing edges, with a veneer taken a third back in some cases. I know this is not original, but practice has proven to me that this is one of the best combinations to be found, and the lasting qualities of my own models are some indication of the inherent strength gained by such construction. The original "Mayfly," built getting on for four years ago now, uses the methods described here, and the fact that it is still going strong is a good answer to the critics of these "balsa wind-bags."

model put it's nose down when the power was off, 'nuff said!

Props and power are an unknown quantity under this year's conditions, but my preference has always been for a fairly fast-revving propeller that yanks the model up to the higher regions, and trust to luck to find an angel to give it a helping hand! I have heard of quite a number of builders this year who are building their models as per usual, and bringing them up to the weight requirements with rubber—but how are they going to manage that power, and what is going to happen to the turns?



I do not believe in large tail surfaces, and in my opinion a proportion of from 25–30 per cent wing area is ample, providing there is at least 2½–3 chord breadths distance for the moment arm. An incidence adjustment can be very useful on the tailplane and should cut out that idiosyncrasy, down-thrust. Now then, who never uses it? As to whether the tail should lift or not is something I am keeping mum on. Had little experience with the lifting type, but am anxious to make some tests. My one and only experiment with a lifting tail was made when I was an even greener novice than now, and the results were enough to put me off till now. Yes, I shirked it, and if you could have seen the way that

I have seen one or two samples of the geared jobs that there is so much discussion about, but I must admit I am not too favourably impressed. All right for hand-launch, but the majority seem to funk it on a R.O.G. The single-motor job is by no means a back number under the new regulations—Bob Copland's achievements already having proven this—and I think a great many builders will find they have not a lot of weight to spare for nice geared nose-pieces by the time they have put all those nice little extra bits in the model. I'll take a bet that a number of people have had a shock when they came to weigh that special balsa framework! It's surprising how easy it is to accumulate weight.

Streamlining will play a great part this year, the lessened drag making for a saving in power. My idea was to fair everything in as much as possible, though the necessarily stronger undercarriage required for the greater weight will present a pretty problem in this direction. I had thought of a retractable undercart, but came to the conclusion that a system of this sort working in a half-hearted manner would be worse than useless, and I think there will always be a doubt about the action working properly. Ergo, until some bright spark thinks out a method of dropping the undercart again just before landing, who's going to bung a new propeller on for every flight?

With the majority using very long motors, a rubber tensioner is an essential fitting: I've seen some very funny antics cut when the slack rubber slides into the rear of the fuselage. Also with the amount of power used on the 8 oz. jobs, soldered clutches, etc., become a very important point to watch, the amount of strain being very considerable. One tip I can give here, and one learnt by painful experience! If using Baker's Preparation as a flux for soldered joints on the propeller shaft, clean the job very thoroughly after using the iron, as I have found that there is a tendency to corrode if any flux is allowed to remain on the steel. After my experience at Flers a few days ago—the clutch stripped clean away from the shaft just as I was about to make my first competition flight—I think it advisable to occasionally resolder the clutch. On examination of the aforesaid shaft on the "Mayfly," I found a section corresponding to the position of the clutch had corroded, eating its way between the shaft and the solder, with disastrous results.

I should think a tail-wheel instead of a skid would help the heavier jobs to R.O.G. with greater ease—but be careful the track is accurate. I've seen some beautiful circling ground hops caused through the tail wheel being offset!

I can't resist a few remarks on the gearing controversy. I have built geared nose-pieces—nothing elaborate, but effective, but can see no real advantage to be gained for the present type of machine. Gearing seems to be a vicious circle to me—weight and friction of the gears require more power, more power means more weight, which in turn requires more power again to overcome that weight—and so on *ad infinitum*. When it comes to gear experts like Allman—well, I won't argue, but for the general class of worker, I'm one, and I'm leaving 'em alone!

As for my advice on actually flying I guess there is not much I can say. A lot depends on the temperament of the individual, but I can say this—don't let the occasion get you down. Many chaps have spoilt their chances through nervousness and being over-anxious to do well. You have three flights to do, and my method is never to wind the motor right to the full until the last flight. What a blow if the rubber bursts on the first wind up! Take it as though you were on an ordinary club contest, or, better still, watch your humble at Fairey's on the Trials day. See the wonderful steadiness with which he holds his model. "No, that's not an aspen he's holding, dear, only his machine." Study the icy calm he displays as the bus goes up, dashing across ground yelling his head off: "Blimey; it's done more than 30 sec."

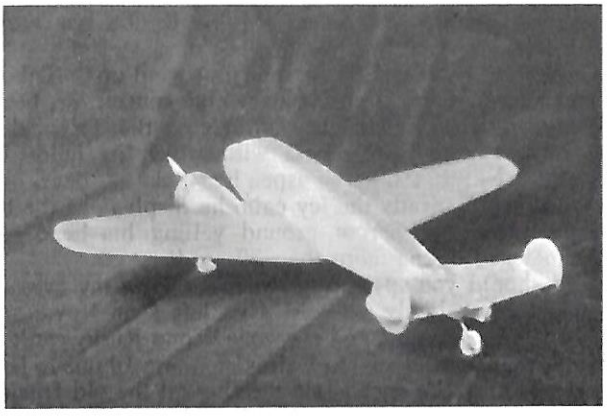
And should you spy me in a corner crying my eyes out you will most likely be told I've left that Royal and Ancient beret at home, and everyone knows Rushy can't fly without that! And so—to Fairey's, where I hope to have the time of my life once again meeting all the old friends, listening to new "Fairey Stories," and making periodical flights to the little pub. behind the orchard! What? Am I going to do any flying? 'Struth, I forgot all about that!

"ON TEST"

The LOCKHEED "ELECTRA" and the FAIREY "HENDON"

By OUR TEST PILOT

WHILST the notes of the Skybird League have appeared in this journal since its inception, a description of the models made by members of the League has not before appeared, and personally I had never even examined a kit of parts until I received these two from Messrs. A. J. Holladay and Co. Ltd., of 3 Aldermanbury Avenue, London, E.C.2, with instructions from the Editor that they were to form the subject of this month's Test Report.



" Skybird " models are, of course, non-flying, being fashioned mainly in wood, with certain parts, such as motor cowls, exhaust pipes, propellers, etc., made in metal, and excellent, clear-cut die castings they are.

The Kits.

The Lockhead " Electra " is a medium-priced model, 9¼ in. span, which is offered at 5s., and the Fairey " Hendon " long-range bomber, with a span of 16 in., is the largest model in the range, and costs 12s. 6d. for the complete kit.

Both models are built to a scale of 1/72 of the full-size machine.

Securely arranged in strong boxes, and supplied with full instructions for assembly, these kits are certainly " put out " in an attractive way ; and provided care and patience are exercised, they undoubtedly represent the " real thing " when assembly is completed.

Assembly.

It is claimed by the manufacturers that the various parts are accurately shaped, and only require fitting together ; and that they do so is quite definitely a fact, slotted parts " going together " very nicely, and only requiring a small amount of plastic wood at the junctions to effect smooth streamline contours.

Who Builds Skybirds?

Whilst it is surprising the number of " grown ups," especially Air Force personnel, who build " Skybirds," undoubtedly the majority of models are built by young aero-modellists, and to these latter a considerable advantage is the fact that wherever struts, landing gear, etc., are inserted into wood, suitable holes are already pierced, thus ensuring accuracy of alignment, and reducing the need for tools to literally a small file, a razor blade, a small pair of pliers, and some fine grade sandpaper.

It is, of course, on the final finish and attention to detail that depends the main success of the models, and practically an unlimited amount of time (far more than I am allowed !) may be spent on such refinements as the representation of rivet heads, the shape of stringers, windows, and controls, etc., but nevertheless, in a reasonable amount of time, very attractive models may be assembled.

The Photographs.

The photographs shown herewith are of the " Electra " and the " Hendon," which I built, the former being painted aluminium and the latter dark green.

I was considerably impressed by the attention given to detail work in the metal parts. With the " Electra " were two radial engines which fitted inside cowls, and the fins on the cylinders in particular were very clearly impressed ; also the propellers were very nicely made up.

With such tiny items as exhaust ports, cabin frames, machine gun " cupola," and three machine guns, the " Hendon " is a most interesting model to build, and here again the wooden parts fitted together accurately.

I might say here that the wood itself is of very good quality, and a total absence of machine marks on the surface is a pleasing feature not always found in kits of this kind. If one may offer a small criticism in regard to the " Hendon " it is that the propellers might be die castings, as on the " Electra," instead of aluminium stampings,

although, when the blades have been correctly twisted, and the little bosses fitted, they really look quite realistic.

With such etceteras as wire for wheel axles, pins for fixing the machine guns, all carefully packed in envelopes, the kits are definitely complete, and with the exception of paints and plastic wood, no other material is required.

As there is a very complete range of models available, as well, of course, as all kinds of accessories, there is no doubt that very attractive displays can be arranged for school and exhibition purposes ; whilst as a means of making the youth of Britain " air-minded " at an early age the work of the League deserves every encouragement.

AT THE SIGN OF THE WIND STOCKING

Conducted by
THE BLOKES IN THE OFFICE.

Members of the Edgware Club "rallying round their standard."

MSS. Manuscript! *No.* Copy! *No.* But M.S.S.= Model Supply Stores, 4 Stewart Street, Deansgate, Manchester 3; who have sent us a copy of their latest catalogue. In our opinion this should be in the hands of all North Country aero-modellists. There is a full range of "Endurance" kits, scale flying models, and petrol 'plane kits, besides details of many useful accessories and petrol 'plane components. And what do you think of their latest range of inverted "Bunch" petrol motors? Ready to run for 97s. 6d.; and ready-to-see-what-it's-all-like-in-pieces-and-put-together-yourself for 72s. 6d.; buzz like a drove of gnats, and *very* gnattily finished are these "gwin-aero"-engines; complete, with coil, tank, and condenser they only weigh 15 oz., yet develop $\frac{1}{5}$ h.p., and a static thrust of over 3 lb. All for a capacity of $7\frac{1}{2}$ cc.! True "Mighty Midgets"—are you gwin to get one?

! ! ! ! !

What about 'Avan a first-class airscrew for your model? Bass wood, balsa wood, or what-you-would, it's all the same to Avan, of 3 Potters' Cottages, Sherrard Road, Leicester, who may be relied upon to make you a perfectly balanced airscrew of any desired pitch, at a very reasonable price; the same as supplied to all the leading aero-modellists in the country—ourselves included—*naturally!*

. . . .

Have you seen the fine photo of the Hawker "Super Fury" in flight on page 296. There was a report, in our last issue, on this model by our test pilot. Why not get a kit from the Model Shop, 2 College Road, Barras Bridge, Newcastle-on-Tyne, and enter your model for the special prize at the forthcoming *Model Engineer* exhibition?

- - - - - -

So simple to build is the latest model, the "Cruiser Pup," from the factory of Premier Aero Model Supplies, that a girl of nine has built up a kit which has clocked 75 secs.

She has a wing span of 29 in., is 18 in. long, and weighs $1\frac{1}{2}$ oz., and was designed by Mr. C. A. Rippon. No! we are *not* going to tell you her address—and anyway, we are describing the model, not the young lady! The kit, complete with finished airscrew and detailed blue print, can be obtained post paid for 6s. 6d., from 2a, Hornsey Rise, London, N.19, and we thoroughly recommend beginners, and those whose pockets are not bottomless, to get one.

If you want a real model
to fly,
Get one of "Rips"
"Cruisers" to try.
For six-and-a-kick
Flies better'n any
"Stick,"
And folds up in its box
—bye the bye!

? ? ? ? ?

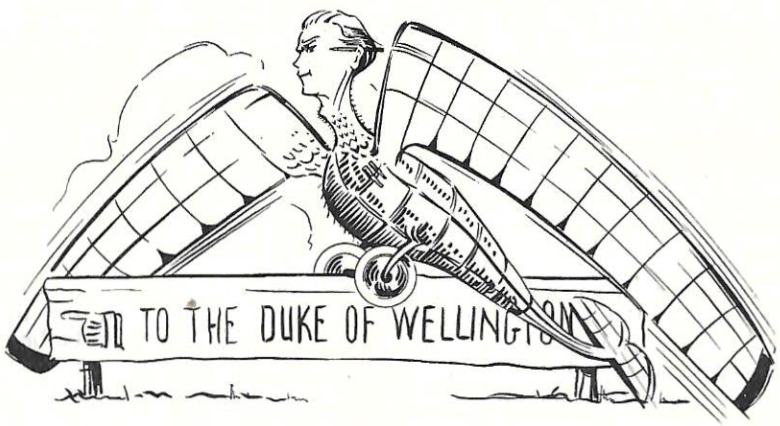
With many years of actual flying experience to aid them with their designs, Scud Models Ltd., Lovaine Crescent Works, Newcastle-on-Tyne 2, offer ready-to-fly model aircraft from 2s. to 21s.

One of the prettiest models we have seen is the 38 in. span "Scud" sail 'plane, which at 17s. 6d., complete with launching gear, is one of the best offers we have met. This model will soar for over 2 miles—(and well we know it, so sore were our feet after chasing it!) There is no doubt that with a "Scud"—sail planing is all plane sailing.

QUEER BIRD No. 2

The "GREAT YORKY" or "SAMME PRESS-REP"

(Councilori hand crampus)



One of the best known birds to the discerning aero-modeller, the species is noted for its resemblance to that Q.B. of another sphere—Hannen Swaffer. Can be selected from a crowd by its gaunt appearance and prominent Adam's apple.

Of strong migratory habits, can be expected to turn up in all sorts of queer places, varying its diet to the locality as required—always excepting its liquid refreshment, which remains constant! Mainly found in the New Kent Road, within easy reach of the Duke of Wellington, it has on accasion been seen in America, Manchester—in close proximity to a plate of sausage rolls, and Flers, where it astonished even the natives with its capacity for champagne.

Of great wit, has—together with 999 other birds, been accused of possessing a wagging digit, much to its delight! Always found at the rookery of the "Greater Councillors," it takes copious notes, which it subsequently attacks with great ferocity with pen and pencil, to the bewilderment of the lesser lights.

Though no known female of the species has been seen, cannot be regarded as a mysogonist. In the words of the great bard, Spokeshave:—

"What is this menace—see it stalk,
Horrors, 'tis the 'Greater York.'
Hasten maidens—be alert, yer
Bar thy doors and holler 'Gertcher.'"

THE "8/200" HIGH WING MONOPLANE

By S. E. CAPPS

THE revised interest that has developed recently in geared motors for model airplanes has brought to the front several designs of machines that incorporate this form of drive for the airscrew power. The efficiency of well-designed and constructed models to-day is far in advance of what one considered the last word three to four years ago. Then, the duration of a model constructed of the lightest wood known and covered with the finest tissue paper, was high compared with that obtained two years or so before that, but to-day the duration of one of these super-lightweight models is calculated in minutes, not a few seconds, and in many cases these models have ascended so high on thermal currents that they have been lost, and in many cases have never been recovered.

Many of those fliers who have lost machines in this manner have been to a certain extent pleased, inasmuch as they are able to say that their model flew so high that it was lost. Very nice! But one has got to buy more material and build another before one can again go model flying. Model performances achieved in this manner are but a very small credit to the builder, and in many competitions of the last two years or more premier places have been secured by this type of model. To day the mighty powers that say "yes" or "no" to our competitions have decided that the models taking part must be much heavier. The performance of which will be absolutely centred around the skill of the builder in designing and constructing, and his ability to pilot or fly his model.

To maintain a much heavier model in the air for as long as possible without increasing the supporting area, it is obvious that the power must be increased. The general trend in the few models that the writer has seen constructed this season has been to increase the rubber motor weight to half to two-thirds the total weight of the machine. But to increase the rubber motor of a model from say two ounces to four or six would give one such a heavy, thick skein that the turns would be very much reduced, and the power developed by such a large skein would be more than the fragile framework of a model airplane could stand. Thus we are forced to adopt some method by which we can retain our turns or increase them, and at the same time take this heavy strain from the fuselage. The most common way is with the use of gears, which allows the rubber to be divided into two or more thinner skeins with the increased number of turns which are fed to the airscrew in a much more steady and even way than with the single skein.

The model here described was built by the writer, and embodies many of the points that might possibly be of use in models entering this year's premier international competition, which is the reason for his describing it. The gears in this model are in the head and have a ratio of 2 - 1 step-up on the airscrew spindle. The general design is simple, and such embellishments as highly tapered wings and tail fairings have been dispensed with. The wing has a constant chord, which is easier to repair in case of fracture, and the fuselage has the tail end arranged in such a manner as to allow the heavy motors being wound up to their maximum from the rear. The construction follows usual practice, and the drawings should be strictly adhered to.

The Fuselage.

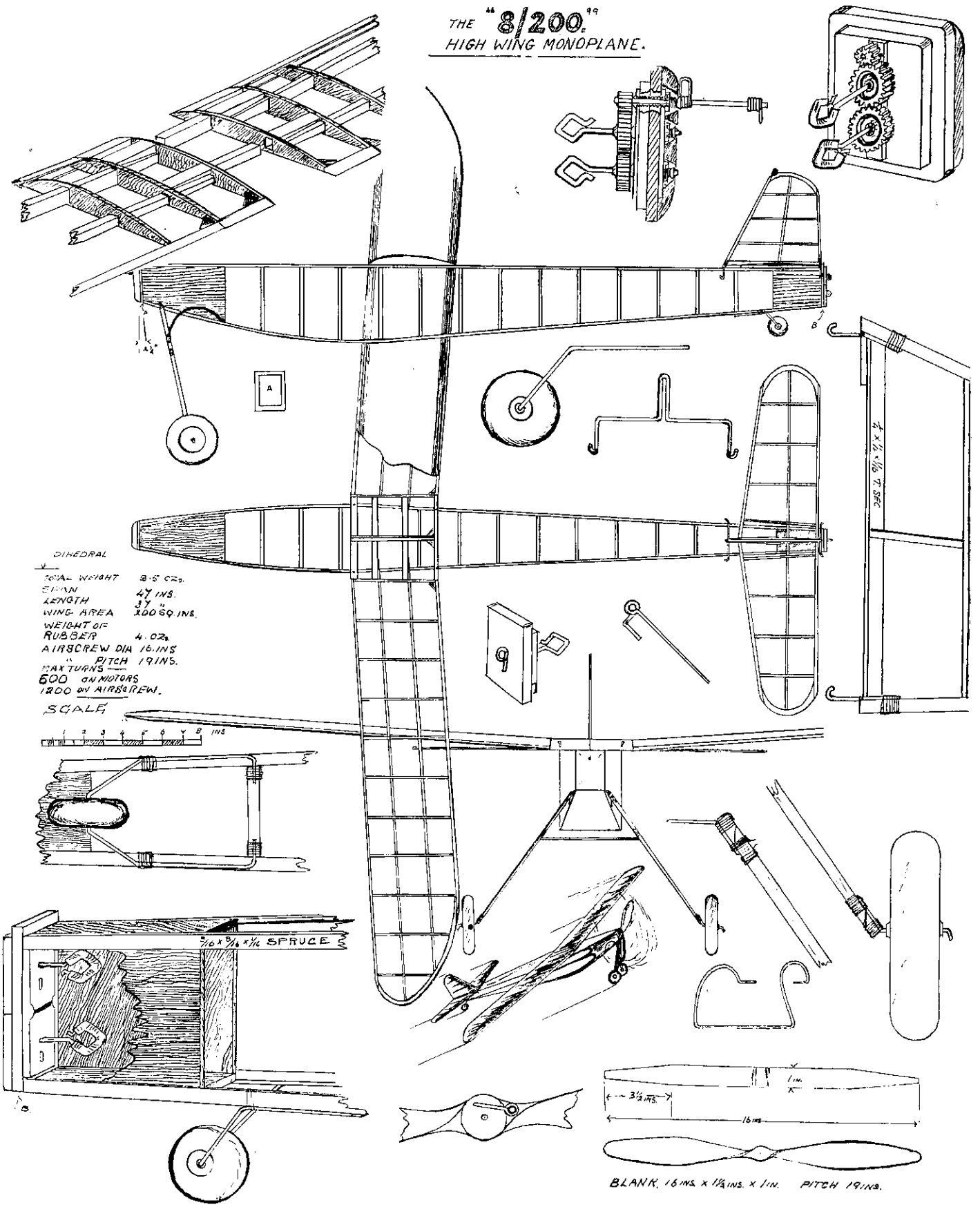
The construction of this is in the usual way. The sides are built first over a full-size lay-out drawn on a flat board. After they have set hard they should be removed and secured in an upright position over a full-size drawing of the top of the fuselage. The longerons are $\frac{3}{16} \times \frac{3}{16} \times \frac{1}{16} \times 38$ in. long. All the cross pieces are $\frac{1}{8} \times \frac{1}{8}$ hard balsa wood. The ends are filled in with $\frac{1}{8}$ in. sheet balsa wood. After the whole is set hard it can be removed from the board, and the ends can be squared with the top of the fuselage, giving the front end a down-thrust slope of $2\frac{1}{2}$ degrees. On to these ends should be cemented the three-ply formers, whilst the tubes for the undercarriage can also be fitted. The fork for the rear wheel can now be made and fitted to the rear end by binding and glueing. All these small items should be very carefully done, as any shoddy work will result in trouble later, when one has the model out for flying. Pay special attention to see that the down-thrust angle is right, as this to a large extent controls the first rush of power when $\frac{1}{4}$ lb. rubber twisted to breaking is released.

The Wing.

The leading edge of this is $\frac{1}{4} \times \frac{1}{4} \times \frac{1}{16}$ in. hollow vee section. The trailing edge is $\frac{1}{4} \times \frac{3}{32} \times \frac{1}{32}$ in. The ribs are all cut from $\frac{3}{32}$ in. thick sheet. The spars are, front, $\frac{3}{8} \times \frac{3}{16}$ in., and the rear $\frac{3}{16} \times \frac{3}{16}$ in. All are hard balsa wood free from cross-graining, so prevalent with the cheaper grades. The construction is simple, and the same procedure used for the fuselage should be followed. The wing can be built as two halves over a full-size drawing, or as one complete wing, and bisected afterwards if one wants a dividing wing. Careful study of the plan while building will result in a strong and true wing. The tips are cut from $\frac{3}{32}$ in. balsa wood sheet, and the last ribs are shaped down at their rear to suit. The balsa wood sockets or tubes are built up from sheet or suitable angle, and when made should be wrapped in thin silk to give them strength, and given a thin coat of cement all over. The two halves of the wing should be secured on a board, with their ends at the correct dihedral, and the two centre ribs, the balsa tubes, the solid nosing, and rear trailing edge put into their respective positions and carefully cemented. (If one has a dihedral board so much the better, as this will simplify the whole assembly). This should be left to set hard, and another part proceeded with.

The Tail and Rudder.

These also are built over full-size lay-out, the leading and trailing edges being $\frac{1}{4}$ in. $\times \frac{3}{32}$ in. balsa wood. The ribs are cut from $\frac{3}{32}$ in. thick balsa sheet. The spars are


THE "8/200"
HIGH WING MONOPLANE.
DIHEDRAL
TOTAL WEIGHT 8·5 OZS.
SPAN 47 INS.
LENGTH 37 "
WING AREA 200 SQ INS.
WEIGHT OF RUBBER 4 OZS.
AIRSCREW DIA 16 INS
" PITCH 19 INS.
MAX TURNS
600 ON MOTORS
1200 ON AIRSCREW.
SCALE
1 2 3 4 5 6 7 8 INS
7/16 x 7/16 x 7/16 SPRUCE
3½ INS.
16 INS.
BLANK. 16 INS. x 1⅛ INS. x 1 IN. PITCH 19 INS.

$\frac{3}{16} \times \frac{5}{32}$ in. The rudder bottom is made from $\frac{1}{4} \times \frac{1}{16} \times \frac{1}{16}$ tee balsa wood, or if difficult to obtain can be built up from $\frac{1}{16}$ in. sheet. The wire securing hooks should now be shaped from 20 s.w.g. spring wire and cemented in place. Care should be taken to ensure that they are square with rudder. Binding these hooks in position is a help. The builder will find little trouble in constructing this part if he pays attention to the sketches. The ribs are all streamline shape, with the deepest part about halfway across the rib. The tips of rudder and tailplane are cut from $\frac{5}{32}$ in. sheet.

The Landing Gear.

This is of usual design, and the one adopted here is very light, and is extremely efficient in operation. The legs are cut from $\frac{5}{16} \times \frac{3}{16}$ in. bamboo of good quality, and are tapered from $\frac{3}{16}$ in. square at the top to $\frac{5}{32}$ in. at the bottom. Small 18 s.w.g. wire angles are fitted to each end, and a cross brace of the same gauge wire is bound in position with fine silk thread and cemented. The ends of this are curved round to form the spring arms that take the shock on landing. It will be seen that they are bent round at right angles to fit into the tubes fixed on the body. A pair of light hard wood wheels of the balloon tyre shape type are used, and are $2\frac{1}{2}$ in. in diameter. These are preferred to balsa wood or the celluloid type, as a little weight is required in the front of the model. The position of the cross brace can be seen from the drawing, as can the method of fixing the wire angles.

The Tail Blocks.

Make these exactly as shown, special attention being given to the rubber hooks, which are bent out of 18 s.w.g. spring wire. The winding eyes are made first, and one end formed as shown. They are then passed through the centre of the three-ply blocks and bent over to prevent them slipping out at the wrong moment. The hooks for the rubber are formed last, and the end of the wires should have all the sharp edge removed with a piece of emery cloth to prevent any cutting of the rubber motors when putting them on to the hooks.

The Headpiece.

Two three-ply pieces of wood are cut to fit the nose of the fuselage, one inside and one out. These are cemented together and form the nose plug. One set of three gear-wheels, two of say not under half-an-inch in diameter and a smaller one that, when meshed with the larger ones, will give a step-up ratio of 2 - 1. Three spindles of 16 s.w.g. steel, three screwed brass bushes with nuts to fit the thread, and two steel plates cut from $\frac{1}{2}$ in. $\times \frac{1}{16}$ in. steel strip are the main items required for this all-important part. The building of any form of geared head calls for a certain amount of care and skill, but it is not as difficult as some who have tried building them and not had a great deal of success would have us believe. However, if care is exercised no serious trouble will be met with. The two steel plates are first cut and the holes drilled to suit the gear-wheels it is proposed to use; after which one should be threaded to take the screwed bushes; the other should be drilled to just clear the threads of the bushes and just slip over.

The three-ply nose should be drilled to take the three bushes, and these, along with the plates, can now be placed in position in these holes; the clearance plate should be put on over the protruding ends of the bushes and the nuts screwed on and tightened up. The three spindles can now be proceeded with, and a good fit in the gear-wheel holes will save a lot of trouble developing later. As will be seen in the sketch these gears are soft soldered to the shafts or spindles. This method of fixing, providing it is carried out properly, is satisfactory. The rubber hooks should now be formed on the ends of the spindles and the sharp edges removed, as with the tail plugs. They can now be assembled in the nose-block through the bushes. The two large gear shafts should have good quality cup washers passed on the ends of the spindles and carefully soldered tight, that is, without any end-play. They must, of course, be free to revolve. Take care when soldering these in position that the solder does not run into the bushes and sweat these up tight as well. This undoubtedly can be one of the possible snags, but if care is taken no trouble will be found in this direction. Make and solder on the free-wheel loop from 18 s.w.g. spring steel wire, and this, to ensure a tight fit on the airscrew spindle, must be wound on a piece of shaft slightly smaller than the shaft on which it has to go; if this is done it will be found that it will screw on to the shaft very tightly. At the same time make the airscrew retaining clip on the end of the spindle in the same way. Before fixing the free-wheel loop put on a cup washer. This will look after the end of the spring wire, and, to a certain extent, prevent the solder from running into the bearing. This completes the head, with the exception of the balsa wood fairing over the bush nuts. It is not essential, but it improves the appearance of the nose, and the builder can please himself whether it is fitted or not. If these instructions are carefully followed out in constructing this head it will be found that building geared noseblocks is not the bugbear it is made out to be.

Covering.

All the covering can now be got on with, and all surfaces are covered with tissue paper. The writer used a coloured tissue for the top half of the fuselage and white for the bottom, the division accentuated and finished with a thin black line, also cut from tissue. However, the builder will want possibly to use his own particular colours. The framework should be sanded all over with a fine sanding stick to remove all bumps, rough places, and blobs of cement, and any uneven fitting of some of the balsa wood parts. The tissue paper should be attached to the framework by a thin paper gum or paste and used as sparingly as possible. It should be stretched just tight without putting any strain on the paper, as this is almost sure to result in a warp when doping or in the hot sun. When the model is completely covered and is perfectly dry it should be given one coat of dope on the wing halves, tailplane and rudder, and two on the fuselage. It should be then left to dry completely. All the parts not covered with tissue paper should be given a coat of lightweight cellulose of a colour such as will match the colours of the rest of the model.

The Airscrew and Motors.

The airscrew for this model is 16 in. in diameter and has a pitch of 19 in. It can be purchased or carved by the builder himself. If he desires to do this rather ticklish job the dimensions of the blank are given in the sketches. It should be kept as light as possible, with due regard to mechanical strength, and can be polished as a protection against moisture. The one the writer used he made from a piece of dry deal, and when compared with one made

from balsa wood in performance there appeared to be very little difference between them. The hardwood one was decided upon, as the mechanical strength was much greater, and therefore less likely to be damaged.

The Motors.

These are two skeins of eight strands of $\frac{1}{4}$ × 20 in. × 38 in. rubber strip, and when well lubricated will take 600 turns. These motors should be wound up from the rear, as winding these heavy skeins from the front by the airscrew spindle will result in undue wear of the whole head, will take longer, and usually finishes with something breaking !

This brings the builder to the end of his constructive efforts, and when everything has been checked over and any corrections made the machine can be assembled into flying condition. The motor hooks should have pieces of rubber tubing threaded over them to prevent them cutting the rubber motors. These should be carefully put on to the hooks and the hooks closed and bound shut with strong thread. This is to stop any inclination for the motor to ride up the side of the hook and so come off inside the fuselage. Secure the tailplane and rudder in position with rubber bands, as also the wing. The landing gear can be attached, and the airscrew and head assembled and put on. Take the model to a suitable ground, and place under rear of tailplane a small piece of flat balsa wood, enough to just give the tailplane a slight negative incidence. Place main wing about halfway along the fuselage. Now give airscrew about 300 turns, and see if the model will rise from the ground. Do not attempt to hand-launch unless you are used to flying heavy models. If the model fails to rise, wind on the same number again and advance the wing about half-an-inch and try again. If it still refuses to rise advance the wing still further and try again. Do not advance wing nearer to the nose than one-third the length of the fuselage. Should model still fail to rise increase turns to 400 on airscrew and start again with wing in the first position. Do not advance the wing too much at a time in case a stall results. When the correct flying trim is found, increase turns to maximum from the rear one hundred at a time, and take particular note what machine does. Do not forget that models with high wing loadings such as this fly rather fast, so do not be too surprised if it does not feel inclined to saunter around like a piece of gossamer ! Learn everything possible about this model, and please remember that although the effective power run of the motors in this model, using the best rubber, with the wing loading the lowest allowable for machines of this area in the competition class, and everything correct, is only approximately 90—100 secs. This cannot be got by just putting model on the ground, winding up and releasing. The writer has found that getting anywhere near this duration with machines of this weight is 50 per cent correct model and 50 per cent the pilot or flier, and I think that many other fliers will agree with this. The writer had from 600 to 700 flights, ranging from 60 to 120 seconds duration while he flew his, but it was some time before this was obtained. However, it *is* obtainable and it is up to the flier.

PETROL 'PLANES

By "C.E.B."

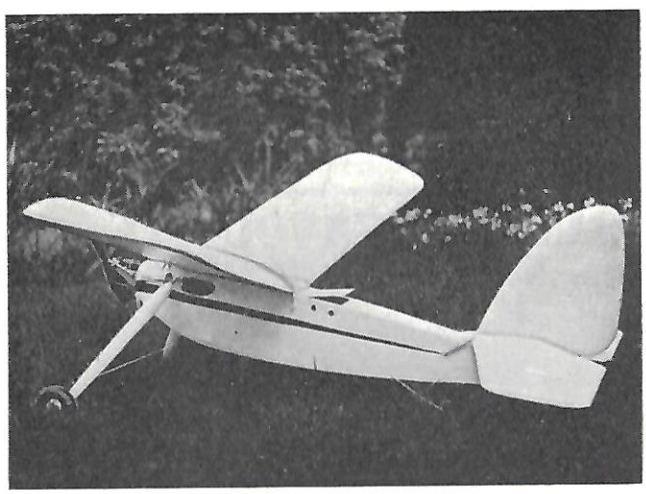
LAST month we completed the second of this series of three short articles on a suitable type of competition petrol-driven model.

After discussing the main requirements of a model to compete in the three major petrol competitions to be held in the London area during 1937, I gave a suggested design in Fig. 3, called the "Kub." This design was drawn up for a 3 cc. engine and it was suggested that it should be scaled up one-third all round to be suitable for a 6 cc. or 9 cc. engine.

I noticed that at the head of Fig. 3 the "Kub" was marked up as suitable for 6 cc. *This was, of course, a mistake.* The drawing dimensions should have been shown as suitable for 2·5 cc. engines only.

As a 6 cc. or 9 cc. engine has a greater reserve of power for competition work, I suggest that those who want to use this design should scale it up one-third.

Now let us refer back to Fig. 3 of last month and carry on the description from where we left off.



A three-quarter rear view of the "Kub," showing method of attachment of wing, tailplane and undercarriage details.

Other points in this design that will help as a competition machine, are its reasonably light wing loading, which ensures that the model takes off quickly with little extra power than is required to fly it. This means that the model will not climb at an acute angle after taking off. It will gradually and steadily climb and be at a reasonable height, that will allow the competitor to calculate the correct time of glide, so that he can set his timer to bring in his model as near as possible to the correct landing time.

The wing section chosen will help towards this quick take off, good floating ability, and smooth and slow glide.

A machine that floats requires less power to fly. The slight under-camber given must not, however, be overdone, but must be adhered to.

The wing is swept *slightly* back, and the tips are given slight washout equally on both tips.

If the model gets into a nose-up position the centre of the wing will stall first, and the tips will come into a better lifting incidence and become more effective, and so prevent a wing dropping. Also, owing to the sweep back, this later and more effective lift will tend to push the nose down, because the lift will have moved *back* along the fuselage. As the nose drops, the mainplane at the centre comes back into correct flying incidence, and carries on the good work. On no account give too much washout to the wing tips, or they will be inoperative during normal flight. This is where good compromise is again required. Washout at tips is most effective when there is a slight sweep back of the wings, as will be realised by the reasons given above.

The wings are kept a constant chord because a rectangular wing stalls at the centre first and the tips last. This also is a valuable stability device. If tapered wings are fitted, the taper should be in a forward direction, contrary to the more usual and old belief that a swept back taper is desirable. It has been proved during the last year, by full-sized research, that forward tapered wings are more stable at the tips.

It will be observed that the tailplane and fin are constructed as one unit, and that this unit is detachable and kept in position by elastic bands. Thus, if the tail unit is knocked off in a heavy landing it can be replaced in exactly the same marked position as before, and a similar setting can be assured for the next flight. Also the tail unit will not have been damaged. The fin is set straight to comply with the *most important* requirement of a straight glide, as stressed in last month's article. Engine torque and turn in the air are taken up and dealt with by offsetting the engine thrust line as required.

The fin is made up of laminated $\frac{3}{16}$ in × $\frac{3}{16}$ in. *balsa* outline, 3-ply. In this way it is practically impossible for the fin to become warped on a hot day and upset one's competition adjustments. The weight of such a fin is, if anything, even less than the normal type of construction.

The undercarriage will take up the shock of landing first backwards and then upwards, and has a very wide and stable base, obtained by hinging the cantilever legs from the top of the fuselage.

The rubber tension springing from the forward hooks can be varied to suit the weight of the model. These elastic bands can be taken off, and in a moment the undercarriage can be folded backwards and under the fuselage for easy carriage.

The wheels are well forward, and I find on my "Kub" have enabled me to fly the model with an undamaged wooden propeller for long periods.

This type of undercarriage bounces the nose up and the tail down on landing, and so quickly settling the model down to a good landing.

A *tail wheel* must be fitted to get an easy rolling start, as soon as the model is released.

The tail will then lift at once, owing to its section, which is a flat and thin Clark Y, and the model will run along in flying position until sufficient lift is generated on the mainplane for the model to rise.

The time switch is located in the most convenient position on top of the fuselage, just behind the mainplane, so that one can operate it easily as one releases the model. It is small points of convenience like these that make all the difference between fluster and calm operation during the stress of a competition.

Detachable Component Parts to Prevent Damage and Insure Reliability.

The engine, the wing, and the tail unit are all detachable, and held up to fixed stops, so that it is difficult to damage this model, and if any of the components are knocked off or deranged, due to a bad landing or hitting some object, it is easy to at once replace these vital components in their correct relationship to each other for the next flight.

Incidentally, the wing is made in two detachable halves for ease of carrying to the scene of battle.

I am now building a sealed-up version of the "Kub," 6 ft. 8 in. span for a " Cyclone " or " Brown " engine, as the " Kub " has proved such a happy combination. This model will be called the " Kite." The design for both models is copyright, but any part or the whole design can be used by private individuals for their own private models, of course, and if any elect to do this I hope they will have every success with it, and enter it, or variations of it, in this year's competitions. I wish I was in the position to do so myself this year, as I feel it at least has a very reasonable chance of success.

Final Flying Hints.

Finally, remember to get the model a perfect glider first, by gliding into a gentle wind by hand launching, with either an equivalent weight to the engine lashed on the nose by elastic, or the detachable engine on its mounting very lightly kept in position. In this way the engine will not become damaged whilst gliding adjustments are being made. Check up that the C.G. or point of balance is about halfway back along the chord of the mainplane. (It is further back on this model than the usual third because of the slight sweep back of the wing). Keep around this balance setting, and obtain the correct glide by slight alteration of tail incidences.

Now give some extra down-thrust by inserting packing between the top of the detachable engine mounting and the top of the No. 1 former. Try short flights. If the model will not rise take out a little packing at a time until it rises steadily. If it turns too rapidly, or a wing drops, give a little offset of thrust in the opposite direction by packing the nosepiece.

Ensure that your flights allow sufficient climb, so that when the timer cuts the ignition the model has sufficient height to put its nose down and damp out the slight tendency to dive at first, before it gets into a steady gliding path.

Check up that your fin is straight, and that each wing has an equal lift, and a slight but *equal* washout, at each wing tip.

Point No. 3. Engine Tuning and Preparation for Competition.

Now we come to our third point, that we mentioned at the beginning of this series of three articles: " Extreme care and preparation of the engine," with some operational hints.

I am assuming that you are using a standard commercial engine, for if you have a normal good example, as I suggested at the beginning of these articles, you will have all the power you need, provided you have fitted the engine into a suitably designed model that is easy to fly, owing to its light wing loading, suitable section and clean lines. Great power is only required if your model is heavily loaded, badly adjusted, or has an unsuitable wing section, and a lot of drag through awkward lines and bad arrangement.

There is, therefore, no need to increase the compression or carry out any super timing, as there is in the case of model speedboat work, which requires the last ounce of power. I have been involved in the latter as well, and can speak from experience. Hotting up an engine generally results in a touchy engine—the very last thing one wants for reliable model aeroplane competition work.

The chief aim is to ensure that your engine produces its normal power for its size, that it will start easily, and carry on without fading out in the air, and that it is fitted with a propeller of a suitable pitch to ensure a good take off and steady flying at the speed the model is designed to fly at. Taking this last point first, let us be clear on how a propeller works. As most people know, a two-bladed propeller is merely composed of two small aerofoils, or wings, which travel in a rotary and forward direction. The blades or wings have to be designed with the correct airfoil section, so that they do not stall at the speed and angle at which they travel.

It is, therefore, obvious that if you have a very fast flying model, due to small wing area, or some such cause, and yet set your propeller blades at a large angle of incidence or pitch, when your model is trying to take

off, and is slowly travelling across the ground, the blades of the prop. will be at too great an angle of incidence and will stall. That is why so many modern high-speed full-sized machines fit variable pitch propellers. This enables them to set their blades at a fine angle for the period when the machine is gathering speed and moving slowly, whilst the blades can be set at a greater angle when the machine is travelling fast in the air.

Now, for our competition slow-flying model, which suits modern competitions, we are fortunate, for we want a fine pitch to take off, and our flying speed is not so very much greater. We can, therefore, use a fine pitch that will be suitable for both take-off and flying. Some small engines are spoilt by too coarse a pitch, and as a result they apparently do not produce the power they should do. Alternatively some people try and fly a fast model with a very fine pitch propeller, and wonder why it is not successful.

If we stick to our lightly-loaded model we can use a fine pitch, and ensure a good take-off, and also keep the engine revs. high, which suits the average small petrol engine.

The Engine.

I assume, of course, that your engine has good compression, and that the state of the rings, if any, and cylinder bore are good. It is a mistake I consider to decarbonise an engine just before a competition. It often upsets the gas seal between piston and cylinder walls, etc.

Make absolutely sure that the petrol-oil ratio is adequate in the case of a two-stroke, and be very careful to only use a good thick motor-cycle type oil, and either No. 1 grade petrol or aviation fuel. I always use a 3 to 1 mixture on "Browns" and "Cyclones," i.e. 1 part oil to 3 of petrol. Shake this well before putting into the tank. I also generally have a little graphite in my mixture.

Go to a lot of trouble about straining your mixture to ensure that no dirt gets into the petrol to choke the minute petrol orifice. A careless man will always lose here.

Platinum Points.

Clean out all petrol pipes and tank very carefully, also carburetter or mixing valve. See that the tank is not fitted a long way from the engine or surging may take place.

Be absolutely certain that the mixture-making fine adjustment screw cannot alter due to vibration, or in the case of a carburetter, that the throttle cannot alter its setting. This is a very common cause of trouble. After running your engine up, and just before release, very slightly enrich the mixture.

Above all, be very careful in the excitement of the moment at the start not to flood the engine. It is so easy to flood one's engine and spoil all chances of a rapid start on a miniature two-stroke. Through practice, get a technique of starting and adhere to it. Every engine has its own little peculiarities, and must be known by its owner.

The ignition is, perhaps, the crux of the whole show. It must be perfect.

Use a large ground battery to start up, and a flash lamp battery for flight, and *be absolutely certain*, on the day of the competition, that you have a stock of *new* flash lamp batteries. Only get these from a trusted source, where they have not been standing in a shop. One should get new bell batteries for ground starting, or, better still, have your large accumulators fully charged the day before the event.

I fit a bell switch to my leads from the ground accumulator. This switch is attached to the accumulator. I can then quickly switch off and on as I require when starting, and after the lead plugs are withdrawn from the fuselage to prevent shorts.

The contact breaker must be clean, and the points *making perfect contact and absolutely clean.* The breaker arm must be free and not sticky, and the spring well up to its work. There is more contact breaker trouble on model engines than any other single item, I consider.

And here is a tip. If you feel like the expense and trouble, fit platinum points to your contact breaker. Don't be put off by "those who know better." The result is well worth the extra expense. Ease of starting, a fat spark, and less cleaning of points are all gained. I have done it to my favourite engines now, and in each case those engines so fitted are far superior starters, and I have come to this conclusion over a good period of time now. The fact is, we do not use many volts on model engines compared to cars and motor-cycles, and one wants to make things easy for the contact breaker.

Needless to say, however perfect you get your contact breaker, if your sparking plug is not up to scratch, or your coil or condenser a dud, or your battery not absolutely top notch, your ignition will be poor and not allow your engine to fire with regularity and full power. I always suspect my battery, contact breaker, and plug first, and then if these are o.k. I look to wiring, and finally to coil and condenser. The modern little coil and condenser does not often give trouble unless the ignition points are left closed with the battery in connection for long periods. There is then a danger of possibly damaging the winding.

Sparking Plugs.

It is a good plan to have a small tin, on the field of battle, full of clean petrol and to leave plugs soaking after a run. Take them out, blow them dry, and put them in the engine. If plugs are carboned up, leave them to soak for about twenty minutes, and then pick them carefully clean inside with a pin or needle. Clean off the bits of carbon and dry.

I have not been very successful with detachable miniature plugs, and now prefer the fixed type, using the above method. Some people may not agree with me here, however.

It is very important to keep wiring down to a minimum, and to solder and tape up all joints. Also to see that connections at the timing device for control of duration of flight are good.

To Counteract Vibration.

Make sure that engine bolts are tight and cannot vibrate loose. Go over them all just prior to the competition and between flights, and be very sure that you have good connections that will not become detached from the flash lamp battery, due to vibration. I used to bind these on when carrying out a competition.

Carburetters.

I also used to fit a carburetter with fixed but carefully tuned jet and a throttle so that I could not make an incorrect mixture in the general fuss and bother of a competition.

In fact, I always do this now with speedboats, as it is obviously almost impossible to judge the correct mixture for full throttle when one is tuning up in the water with a stalled propeller. The load varies as the boat gets going, and the blades of the propeller get a correct grip. The carburetter should be tuned for the running load.

I do not feel, however, that for the average man a carefully tuned and fixed carburetter is worth the expense for model aeroplane work, provided he makes a good mixture, and very slightly enriches it just before releasing the model, and ensures that the mixture screw can not alter by vibration.

The reason for enriching the mixture is because the propeller blades are slightly stalled whilst the model is kept still. As soon as it gets going the blades begin to get a better grip of the air, and put more load upon themselves.

One can often notice that if one starts off with a very lean mixture and full revolutions, shortly after release the engine note and power dies down.

All these hints and tips are very obvious, I fear, and there is little that is startling in them, but combine them as a whole and you will at least stand as good a chance as the average fellow, and I hope may even find yourself amongst the winners.

If you do, write and tell me. I shall be interested to hear all about it.

One should remember that a successful man at any hobby must never allow himself to be side-tracked by stupid little detail that does not matter, and is not *essential* to the main issue.

I am now flying my "Kub" with its "Spitfire." This engine is only 2-3 cc., and has recently been modified in various ways, and the bugs cleared out of a new design. A production job does not always come up to the standard of a hand-made original. This was so in the case of the first production "Spitfires," and incidentally happened in another now very famous engine. The result of the modifications is an enormous improvement on the first production engines, and even an improvement on the original engine, which was lent to me a long time ago. If these latest engines wear as well as they now run I feel they will have a great future, and be very difficult to beat in their class.

I am informed that on the original production engines some of the piston rings were not up to standard, and the pressure on the cylinder walls varied. A steel taper piston is now used without rings. The Americans have proved how efficacious this is, and I am a great believer in this type of piston for miniature production engines, provided a very generous supply of oil to petrol is given. I find that my "Browns" and "Cyclones" run far better on 1 part oil to 3 of petrol, and the "Spitfire" runs perfectly on 1 part oil to 2½ of petrol.

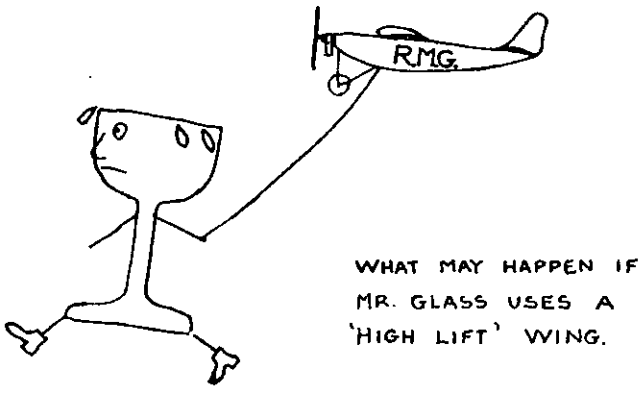
These articles have had to be somewhat sketchy, owing to the limited space and the large amount of ground covered. If the reader wants to go more deeply into the subject, my book, "Petrol-Engined Model Aeroplanes," by C. E. Bowden, may be of help. This book has appeared in print since writing these articles, and, I hope, will be a help to the beginner and of interest to the more experienced aero-modellist.

LETTERS TO THE EDITOR

DEAR SIR,

I was very interested to see Mr. Glass's letter concerning aerofoils.

My statement that the best climb usually takes place at the highest L/D ratio was taken from a standard text book without question, but on thinking the matter over I quite agree with Mr. Glass that the best condition all round would be when $\frac{CD}{CL}$ 1·5 is a minimum. Mr. Glass quotes R.A.F. 32 as a "High Lift" section, but data I have, at round about the same Reynolds number, indicates that R.A.F. 32, Clark Y, and Gottingen 436, are very similar; with R.A.F. 32 only slightly "Higher Lift." The CL max. for each being 1·3, 1·25, and 1·2 respectively, while Gott. 535 has a CL max. of 1·5.



Mr. Glass also quoted $\frac{CD}{CL}$ 1·5 as though this value would be the same as the $\frac{KD}{KL}$ 1·5 I quoted, but to be comparable $\frac{KD}{KL}$ 1·5 would have to be multiplied by about ·7. The minimum value of each would, however, occur at the same lift coefficient.

I quite agree that a "High Lift" wing can be used to reduce the flying speed of a model, but it requires extra power, and it would be better to increase the wing area.

I have picked on the A.M. Cyclonic for some figures to illustrate the difference between wing sections.

The CD I have used is ·02, which is what I assume Mr. Glass used, and is I think somewhere near right, as the CD given for an American high wing strut braced monoplane with radial engine (The Porterfield) is ·039.

The figures I get are tabulated below:

Section.	*Speed M.P.H.*	*Relative Power*	*CL/CD 1·5. Remarks.*
Gott. 436	17·3	1556	Best values.
Gott. 535	16·7	1800	Best values.
Gott. 436	16·7	1590	Slowest speed.
Gott. 535	17·3	1820	
Gott. 535	14·8	1830	Slowest speed
Gott. 436	14·8	1590	Wing area increased.
Gott. 436	26	2320	High speeds.
Gott. 535	25	3460	High speeds.

In my calculation for the relative power required for the larger wing I have taken into account the increased weight, but Gott. 436 still requires less power than Gott. 535. The only real advantage of the "High Lift" wing is when the size of the model is important.

I am glad to see that Mr. Glass does not consider "High Lift" sections worth while for small models. The smaller and slower, the nearer an aerofoil's characteristics approach those of a flat plate, and this is considered the reason for insects having flat wings.

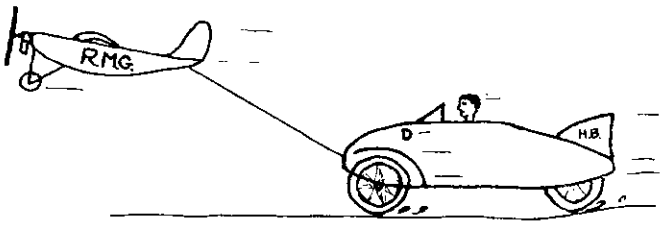
I was very pleased to see in the July issue of THE AERO-MODELLER the results obtained by Mr. Gabriel Jones in testing a wing and airscrew combination. Tests of this sort are all going to help THE AERO-MODELLER to design machines on a more scientific basis.

These results certainly settle the question up to a point, but I feel we could go still further with advantage.

If anyone feels like carrying out some tests, here are a few suggestions:—

Airscrew diameters to be about ⅓ the wing span, and to have pitch/dia. ratios of ½, 1·1 and 1·5. The wing to be Clark Y or Gott. 436 section, and tested from zero to maximum lift with each airscrew in turn: (*a*) with the airscrews free-wheeling; (*b*) airscrews fixed vertically; and (*c*) airscrews fixed horizontally. The drag and torque of the airscrews to be measured separately. If someone carries out the tests I shall be pleased to do the remaining figure work, etc.

I have not had time to make a suitable model for such tests, or I would, long ago, have availed myself of Mr. Russell's offer. Well! Any offers?



HOWARD BOYS.

P.S.—Please note that the correct form for $\frac{KD}{KL}$ 1·5 is $\frac{KD}{KL}$ 1·5 The same applies to CL and KL.

Re NORTHERN HEIGHTS GALA MEETING

DEAR SIR,

May I through the pages of THE AERO-MODELLER express my own impressions of the Northern Heights Gala Meeting and give my personal thanks to all and every person who so willingly helped in the running of the event?

It takes a good six months' work during spare time to organise this meeting, and it would not be half so successful if we did not have the unqualified support of the clubs, Press, and the many people who so unselfishly give up considerable time on the day to steward and timekeeping work.

Believe me, it is very much appreciated, and it gives the Northern Heights officials continued confidence that we can do better next time.

Unfortunately our scheme for controlling the expected large number of visitors was squashed at the onset, for we were told that the enclosure which we planned to arrange in the best part of the 'drome could not be fixed, and we felt the effects of this ruling throughout the day, and at times it was as case of "Save us from our friends!"

However, all went well in spite of this, and the spirit of the meeting was true to our desire for good fellowship and plenty to see, for the flying was of the very best, the models were of great variety and splendid workmanship, and best of all, in sympathy with the spirit, the weather relented and smiled upon us and even handed out a few therms to brighten things up.

There were 219 entries for the competitions, the greatest for any one contest being 73 for the popular contest, and 125 flights were made in this particular event. The ladies' contest was a very promising show, for we had 14 entries and the best flight was 116 sec. The best flight of the day was made by Mr. R. Copland with 555 sec. timed "out of sight."

For the support and help we received from all may I tender my personal thanks and add that we hope to do better next time.

Thanking you for your personal attendance and interest.

I remain,

Yours sincerely,

C. A. RIPPON,

For Northern Heights Model Flying Club.

A COMPETITION FOR FLYING SCALE MODELS

TO BE HELD AT THE "MODEL ENGINEER" EXHIBITION, ROYAL HORTICULTURAL HALL—SEPTEMBER 16th-25th.

Percival Marshall, Esq., C.I.Mech.E., Editor of the *Model Engineer*, has asked us to notify all readers of THE AERO-MODELLER that he has been pleased to accept a special prize of £2 2s., kindly offered by Mr. D. A. Russell, to be awarded to the entrant of the best flying scale model aircraft entered in the competition section of the exhibition.

All entries must be notified to the organisers, Messrs. Percival Marshall and Co. Ltd., 13-16 Fisher Street, London, W.C.1, on the appropriate form, which may be obtained direct from their offices.

In addition to the general rules governing the competitions, the following conditions will apply to this particular competition :—

1. The model must be built from a home construction kit, or it may be built from raw material purchased by the builder.
2. Any type of British model aircraft can be shown.
3. The scale may be any size, but the span of the machine must not be less than 20 in.
4. The motive power must be a rubber motor.
5. Every entrant to submit with his model a certificate, signed by himself and two S.M.A.E. timekeepers, that the model has flown for not less than 20 secs.
6. Points to which marks will be awarded are :—

   The general finish.
   Class of workmanship.
   Attention to detail.
   Similarity to prototype.
   Design of motor unit.

BLUE PRINTS

We have received a number of letters from our readers indicating a definite choice for a certain manufacturer's aircraft for our second blue print. We have approached this firm, but regret that they have been unable to let us have a decision in time to note it in this issue.

Meanwhile, we record with pleasure the eager response to our first offer of blue prints of the Fairey "Battle."

These blue prints are 36 in. by 30 in., and contain plan, side and front elevations drawn to scale. Also the main dimensions are given. The price is 2s. 6d. post free, from the offices of THE AERO-MODELLER, Allen House, Newarke Street, Leicester.

WAKEFIELD STOP PRESS NEWS

Society of Model Aeronautical Engineers.

H. York, S.M.A.E. Press Representative, 2 Scutari Road, Dulwich, London, S.E.22.

The following countries have notified the S.M.A.E. of their intention of competing in the Wakefield International Competition at Fairey's Great West Aerodrome on August 1st, 1937:—

America	... ...	6 entries.
Australia	... ...	6 ,,
Canada	... ...	6 ,,
France	... ...	6 ,,
Holland	... ...	6 ,,
New Zealand	... ...	6 ,,
South Africa	... ...	6 ,,
Norway	... ...	1 entry.

It is hoped that America will be able to send a complete team of six, but only one visitor is definitely coming, and that is Frank Zaic.

France will as usual be sending six men.

Holland has four representatives coming, perhaps six.

Australia, Canada, New Zealand and South Africa have requested that proxy fliers be found.

It is hoped that Norway's one entry will be accompanied by its builder.

It was announced at the F.A.I. conference that His Majesty King Peter II of Yugoslavia had been graciously pleased to present a cup for an international competition for model aircraft to be held in 1938.

Mr. W. L. Henery, of the T.M.A.C., won the Civil Service Supply Association Cup with 123·2 points.

Practical Mechanics £50 petrol model competition will be held at Brooklands Aerodrome on August 14th.

Sheffield.

All junior members of "The Air League of the British Empire" in Sheffield and district, also other juniors interested in model aeroplanes are advised to get in touch with C. F. W. Cudworth, 18 Derbyshire Lane, Meersbrook, Sheffield 8, in view of arranging a model flying competition, in which prizes and a trophy will be competed for during the model flying season.

BOOK REVIEW

The Design and Construction of Flying Model Aircraft. By D. A. Russell, A.I.Mech.E., A.I.E.E., M.Assoc.Min.E.E. Published at 5s. by the Harborough Publishing Co., 40 High Street, Market Harborough, Leics. By post 5s. 6d.

I wonder how many aero-modellers have really tried to design their own machines? Judging by the rallies I have attended, very few people design their models themselves, and most of those who do keep to extremely ordinary types.

I know from personal experience that designing a really good machine is chiefly a matter of trial and error.

Propellers and power are other things which cause a great deal of anxiety and much experimenting. The reason for this has been that there was not available a text-book dealing with model aerodynamics, and all one could do was to follow successful designs of other folk and hope for the best.

Having read Mr. D. A. Russell's Book, I realised that the age of "trial and error" designing has been passed.

This book deals with the designing and constructing of all sizes of model aircraft, both rubber- and petrol-driven, and it deals with aerodynamics for the aero-modeller, and just as the aero-modeller wants it simple and easy to follow.

First describing the ordinary forces on an aerofoil, Mr. Russell goes on to explain all sorts of mysteries concerning aerofoils and wings. Not only are useful formulæ given and explained properly and understandably, but so-called "formulæ" used by many aero-modellers in the past are shown to be incorrect.

I wonder how many "designers" know the arguments for and against high-wing and low-wing planes- biplanes and monoplanes- tapered and parallel wings? In this book all these, and many other such questions, are fully explained.

Flight performance is another thing easily calculated from formulæ given, whilst two chapters on airscrew design and performance complete with many more valuable formulæ add greatly to the aero-modellist's knowledge.

There is an extremely useful chapter for the rubber enthusiast. In it are given equations for calculating the energy stored in twisted rubber descriptions of testing apparatus, easily built and really worth having—and seven graphs showing useful facts about rubber motors. Next comes a chapter on testing power-driven airscrews. And so the book goes on —wind tunnel testing- construction of wings, fuselages, undercarriages petrol engine mounting and testing—a chapter on the A.M. cyclonic. Finally, there are graphs showing the power developed by several popular engines.

Altogether there are just under 200 pages packed with information well worth knowing. The book is carefully written, well printed, and nicely bound, and should definitely find a place on the bookshelf of every aero-modellist.

BOOKS RECEIVED

Petrol-Engined Model Aeroplanes. By C. E. Bowden. Published at 3s. 6d. by Percival Marshall and Co. Ltd., 13-16 Fisher Street, London, W.C.1. By post 3s. 10d.

Aeroplanes and Aero Engines. By P. H. Sumner. Published at 15s. by the Technical Press Ltd., 5 Ave Maria Lane, Ludgate Hill, London, E.C.4. By post 15s. 6d.

The New Model Aeroplane Manual. By L. H. Sparey and C. A. Rippon. Published at 3s. by Percival Marshall and Co. Ltd., 13A Fisher Street, London, W.C.1. By post 3s. 4d.

Zaic's Model Aeronautics Year Book, 1937. Considerably enlarged, with many more drawings and data. Published at 4s. By post 4s. 3d.

Copies of all of the above books can be obtained direct from the offices of THE AERO MODELLER.

THE NORTHERN HEIGHTS RALLY

HELD AT FAIREY'S AERODROME, HEATHROW, MIDDLESEX, on SUNDAY, 20th June, 1937

Full Report by "AERO-MODELLER" Staff Reporter

Northern Heights Gala Day.

WELL! well! well! So for once the gala day had a change from its usual umpteen degrees in the shade temperature and thirty m.p.h. gale. Early visitors had the pleasure (?) of seeing a nice, black rain-cloud in the offing . . . but, despite these ominous portents, the weather around 11.30 began to show signs of clearing, allowing the popular duration contest (nearest to 45 sec.) to be run off in comparative comfort. Mr. Blacklock, of the Wembley and District M.F.C., clocked the required 45 sec. dead. In nearly every competition of this type which I have seen I have noticed that somebody inevitably manages to accomplish this feat; this time, however, two other competitors came to within one-tenth of a second of the required time. After some discussion the judges decided to rerun the three leading men at a later time in the day.

By the end of this contest things were warming up, and with the constant arrival of late-comers the "ozone" began to assume a somewhat crowded aspect! In fact, from my vantage point in the refreshment booth in the process of consuming beer (ginger)- the machines really did give the appearance of a flight of gulls lazily circling in the now thoroughly warmed air. While awaiting the next contest I made a quick tour of the machines present, which were so numerous that they appeared to cover model aviation in every aspect. Mr. Crow was observed trying out a new autogiro—cabin fuselage—short, low aspect ratio rotors—and a tail plane employing upturned tips as per the full-size job. Few people realise the extreme difficulty of successfully designing and flying one of these craft; I suggest that they try building one—it would certainly make them appreciate Mr. Crow's dogged persistance in this type of work. Well away from the motley throng, assuming a dignity of its own, was a gas job of an extremely ambitious design. Coloured a pale cream which glistened beautifully in the sun, the model was a semi-scale of the Percival Mew Gull the airscrew was run through a reduction gearing, and at the time I observed it the owner was having difficulty in starting: possibly the airscrew loses some of its inertia through the gears. However, as *all* motors at some time or another become troublesome, this cannot be regarded as a criterion that geared motors are not feasible!

The next model which was of particular interest was a gulled low-wing job, not of the inverted Heinkel type, but of conventional lay-out, thus bringing the outer panels of the wing in the same position as would be assumed by a mid-wing. The wings were strut-braced, the strut running from the "shoulder" of the wing to the top of the fuselage. In the air the model was exceptionally stable both under power and gliding, the angle of the latter being very flat.

A minor sensation was caused by the sudden appearance of Mr. H. E. White's twin motor flying boat; this machine gives swift, smooth flights which are pretty to watch. Mr. White is a builder of which the model fraternity may well be proud—a builder of many types of machines, provided they embody the unconventional.

Seaplanes.

For some time the stewards had been laboriously filling the tank, and now brimming, it awaited the first contestants. The crowd had now got somewhat out of hand and crowded the tank so closely that entrants' models had considerable difficulty in taking off. Many were there who failed to "unstick" by reason of their machines being too large for the restricted amount of water. To these little consolation can be offered, but if they feel disgruntled and inclined to criticise the tank provided I invite them to reflect . . . there is a subtle difference between building a tank for the seaplane and building seaplane for the tank. Ask the hon. treasurer! The results obtained were: Mr. Worden first, Mr. Day second, and Mr. Copland third.

Mr. Rippon, resplendent in a large pair of rubber waders, then announced over the "mike" that the duration contest was about to commence. Whatever critics may say regarding the emphasis given to duration contests, competitions of this nature still attract the largest number of entries, and this one proved no exception. To add to the interest of the contest both heavy-weights and light-weights were flown at the same time (heavy-weights 5 oz. and over, light-weights over 2 oz. but under 5 oz.). Many took advantage of the heavier ruling to try their '37 Wakefield jobs under contest conditions. Since the introduction of the weight rules in 1934 one must admit that a definite improvement in the flying qualities of models is to be found. Gone are the machines of yesteryear which required an aspirin in their rubber lubricant before they could be coaxed off the ground. Nowadays models fairly leap off the board. Mr. Judge's '36 Wakefield design was well to the fore in this respect. With a clean and smooth take-off it would point its nose skywards and give a steep, sustained climb to some 200 feet. During the climb it remained facing the wind, unlike Mr. Copland's machine, which obtained its altitude by a swift spiral. Both, however, had an extremely long power run, the secret appearing to lie in the very long rubber skeins used. Many can no doubt recall that the model flown in the 1934 Wakefield contest at Warwick by Mr. R. T. Howse had similar climbing characteristics. I should imagine that a comparison of power plants and airscrews would prove very interesting. Mr. Bullock was flying his last year's Wakefield job. To see this in flight one can only wonder and sympathise with him in his bad luck in not obtaining a place in the '36 team. In the air it certainly is a "wow" and has the flattest glide that I have seen. For the benefit of those who have not seen it the machine has a round fuselage shaped by stringers (not monocoque), the wing being tapered and swept back, and at its junction with the fuselage smooth fillets are employed. The tail unit is somewhat fish-like in contour, and a fairly hefty prop. gives the model a steep climb. Mr. Lutman's gull wing job (mentioned in the July issue of THE AERO-MODELLER) was also present, its red and black colour scheme glistening very effectively as it spiralled slowly heavenwards. London modellers who pride themselves on finish should see this.

Bad weather of a squally nature handicapped the Coronation Cup contest and the scale-model competition. Scale models always appear to be built too small to obtain good results. Builders should study "The Design and Construction of Flying Model Aircraft," by Mr. D. A. Russell, where it is stated that with an increase in size airfoils and airscrews become more efficient.

Those who saw Mr. C. R. Moore's "Viper" perform will need no convincing that, provided the model is of a reasonable size, a really good performance can be obtained.

By seven o'clock the wind had dropped again and several gas jobs made their appearance. First off was a T.D. coupe, the design of which has appeared in *Model Airplane News*. This particular version was coloured red and black, and powered by a Brown Junior. The machine gave consistent flights with a complete absence of any tendency to perform tight circles. I should here like to mention the extremely competent manner in which the stewards kept the crowd (both friend and foe!) from the immediate vicinity, a fact which minimised the risk and greatly facilitated the flying. Those who came to see the "crack-ups" were not disappointed. I witnessed a very juicy pile-up by a large parasol model. If the owner reads these words, spare me! I've no doubt that he has had the same thrill from other peoples' crack-ups! Mr. Trevithick was putting up consistent flights with his Brown Junior powered ship which makes use of an automatic control rudder.

At the end of the day Dr. Thurston made an excellent speech, after which Mrs. Thurston presented the winners with their prizes, which consisted both of goods and trophies. In conclusion one must express, inadequately I fear, admiration for the organisation and the spartan work which Mr. Rippon and his colleagues must have done to make the gala day such a success, a success which makes one look forward in eager anticipation to the gala day, 1938.

(Top) Capt. and Mrs. C. E. Bowden. Who said "Rubber stuff was only for little boys"? (Top left) A beautifully-finished Gull low-wing—very stable in flight. (Top right) Mr. C. R. Moore's Viper II, winner of the Coronation Cup, being hand-launched. (Centre) Mr. C. A. Rippon, chief organizer, and the hardest-worked official of the day. (Bottom left) Mr. Newman's "Mew Gull," 11 ft. span, 6 ft. long, 8 lbs. weight, 15 cc. "Grayspec" engine. (Bottom right) Mr. H. E. White's "twin-engined" flying boat. (Bottom) The winner of the Coronation Cup for semi-scale flying models. 48 in. span.

ALL PHOTOGRAPHS TAKEN AT THE RALLY BY AERO-MODELLER STAFF PHOTOGRAPHER

FULL RESULTS OF THE NORTHERN HEIGHTS RALLY

1. Mr. N. Blacklock, Wembley. Cup ... ... sec. 60
2. ,, Copland, N.H. Scales ... ... ,, 34
3. ,, Marriott, Edgware. Wallet ... ... ,, 27

CRUISER.

1. Mr. Cox, N.H. Set scales ... ... Total points 70·6
2. ,, Neville, no club. Set scales ... ,, ,, 63·3

SEAPLANE DURATION.

1. Mr. J. Worden, T.M.A.C. 10s. 6d. ... ... sec. 89·4
2. ,, A. Doe, Blackheath. 5s. ... ... ,, 66·5
3. ,, Copland, N.H. Rawlplug outfit ... ,, 61·85

DURATION CONTEST (Light-Weight Class).

1. Mr. R. Copland, N.H. 10s. 6d. ... ... sec. 330·75
   Average two flights. Best flight 551 sec.
2. ,, A. A. Judge, T.M.A.C. 5s. ... ... ,, 327·125
   Best flight 533 sec.
3. ,, E. Chesteneuf, Blackheath. 2s. 6d. ... ,, 215·75
   Best flight 385 sec.

HEAVY-WEIGHT.

1. Mr. Blacklock, Wembley. 10s. 6d. ... ... sec. 245
   Best flight 315 sec.
2. ,, L. A. Smith, Bromley. 5s. ... ... ,, 203·5
   Best flight 300 sec.
3. ,, Clements, T.M.A.C. 2s. 6d. ... ... ,, 159·625
   Best flight 229·5.

CORONATION CUP.

Free lance modern semi-scale aircraft.

1. Mr. C. R. Moore, no club. Cup and 10s. 6d. points 130
2. ,, Archbold, Harrow and District. Rawlplug outfit ... ... ,, 44

INTER-TEAM CLUB CONTEST.

1. N.H.M.F.C.
   Mr. Copland. Heavy-weight ... 150·2. 130. T sec. 280·2
   Miss Lundy. Light-weight ... 115·25. 98·8. T ,, 215·05
   Fairey Cup and cash. 495·25
2. Hayes and District.
   Mr. Finch. Light-weight ... 91·5. 93. T sec. 184·5
   ,, Ives. Heavy-weight ... 103·3. 118. T ,, 221·3
   10s. cash. 405·8
3. Blackheath M.F.C.
   Mr. Chesteneuf. Light-weight 82·75. 133·5. T sec. 216·25
   ,, Bullock. Heavy-weight 68. 44·5. T ,, 112·5
   5s. cash. 328·75

LADIES' COMPETITION.

1. Mrs. Worley, N.H.M.F.C. Jumper ... ... points 167
   Helper: Miss Lundy.—Scent spray.
2. Miss Lundy, N.H.M.F.C. Hand-bag ... ,, 160
   Helper: Mrs. Worley. Scent spray.
3. Mrs. Hastings, Park Mal. Wallet ... ... ,, 136
   Helper: Mrs. King. Scent outfit.

(Miss Lundy made longest flight for a lady—116 sec.).

FLYING SCALE MODEL.

1. Mr. Henery, T.M.A.C. Flight trophy and replica ... ... points 106·9
2. ,, Gillatt, Park Mal. 7s. 6d. cash ... ... ,, 81·25
3. ,, Crow, Blackheath. Rawlplug outfit ... ,, 74·1

CONCOURS D'ELEGANCE.

Section 1. Engine-driven Models.

1. Mr. H. L. Sharvel, Wembley and District. M.E. Cup and 15s.
2. ,, H. L. Sharvel, Wembley and District ... ... 7s. 6d.
   (Special recommendation.)
3. ,, Proudfoot, Harold Wood M.A.C. ... ... 5s. 0d.

Section 2. General Flying Section.

1. Mr. E. W. Evans, Luton and District ... ... 7s. 6d.
2. ,, Moore, no club ... ... 5s. 0d.

Section 3. Flying Scale Models.

1. Mr. H. J. Towner, Brighton and District Cleveland scale.

Section 4. Novelties.

1. Mr. Rogers, N.H.M.F.C. ... ... 7s. 6d.
2. ,, Rippon, N.H.M.F.C. ... ... 5s. 0d.

The winner of the special Brooklands Instructional Flight for best all-round performance was won by R. Copland, M.H.M.F.C., for four firsts and one third.

For best turned out junior model, Mr. Archbold, Harrow and District M.F.C.

For best junior performance, Mr. E. A. Clements, T.M.A.C., third in heavyweight duration. Average two flights, 159·625 seconds.

HAVE YOU TAKEN THAT PHOTOGRAPH FOR OUR COMPETITION No. 3?

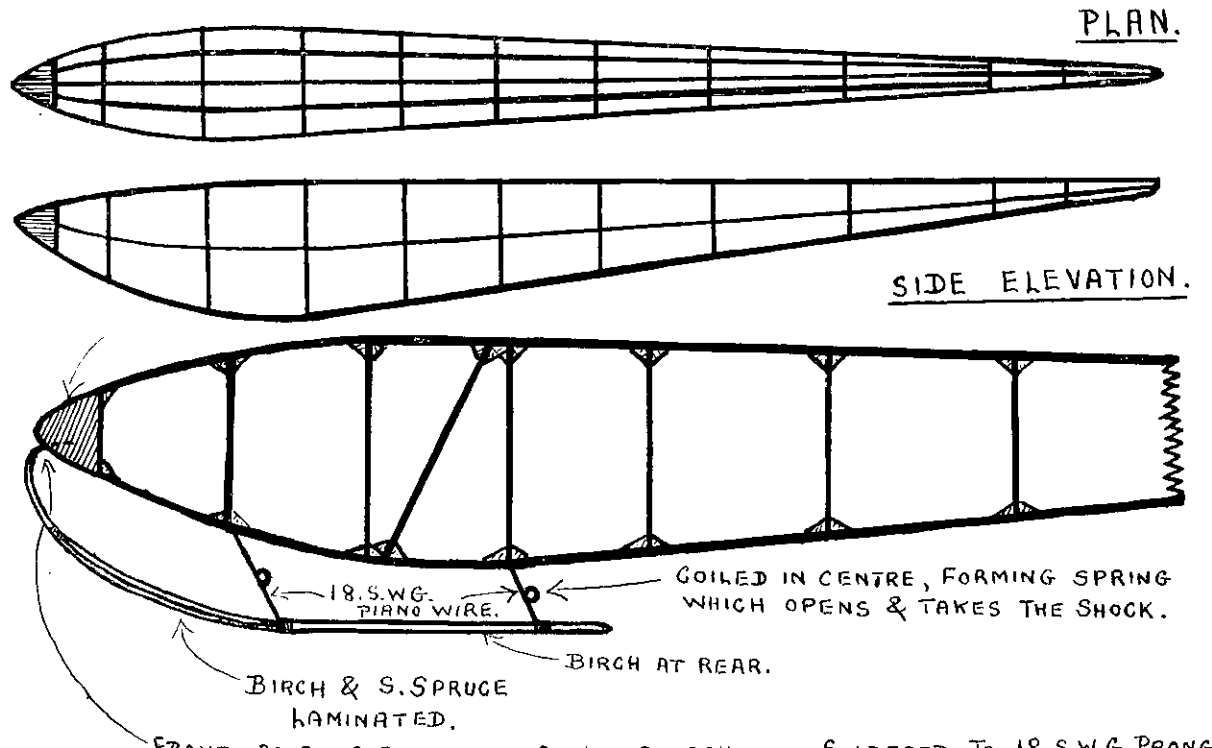
Coming in our next issue—out August 20th. Full report of the Wakefield and Bowden Trophies competitions. Description of "gadgets" submitted by the prize-winners of Competition No. 2.

NOTES ON GLIDING

By FRANCIS M. A. HUGHES

TO those enthusiasts who embark upon this branch of model aeronautics, let me say that they will find it has a very fascinating appeal, which belongs to gliding alone. Of necessity, for the function these machines are called upon to perform, they are designed along the long, slender and graceful lines, a nicely made and well-finished glider possessing beauty at rest, as well as in the air, its natural element.

When building model gliders several things should be kept well in mind by the newcomer, as whereas even a large model of six or seven feet span can be built practically entirely of balsa construction, it must also be well made and, above all, strong. It may be thought that it is not so likely to meet with damage so easily as a rubber-driven model. This is, of course, true to a certain extent, but when you consider the very big stresses placed upon a glider at the moment of launching, especially catapult launching, it readily will be seen that strength is required. Particularly does this apply to the structure of the main aerofoil and the tail unit, which should be of balsa reinforced by main booms of silver spruce for preference. The glider should nevertheless always be kept *as light as possible* on the whole, thus keeping the loading down. Never fix a heavy tail unit; the rear end of a glider particularly wants to be kept light. It has been said that weight does not affect the gliding angle; this is true, but it most certainly does increase the speed at which the machine must travel to keep it in the air. *A protecting and landing skid* will be found a necessity on most gliders. I have personally built and flown them without skids, but in a fairly short space of time the lower members of the fuselage became chafed, and the fabric covering worn away, and after all the skid is really useful weight where it is needed, as well as being a protector. Skids will have to be fashioned from harder woods. I have found that laminations of birch and silver spruce strips glued together answer the purpose admirably. It is advisable to have this sprung to the lower member or members of the fuselage to relieve same of any shock. This can be achieved by small springs or rubber shock absorbers, or a combination of both. A very serviceable skid that has given very excellent results in small and large gliders is shown in Fig. 1. In general, a glider must be designed with a view to obtaining the least possible amount of head resistance. The old, old advice once more is given to "*streamline everything possible* that is exposed to the air stream." The fuselage itself should follow streamline shape, long and slender, as shown by Fig. 2, or as near to this as practicable. It is necessary to build the main aerofoil of a long span with high aspect ratio, preferably tapering towards tips, and with a slight sweep back. We are thus reducing the drag and gaining a maximum amount of efficiency with a maximum of lift for our desired area of supporting surface. The sweep back has a steadying effect, and will help the machine in keeping its head to wind, thus gaining altitude and, incidentally, duration. I think it is fairly safe to say also that the greater you can make the span of your glider the greater will be its efficiency, of course, granting that the design is good throughout.



NEWS FROM THE CLUBS

The Society of Model Aeronautical Engineers.

Hon. Sec.: E. F. H. Cosh,
35 Maple Crescent, Sidcup.

Notes on a council meeting held in the Library of the Royal Aeronautical Society on Wednesday, June 9th, 1937.

The following gentlemen were present:—Dr. Thurston, president; Messrs. A. F. Houlberg, chairman; E. F. H. Cosh, hon. secretary; J. C. Smith, competition secretary; L. J. Hawkins, hon. treasurer; Mr. H. York, Press representative; T. Wickens, mid-Kent; C. S. Rushbrooke, Lancs; R. Copland, Windsor; H. Gillett, P.M.A.L.; P. C. Newport, North Kent; A. Foeling, Dartford; E. A. Ross, Bristol; E. Mendoza, Chalkwell; A. Booth, Ealing H. Knott, Croydon; C. A. Rippon, Northern Heights; T. Ives, Northants; W. E. Evans, Hayes; M. R. Knight, Bradford; J. Worden, Lancs; A. Collings, Woodford, H. Simmonds, Blackheath; H. Lucas, Bournemouth, J. Blunt, Brighton; C. T. Buffery, Midland; A. E. Brookes, Bournemouth; C. Orchard, T.M.A.C.

The minutes of the previous council meeting were read and confirmed. Arising from the minutes, the council were informed by the sub-committee concerned that the competition which was to have taken place this year for prizes given by International Model Aircraft Ltd. had been postponed until next year.

The council after some discussion decided to limit the tail area of Wakefield models to 50 per cent of the main plane area.

Dr. Thurston, as the S.M.A.E. delegate to the F.A.I. conference, then asked the council for their opinions and recommendations for him to place before the conference. This occupied a deal of time, and finally Messrs. Houlberg, Cosh, Smith and York were elected to attend the conference with Dr. Thurston.

The next business was the badge question. Mr. Cosh reported that twenty clubs were in favour of a standard badge, four against, and that he had received no reply from eight clubs.

Messrs. Hawkins, Knight and Ives were elected to sort out the various designs submitted, and to place best before the council at the next meeting.

S.M.A.E. Council Report.

Club delegates were asked to ascertain the minimum number of badges their members would require at a cost of approximately 1s. each.

An application for affiliation was received from the Silver Wings Club, of Stratford. This application was put back pending further information.

The Leamington and Warwick Model Aero Club with 18 members was reaffiliated.

The Model Aircraft Construction Society (Notts) with nine members was also reaffiliated.

Woking and District M.A.C. applied for two more timekeepers, bringing their total to four.

The Wellington College (Berks) Model Aeroplane Club submitted the names of two additional timekeepers, bringing their total to three.

The Blackheath Model Flying Club asked for two extra timekeepers, making their total six.

The Northern Heights Model Flying Club submitted one name as timekeeper, bringing their total to six.

All these applications were granted.

An invitation to give a flying display at Brooklands Aerodrome was received. Clubs were asked to select members to attend.

The question of entertaining our foreign guests at the forthcoming International competition was then discussed. Clubs were requested to make donations to the fund opened for this purpose. Mr. Rippon offered to have a collection taken at the Northern Heights Gala Day. Mr. C. S. Rushbrooke, on behalf of the Lancashire Model Aircraft Society, promised a donation. Will other clubs please follow suit?

An application for a Catapult Glider Record of 2 min. 25 sec., made by Mr. C. S. Rushbrooke, was granted.

The meeting closed at 11 p.m. with a vote of thanks to the chair.

S.M.A.E. Competition Results.

The Weston Cup Competition. Held throughout England on June 13th, 1937. Wakefield Cup rules.

There were 22 entries from the various clubs, made up as follow:—

Bradford	6	T.M.A.C.	2
Bristol	4	N. Kent	1
P.M.A.L.	4	Brighton	1
N. Heights	3	Southport	1

The result was:—

1. R. Copland, Northern Heights. Average of 3 flights 133·46
2. E. Leadbetter, Southport ... ,, ,, ,, 108·66
3. H. E. Taylor, Bradford ... ,, ,, ,, 81·5

Fourteen competitors clocked over 60 sec. average.

The Auto-Giro Competition.

Centralised held at Fairey's Aerodrome on June 20th, 1937. There were two competitors, the result being:—

1. E. A. Ross, Northern Heights. Average of 3 flights 22.583
2. S. R. Crow, Blackheath ... ,, ,, ,, 12·93

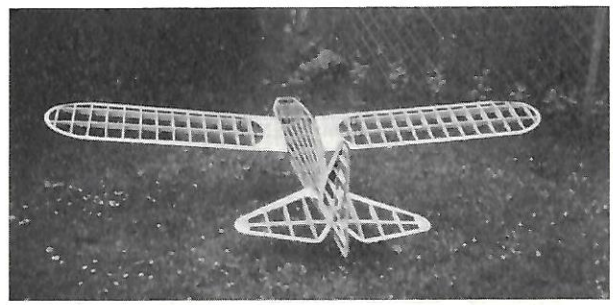
The Lady Shelley Cup. Seaplane.

Centralised Competition held at Danson Park on June 27th, 1937.

There were 18 entries made up of nine North Kent members, six Blackheath, two Luton and one T.M.A.C.

The result was:—

1. H. Smith, North Kent ... ... Average of 3 flights 94·616
2. S. R. Crow, Blackheath ... ,, ,, ,, 92·55
3. G. Suggett, North Kent ... ,, ,, ,, 85·8



A fine model of a Buhl "Bull Pup," built by Mr. R. C. H. Young. It is powered by a 15 cc. engine and trial flights will be taking place shortly.

Liverpool Model Flying Club.

Hon. Sec.: N. D. Hughes,
"Finchleigh," Rose Brow, Gateacre, Liverpool.

At a meeting at the club-room, Lark Lane, Aigburth, on June 23rd, Mr. F. J. Sheldrake, through the pressure of work had to resign from his position as hon. secretary.

All members wish to thank Mr. Sheldrake for his fine work in helping to found the club, and for his very efficient work since. We are all sorry to lose such a fine secretary, but we are very glad to say that he will still remain an active flying member.

The election of a new secretary took place at once and Mr. N. D. Hughes accepted the post upon the approval of all present. Mr. Hughes has acted as assistant secretary since one became necessary some months ago, and we feel sure that he will carry on the work as well as he did in his previous post.

The club gliding contest will be run off on the first fine Saturday after June 26th. We expect this to be a very close contest, as a lot of the members are glider fans and some very fine models have been seen in the air during the last couple of months. We hope to be able to publish the results in the next issue, so more of this then.

We are still open to new members, so that those who are interested are asked to get in touch with the hon. secretary at the above address.

EAST ANGLIAN FLYING MODEL AERO CONTESTS

Hon Sec.: M. Kinchin Smith,
Clare Priory, Suffolk.

IPSWICH AIRPORT—SAT. SEPTEMBER 4th, 3 p.m.

Open to all modellers residing in the counties of Essex, Suffolk, Norfolk, Cambs., and Herts.

CLASS 1. DURATION MODELS.

All models must conform to the S.M.A.E. Fuselage Formula, and will be handicapped acording to weight and wing span by the judges. All models to be hand-launched, two sections :—

(i) Open.
(ii) Junior. Under 18 on May 1st.

CLASS 2. FLYING SCALE MODELS.

Models need conform to no formalæ. Points will be allotted for :—

(i) Workmanship.
(ii) Adherence to scale.
(iii) Finish.
(iv) Flight.

Two sections: Open and Junior (under 18 May 1st). All models hand-launched.

CLASS 3. CLUB CONTEST.

Open to teams of two from East Anglian Club. Total duration of R.O.G. flights of two models decide winners.

CLASS 4. CONSOLATION CONTEST.

Open to all competitors who have not won an award. Nearest flight to 20 seconds by any type of model decides winners. All models hand-launched.

NOTE :

(i) There will be an entrance fee of 1s. for each model entered in the contests.
(ii) The judges' decisions are final in all matters.
(iii) Models may be flown by proxy by special arrangement.
(iv) No competitor may win more than one award in any one class.
(v) Prizes will consist of silver cups and medals.

Liverpool Model Aircraft Society.

Hon. Sec.: G. H. Roberts,
120 Warbrick Moor, Aintree, Liverpool.

Bad flying weather has delayed the L.M.A.S. Cup Competition for several weeks. (This competition, which is under the 1937 Wakefield rules, was due to take place on June 5th).

The experience of members interested in Wakefield machines has been that unless conditions are moderately calm the 'planes fly off the premises. This is rather interesting, in view of the fact that the society is fortunate in having as a flying ground what is probably the largest airport in Britain.

To date, few have ventured to put more than half-turns into their motors, not wishing to lose machines with the competition date so near. Notwithstanding this, times of nearly 100 sec. are quite common.

Mr. R. B. Sisson, who produced two Wakefield Class models, has been observed to do much walking of late in the cause of "Model Aviation."

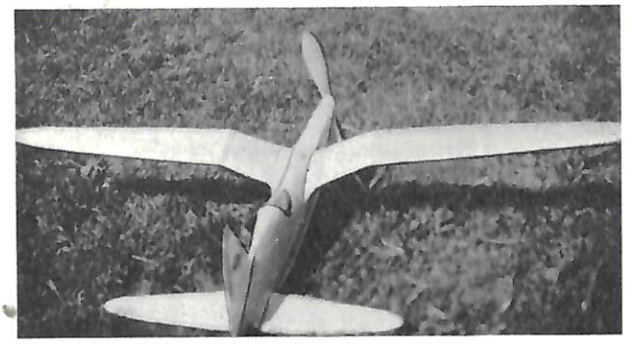
His models are likely to start favourite for the Club Competition, as they are the outcome of many years' experience, with various systems of gearing and similar devices for prolonging duration of power flight.

Several members of the society visited the Southport M.A. Club on Sunday, May 30th, for their open Competition Rally.

Mr. T. Comber finished a rather unfortunate second in the 150-200 sq. in. class. After having first place seemingly within his grasp, he omitted to notice that the previous landing in the high wind had altered the setting of his tail plane, with the result that his last flight was only about 20 sec.

We were very pleased to meet our Southport friends again and feel that they are to be congratulated on the very able way the series of events were conducted.

We enjoyed ourselves and have no doubt that the many other competitors did likewise.



Mr. Archbold's M-10, which gained second prize in the Coronation Cup Competition. A full description, with scale drawings, of this machine will appear in a later issue.

Northants Model Aero Club.

Leader: W. Mile, 9 Granville Street, Kettering.

The section is still multiplying and has now reached the respectable total of 27.

At our indoor meeting on June 4th, Mr. S. R. Nicholls, an ex sergeant-pilot of the R.F.C. and a prewar modeller, addressed the members, his many experiences being well received and much appreciated by the members. On Sunday, June 20th (sorry, Northern Heights, but we wanted the longest day too!), the members cycled, motor-cycled and motored to visit Mr. E. G. Snowden, an enthusiastic member of the club, at his place at Stoke Dry, which is 14 miles away. Mr. Snowden presented a copy of D. A. Russell's "The Design and Construction of Flying Model Aircraft" for the best average of one R.O.G. and two H.L. flights. This was won by W. Mile with an untried design for a club model, beating Mr. G. W. Cragg's "Airspeed" by 1 sec.

One of our new members, Mr. R. King, on his first day out with us also established a new club record at 2 min. 16⅜ sec. on Sunday, June 27th.

Harrow and District Model Flying Club.

Hon. Sec. and Treasurer: A. S. Hands,
"Ashbury," 4 Hillcrest Avenue, Pinner, Middlesex.

We are holding a series of competitions throughout the season, each for H.L. duration. Each member enters for as many as possible and the aggregate of the average durations of three flights in each contest being divided at the end of the contest by the number of conests entered or by 4, whichever is the greater. The member taking the most points is then the winner.

The first of these was held at our Hatch End flying field on Sunday, April 18th. In spite of a wind of 16 m.p.h., A. G. Newton succeeded in putting up an average duration of 132·5 sec. to take first place. His last flight pushed the club record for machines under 5 oz. up to 4 min. 40 sec. This was an out of sight flight, and the machine has not been recovered.

The second competition was held on Sunday, May 23rd in a wind squalling up to 15 m.p.h. The results were as follow: 1, W. H. Gilby, 51·33 sec.; 2, E. de H. Rountree, 42·8 sec.

A. G. Newton and J. O. Young were unfortunate in hitting a "grid" pylon and telegraph wires on their first and second flights respectively.

H. and D.M.F.C. and the Edgware Model Aero Club combined and hired an omnibus to go to Fairey's for Northern Heights Gala Day. No extraordinary success was obtained, and indeed no events were won.

The writer's machine M 10 was one of the two entries for the Coronation Cup, but was unfortunate in hitting a spectator who should have been behind the ropes, but wasn't.

An inter-team contest with Edgware and Wembley was to have been held on June 13th, together with a novelty contest, but was unfortunately prevented by torrential rain.

Further competition programme for 1937 is as follows:

June 27th.—Third major competition and club Wakefield trials.
July 11th.—Fourth major competition.
July 18th.—Wakefield elimination trials.
Aug. 1st.—Wakefield International contest.
Sept. 5.—Fifth major competition.
Oct. 3.—Sixth and last major competition to decide club championship.

Newcastle Model Aero Club.

ANNUAL GENERAL MEETING.

Chairman: D. G. Brown.

Minutes of the last General Meeting were not available owing to the previous secretary having removed from the district and apparently having unwittingly taken the minutes with him.

The exhibition secretary was then called upon to give his report of the exhibition. A balance of £20 . 8 . 0 was reported, which was handed over to the *Evening Chronicle* "Sunshine" Fund. Mr. Tweedy then thanked Mr. Thompson for his very able and valuable assistance, and also Mr. Parsons (of the *Newcastle Chronicle*) for his help in making the exhibition a huge success.

A hearty vote of thanks was then proposed to Mr. Tweedy for the enormous amount of time and energy he had expended on the organisation of the exhibition, to which all present responded enthusiastically.

The treasurer was then asked to give his report. In doing so he explained that it was only due to the large amount in hand at the beginning of the financial year that he was able to report a balance on the right side of the ledger this year.

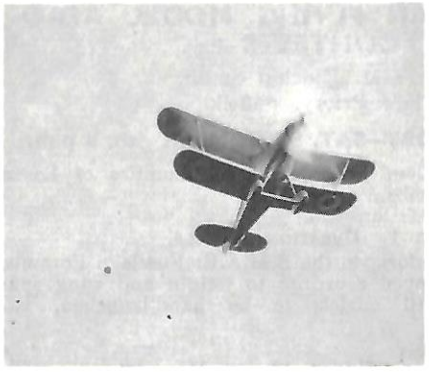
Proposed M. Thompson, seconded C. W. Lutman, that this report be adopted and was carried.

ELECTION OF OFFICERS.

President: Mr. Parsons.
Chairman: D. G. Brown.
Secretary: A. S. Tweedy, 5 River View, Ryton-on-Tyne.
Assistant Secretary: M. Thompson, 77 Colston Street, Benwell, Newcastle-on-Tyne.
Treasurer: H. Clark.
Committee: (Senior) Messrs. C. W. Lutman, W. Taylor, S. Peirson, F. Langley, T. Hackett.
Committee: (Junior) Messrs. E. Fearnley, H. Phillipson, E. Cable, J. Bowmer, L. Beaumont.
Timekeepers: Messrs. S. Peirson, M. Thompson, E. Fearnley.
Competition Judge: C. W. Lutman.

After some lively discussion on the matter it was decided that the subscriptions remain as in the previous year; i.e. Senior, 5s. 6d. per annum; Junior, 2s. 6d. per annum.

Six of us visited the Northern Rally at Barton on June 6th, and had a grand time. I wish to congratulate the organisers on a rattling good show, and we certainly intend to come down to the next one in great force. Although we did not meet with any success in the flying competitions, our highly wing-loaded models being unsuitable for the conditions prevailing, we carried off one award in the Concours d' Elegance, Mr. C. W. Lutman winning first prize with his "Gull" machine.



A Hawker "Super Fury" in full flight—a model built from a "Keelbild" kit.

Doncaster Model Engineering and Aviation Society.

Hon. Sec.: W. A. Begg, 6 Westmorland Street, Balby, Doncaster.

Charles E. Jackson, Aviation Press Secretary.

I am pleased to be able to announce the formation of a model society in Doncaster. It was actually hatched about a year ago, but as supplies were only then becoming available in Doncaster, material development to the publicity stage has been rather slow. Nevertheless, membership is constantly increasing, and models are beginning to appear more frequently, both at flying and indoor meetings.

So far the major item in our career has been the organisation of a model exhibition at the local airport on Empire Air Day, in which attempt we were aided by several model builders from other towns, to whom we owe our thanks. The exhibition featured all our activities, from large locomotives and stationary engines to duration model aircraft, flying and non-flying scale models. This exhibition was so well attended that even those present in charge of the models hardly saw anything but their own particular charges.

Apart from this exhibition we have had one of our own at the club headquarters, which went off on similar lines.

At a recent flying meeting we had a taste of tree-landing by one of the members' models. The machine in question parked about 60 feet up a large tree whose structure was not sound. It was eventually removed by the owner with much courage, a ladder, and four fishing canes, the latter being borrowed, upon offering of small reward, from four small boys!

Provincial Aero-Modellists' Debating Society.—This Society has no connection with the Windor Model Aero Club. The Society holds its meetings at the premises of the Windor Club, but it is quite unattached. It is open to all clubs in Great Britain.

The Park Model Aircraft League.

(Mitcham, Tooting, and Wimbledon).

The first P.M.A.L. Competition of June was a junior general duration contest for the Junior Cup, held at Mitcham on Sunday, June 6th, when we had the pleasure of welcoming some visitors. The rather gusty wind made things a little difficult, and there were several crashes. The competition was won by one of the visitors, a Mr. Bolton, from West London, with an average of 31·5 secs., Mr. E. Smith, of the P.M.A.L., being second. On the same day one or two members went to the Hayes and District Club's Invitation Day at Fairey's, Mr. R. J. O'Neil, Dorking Group, winning two prizes, namely: First prize in the 39 sec. Nomination Duration Contest, with a flight of 39 secs. dead; and second prize in the Lightweight Duration event.

The next Sunday was Weston Cup day, and also the day of our York Trophy No. 2 Competition. The York Trophy was won by Mr. H. W. King (Tooting Group), with an average of 73·3 secs. Mr. G. Reynolds (Dorking Group) was most unfortunate in getting his model caught up in a tree at the end of his first flight of 95 secs. out of sight. The model was later retrieved, but as there is a time limit to all P.M.A.L. contests he was too late to complete his three flights.

On Sunday, June 30th, the P.M.A.L., like the rest of the model aeronautical fraternity, went to Fairey's for the H.N.M.F.C.'s gala day. Our thanks are due to the organisers for the excellent and most enjoyable time they gave us, and we feel sorry that they were not favoured with better weather conditions. On this day the League's new official ties made their first appearance and several members put them on immediately.

We were not so lucky this year, as we have sometimes been, in various competitions, the only awards gained being second prize in the Scale Model contest to Mr. R. T. S. Gillett (Mitcham Group), and 3rd prize in the Ladies' Contest to Mrs. Hastings (also Mitcham Group). In all, just over forty members were present.

The following Saturday several members went to the R.A.F. display at Hendon, where a most interesting and instructive afternoon was spent. Those members who watched the show from beside the experimental park were particularly impressed by the clean lines of the new D.H. Albatross (4 Gipsy twelves). It is interesting to note that wood is used for the construction of this new air giant.

The month closed with an open meeting at Mitcham, usual crowd of spectators being present. Mr. Smith, of the Mitcham Group, succeeded in raising the League's R.O.G. biplane record during the afternoon with a 'plane of his own design.

COMET II

THE BRITISH RECORD HOLDER

Article and Design by A. E. BROOKS and W. J. FORSTER

Tail Skid and Undercarriage.—*Continued.*

WHEN these are made, file a flat surface on both legs, front and back, so that you will have a good solder surface, and solder the legs together, withdraw each side of the undercarriage from the fuselage and slide on fairly wide washers and solder these on to the legs so that they are parallel with the building board. Now run on to the top of these washers plenty of solder, so that it can be filed into a cone shape. Now with a very thin file or knife cut away the solder just above the washer right back to the legs, so that a groove is formed all round that will allow 18 gauge piano wire to be inserted. These grooves are only necessary on the front legs. Place the two sides of the undercarriage back into the fuselage. The washers should be in a position about 1 in. from the top of the legs. Now check this up; if they are correct the spreader wires can then be fixed. These are made from 18 gauge piano wire. About $\frac{1}{2}$ in. from one end make a clip so that it will clip on to the 10 gauge legs. Fit this clip into the groove in the solder at the top of the leg, and then take the wire over to the bottom of the opposite leg and solder into position, bind all joints with thin wire and solder well. Do the same with the other leg. You will now have the spreader wires crossing: for the back legs take a fairly long piece of 18 gauge wire and form a clip about $\frac{1}{2}$ in. from one end; then, about 1 in. from this clip make a spring by wrapping the wire round a piece of dowel. Now slip on the clip to one of the back legs and fasten the other end of the wire round the opposite back leg and take a twist on to the wire, so that it is fastened permanently on to the leg. To unfasten the clips press the undercarriage legs slightly together.

Wings.

The wing is 72 in. span, split in the centre, and dowelled; it is straight, with a chord of 11$\frac{1}{4}$ in.; the ribs are 3 in. apart; the tips are made out of 14 gauge piano wire; $\frac{1}{2}$ in. elevation must be built into the wings.

Cut 20 ribs from $\frac{1}{8}$ in. balsa, and 4 ribs from 2 mm. 3-ply; these can be cut so that the $\frac{1}{2}$ in. elevation is allowed for. The maximum depth of the ribs is 1$\frac{1}{2}$ in., 3$\frac{1}{4}$ in. from the leading edge. They are slotted top and bottom to take $\frac{1}{4}$ in. × $\frac{1}{4}$ in. birch spars. These must be soaked and bent and allowed to dry, so that they will give the wing a dihedral angle at the last rib of 6 in. The ribs are also slotted to take a leading and trailing edge of $\frac{3}{16}$ in. × $\frac{1}{8}$ in. The four ribs that have been cut from 3-ply are for the centre section. Place these together and pin down firmly on a piece of wood and bore two holes through in convenient places to take the $\frac{3}{8}$ in. dowels. The centre section can be built up on the plan separately. Place the dowels through the holes in the ribs, having two ribs together in the centre, the other two ribs one on either side to be spaced at 1$\frac{1}{16}$ in. so that the whole section will be the exact width of the fuselage. Glue in numerous spacer pieces and allow the glue to dry thoroughly; also glue in on one side *only* the dowels. When the glue is dry the centre section can be separated and then glued into the correct position on each half of the wing. Make wing tips and glue into position: it is as well to bind these to the edges. The whole of the centre sections, both top and bottom, are covered with $\frac{1}{16}$ in. balsa, and the leading edge from top to bottom spar is covered with $\frac{1}{16}$ in. balsa. Start this covering by covering the leading edge first, mark the centre of a slat of balsa, glue the leading edge, and place the centre of the slat along the glued edge. Then gently press the slat into position round the leading edge and mark off on the ribs where the slat covers to. Now glue the ribs to these marks and then press the slat into position again and pin down to the ribs. Cut strips for the portions that remain to be covered and glue and pin into position. The wing is now ready to be covered with silk.

Tail.

The tail has a high lift section, and was decided on after numerous experiments had been tried, so that the constructor will be well advised to stick rigidly to the plan when building the tail. The outline is of $\frac{1}{16}$ in. birch, and the ribs are of $\frac{1}{16}$ in. balsa; the spar is made of $\frac{1}{8}$ in. balsa. The centre section of the tail is built by placing two ribs 8$\frac{1}{4}$ in. long 2$\frac{1}{2}$ in. apart, spacers being glued in between to hold these in position. The maximum depth of the ribs is $\frac{3}{4}$ in. At a third back from the leading edge a spar $\frac{3}{4}$ in., running down to $\frac{1}{16}$ in., is glued into position, and the four remaining ribs and riblets, which are graduated down from $\frac{3}{4}$ in. to $\frac{1}{16}$ in., are then glued into position. The whole of the bottom of the tail is skinned with $\frac{1}{16}$ in. balsa, the whole of the top centre section and the leading edge, as far back as the spar, are also skinned with $\frac{1}{16}$ in. balsa. The tail is now ready to skin with silk.

Fin.

The fin is streamlined, the outline is of $\frac{1}{16}$ in. birch. The outline of this and the tail are made by steeping the wood in water, placing pins round the outlines, and then pinning the birch into position and leaving to dry.

The base rib of the fin is cut from a balsa block 11 in. × 1$\frac{1}{2}$ in. × $\frac{3}{8}$ in., and the bottom is shaped so that it will sit firmly on the tail. There are four other ribs and three spars all cut from $\frac{1}{8}$ in. balsa, all of which are glued into positions to give maximum strength. The whole of the fin is covered with $\frac{1}{16}$ in. balsa. Into the bottom of the base rib are glued two pieces of threaded brass of sufficient length, so that the forward piece passes through the fuselage down the paper tubing you have glued in the fuselage, and projects far enough to enable you to secure same with a nut, and the rear piece so that it can be secured in the quadrant in the same manner.

Engine Mounting.

To revert to this, it will be remembered that two holes were bored in the bedplate. Place a drill into each of these and now bore through the skinning on the bottom of the fuselage. When the engine is to be mounted bolts are passed through the engine mounting, through the hole in the bedplate and the bottom of the fuselage, and secured with nuts. (Be sure to use a locking nut so the vibration of the engine will not work these loose). This method of mounting the engine is used so that if the constructor finds on trial flights that he has not got the correct thrust angle this can easily be adjusted. If more down-thrust is desired slack off the rear locking nuts and insert packing under rear of the engine mounting. Should you have built in too much down-thrust slack off the front nuts and insert packing under the front of the mounting.

Covering the Machine.

The whole of the machine is covered with Jap silk. Damp this thoroughly before applying. Use Gloy or Polywog paste for fixing. Work the silk until you are certain that all the wrinkles are out, and then leave the machine until it is thoroughly dry, remembering that the woodwork will absorb the damp and will not dry as quickly as the silk. When you are certain that the machine is dry apply three or four coats of dope, either four clear, or two clear and two of coloured.

Testing for Flying.

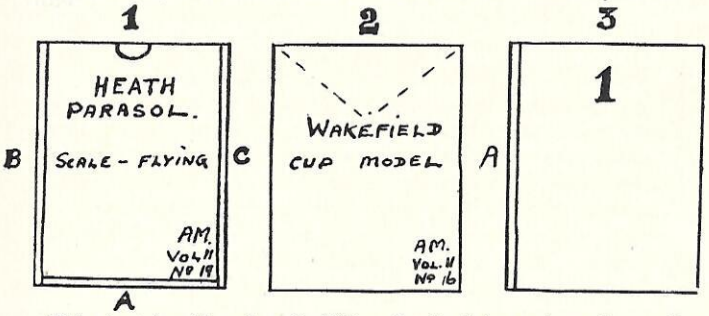
Take the machine out into a field with long grass on a quiet day, fix it up, and get it doing long glides by hand launching; the machine should be loaded with battery, etc. Having got a satisfactory glide, start up the engine. Put your timing switch on 10 seconds. Let the machine go R.O.G., and watch very carefully. If the machine makes no attempt to rise try again with 15 seconds on the timer. If no results, try 20 seconds. If the machine does not then rise too much downthrust has been built in. Take some of this out and try again. On the other hand if, on the first attempt, the machine does a very sharp rise and a stall, add downthrust. *Once the gliding angle has been found the wing must not be moved from this position.*

The price of the set of blue prints of the Comet II is 5s. 6d. and not 4s. 6d., as stated in our last issue.

IN THE MODELLER'S "DEN"

By A. Nelson

IT is a common occurrence, as a hobby develops, to be surrounded with magazines, blue prints, sketches and the like, and when we decide to construct a certain model we may have noticed, a frantic search follows for the necessary data.



This is tolerable when building "solo," but when three of us decided to centralise our workshop and assets the position was hopeless, and the number of "construction hours" considerably reduced.

As we are in the habit of extracting articles and drawings from publications, we decided to form a library of these and similar matter of interesting features appearing from time to time.

A number of folders were prepared (see end of article and sketches), in which the papers relating to one subject were collected, the description prominently displayed on the front and then filed in strict alphabetical order.

The reference to THE AERO-MODELLER, from which the drawings, etc., were extracted, is useful, as they can readily be traced in the binder.

This system obviates the necessity of retaining cumbersome magazines and periodicals for one particular feature, and various data on gearing, free-wheeling, wing sections, etc., can be indexed in this manner with a saving of both space and time.

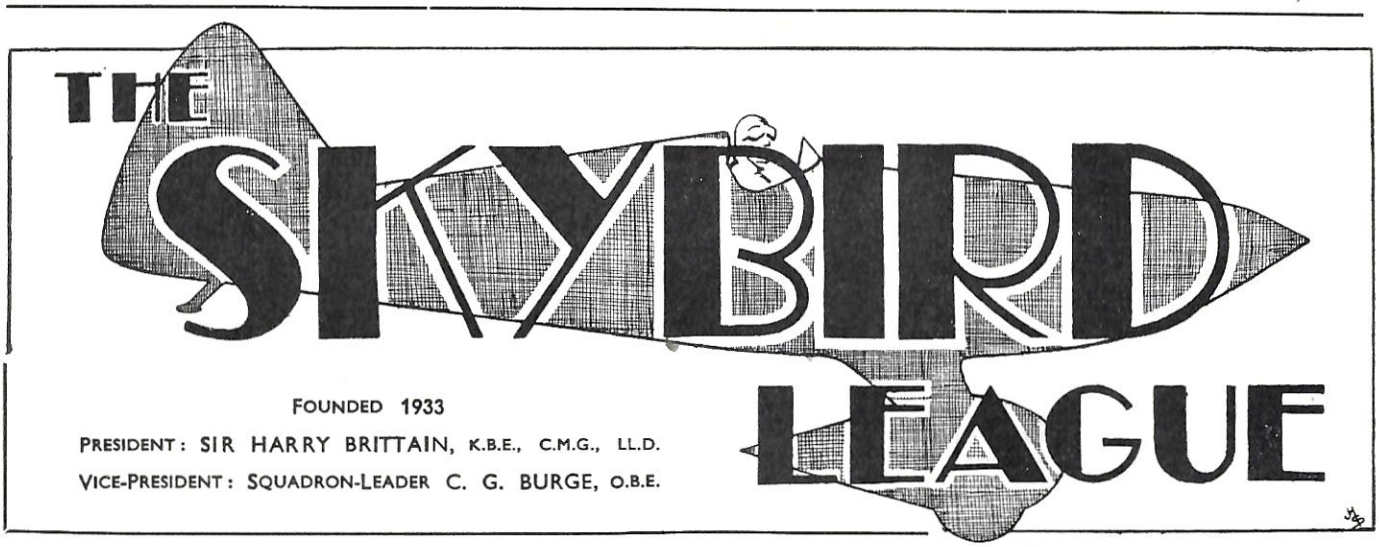
A further refinement is to give the folders a prominent consecutive number, as Fig. 3, and have this number, together with the alphabetical description of the contents, entered in a small indexed notebook.

The folders suggested are easy to make at trifling cost, and a convenient size is about half an inch larger than THE AERO-MODELLER. The pattern is optional.

No. 1. From medium cardboard scored at "A" and foldeed double, with thumb space at top, and lapped at A, B and C with *passé partout.*

No. 2. Envelope pattern from cartridge or similar paper. (Wallpaper reversed is quite substantial).

No. 3. From medium cardboard folded in book form, scored and lapped at "A" with *passé partout.*



Headquarters: 3 ALDERMANBURY AVENUE, LONDON, E.C.2

Gossip From Headquarters

THRILLS OF THE R.A.F. DISPLAY

HOW many Skyleaguers helped to swell the huge crowd, estimated at 200,000, which attended the most spectacular of all Royal Air Force Displays on June 26th? We of Headquarters often pondered on the question during the brilliant afternoon. We know that scores of you must have been there, and we only hope that none were amongst the crowd which could not get in to Hendon Aerodrome.

Success of the display was almost inevitable this year. The presence of their Majesties, the King and Queen, alone attracted thousands.

The Royal Air Force personnel who took part in the display must have been particularly proud to perform before the King, for as one who had served in the R.A.F. His Majesty could appreciate the skilful efficiency of their flying, as well as its spectacular effect. The present writer of these notes well remembers the King when, as Prince Albert, he came to Cranwell Aerodrome during the Great War for flying training. Not the slightest fuss was made about his arrival, and, in fact, he was on the strength of the station several days before many of the personnel knew.

Next to the thrill of their Majesties arrival, the most dramatic moment of the afternoon was the mass formation which, in its magnitude, was a new feature of the display. Wonderful formation was maintained by the 260 aircraft, and the pictorial effect would have made a film director throw a fit of envy, and then bring out his cheque book to make an offer for the exclusive rights! There was one little mystery about the huge aerial fleet. A squadron of Harrow heavy bombers should have brought up the rear—but they were missing! The explanation is quite a story behind the scenes—or rather, out of sight.

The Harrows had not lost themselves, as many spectators thought. They had actually joined the formation before it reached Hendon, but such was their position that they found themselves encroaching on the leading Ansons when there was no time to fall back into their right position. The leader of the bombers was, therefore, set a delicate problem, which had to be solved in a few seconds if the arranged plan of formation was not to be disturbed. He made a decision which was perfectly right, although at the sacrifice of joining in the great fleet. The Harrows broke away!

A wonderful tribute to the technical personnel of the R.A.F. was the absence of a single forced landing, and the flying itself was so amazingly expert that not a dangerous incident of any kind was observed. It was almost just as thrilling to get a close glimpse of the various up-to-the-minute aircraft. The Phillips and Powis new training type is said to have a speed of nearly 300 miles per hour! If training machines are to touch that speed, what sort of speed have our designers in keeping for the future single-seater fighters? Although not a military machine (for the present, anyway), the new De Havilland Albatross, designed for experimental Atlantic flights, and built for the Air Ministry, attracted as much attention as the other new types, and if you hung round after the programme ended you saw it flying.

As usual, the finale was a great thrill. The attack of the speedy Bristol "Blenheims" on a fortified seaport, in which they seemed just as fast as the defending fighters, was a fine piece of realism. To the "fans," like Skyleaguers, it again demonstrated the extraordinary development of speed amongst opposing types of military aircraft. The King's appreciation of the display was revealed at the conclusion, when the organiser, Air Marshal Sir Hugh C. T. Dowding, K.C.B., C.M.G., Air Officer Commanding Fighter Command, and Principal Aide-de-Camp to His Majesty, was made a Knight Grand Cross of the Royal Victorian Order.

The results of the competitions were as follows:—

HEADQUARTERS' RACE.—Wing-Commander D. V. Carnegie (Air Ministry) was first on a Hart light bomber. His speed was 164 m.p.h.

DIVE BOMBING.—The final was won by Pilot-Sergt. Woods, of the Bombing Command, his average error being only 8·75 yards. For all practical purposes he made direct hits.

LANDING COMPETITION.—Flight Lieut. P. C. Lawrence, of the School of Technical Training

Aero-Modellers and Flying Clubs Must Get Together.

What aero-modeller does not aspire to be an airman? Not all of them will be fortunate enough to fill that ambition, but a great many no doubt will. At the least, the fascinating hobby of making accurate models creates a natural desire to become familiar with the real thing, and to fly when the opportunity arises. Now this opportunity is most likely to come from the flying clubs, which are now so numerous throughout the country. Does this not suggest that aero-modellers and flying clubs should co-operate? Both would find advantages.

The clubs would eventually find many new pupils amongst the young modellers, and what apt pupils they will be with so intimate a knowledge of aircraft models! We know that many Skyleaguers will not be within easy reach of a flying club, but where a flying club operates in the district we suggest that a polite letter or a personal call by the District Commodore would be a useful beginning.

Each flying club has a secretary, and from our personal acquaintance with these club secretaries we can assure Skyleaguers that, young as they may be, they will not find their enthusiasm damped—or we are very much mistaken. After an introduction is made, invitations to visit the aerodrome will no doubt follow, and regular co-operation will inevitably be the result.

In our next issue we hope to publish a complete list of flying clubs in the United Kingdom, with the names of the secretaries.

Sixpence a Week Flying Lessons.

Although the cost of learning to fly is cheaper now than it used to be, it is still far beyond the range of the average boy's pocket money. Any scheme, therefore, to overcome this difficulty wins our ear. Working boys in Kent are to enjoy the splendid opportunity of learning to fly for sixpence a week! Sponsored by the energetic Cinque Ports Flying Club of Lympne, a scheme has been launched to raise a defence air squadron at Hythe (Kent) from among working boys. Headed by a subscription of £100 from Councillor A. E. Palmar, of Hythe, who originated the scheme, a "young pilots" fund has been opened with the object of paying for the training of youths between 16 and 22 years of age, whose parents cannot afford to pay ordinary fees.

The applicants will first receive a trial flying lesson at Lympne Aerodrome, then write an essay on the impressions of the flight. The chosen candidates for No. 1 Squadron will have to pay only £2 in weekly instalments (sixpence a week), and they will receive their flying lessons in the club machines in their spare time, so that their daily job will not be interfered with. This is not all. If enough money is obtained, the most promising candidates will be able to gain scholarships for advanced training. How many Skyleaguers will read this without a twinge of envy of the lads of Kent? If this fine scheme succeeds, what is to prevent its spreading? Nothing succeeds like success, so we have heard!

The Height Record Recaptured.

We would remind our readers that a "Skybird" model of the "Bristol 138 A," in which Flight-Lieut M. J. Adam, R.A.F., recaptured the world altitude record on June 30th, was fully described in our February issue, when we introduced this model to our series. The "Bristol 138 A" then held the official altitude record of 49,967 feet, set up in September last year by Squadron Leader Swain, R.A.F. Subsequently Italy has held the record (51,639 feet), but now Great Britain has regained it. Flight-Lieut. Adam reached a height of 53,937 feet, or 10·2 miles, in the "Bristol 138 A" (Pegasus engine). Well done, "Bristol," and how proud we are of the great pilot! How delighted, too, will be those Skyleaguers who have built the "Bristol 138 A" already. "How up-to-date you are!" we can hear their friends declaring.

On Top of the World.

Is the Arctic Circle to be a future air route to link the East with the West? The question arises from the recent remarkable flight of three Russian airmen over the North Pole. In a single-engined Russian monoplane of nearly 1,000 h.p. they flew non-stop for 5,200 miles from Soviet Russia to Oregon, in the United States, nearly equalling the world's non-stop flight record. They were in the air for just over 2½ days, and one report declares that the same pilot was at the controls the whole of the time.

Perhaps one of the most remarkable facts is that their speed only averaged about 82 miles per hour. The A.N.T. 25, the name of the machine, was not designed for high speed. Considering the hazardous route they followed, the Russians apparently did not meet with the severe experiences that one might expect, which tends to prove that the North Pole will become a future air route.

Russians, in particular, have great faith in the possibilities of the Arctic Circle for human travel. Apart from this recent flight, have they not just settled a party of airmen and meteorologists at the Pole to study weather conditions? It is claimed that if meteorological stations could be set up permanently in the Arctic and Antarctic to broadcast weather conditions, we should be able to forecast our own weather for a long time to come. How convenient for booking our holidays, Skyleaguers!

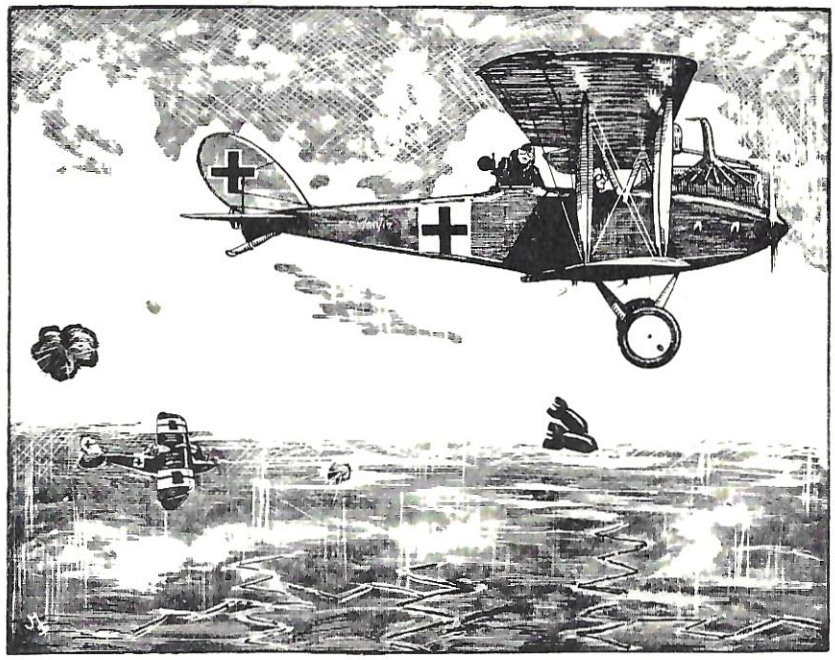
Good News for Correspondents.

A splendid stride in the progress of our Air Mail is denoted by the new rate of 1½d. per half-ounce for letters and 1d. for postcards carried on the Empire air route to South Africa and intervening territories such as Kenya, Rhodesia, Tanganyika, Sudan, etc. This rate began on June 26th, and His Majesty the King sent the first letter under the new rate in the Empire flying boat which departed from Southampton on June 29th. It was addressed to the Governor-General of South Africa. Now Skyleaguers, here is a useful chance for increasing your correspondence overseas.

Opportunities for Skyleaguers. Don't forget THE AERO MODELLER competitions.

THE L.V.G. C.5

BY J. H. STEVENS



The illustration shows this machine flying over the trenches.

WE have taken the opportunity of publishing this article, as we feel it should prove of interest after the appearance of an L.V.G. biplane at this year's Royal Air Force Display. The re-enactment of an everyday wartime scene at the show, when the observation balloon was unsuccessfully defended by the L.V.G. and strong anti-aircraft fire against the determined (if somewhat staid) attack of an S.E.5, a Sopwith Triplane, and a Bristol "Fighter," must have brought back memories—not altogether pleasant in many cases—to some thousands of the spectators, though to the post-war generation it came more as a taste of the history which we hope will not repeat itself.

It really was delightful to see these "old timers" flying, and flying well, even if their pilots did treat them perhaps a trifle gingerly. Those who have only read of the deeds of these wartime machines could not help but be thrilled by seeing them in the flesh (or should it be "wood and fabric"?), and the appearance among our own veterans of such a worthy one-time opponent as the L.V.G. was an added attraction. So it is that we feel justified in presenting this article on the aeroplane in question.

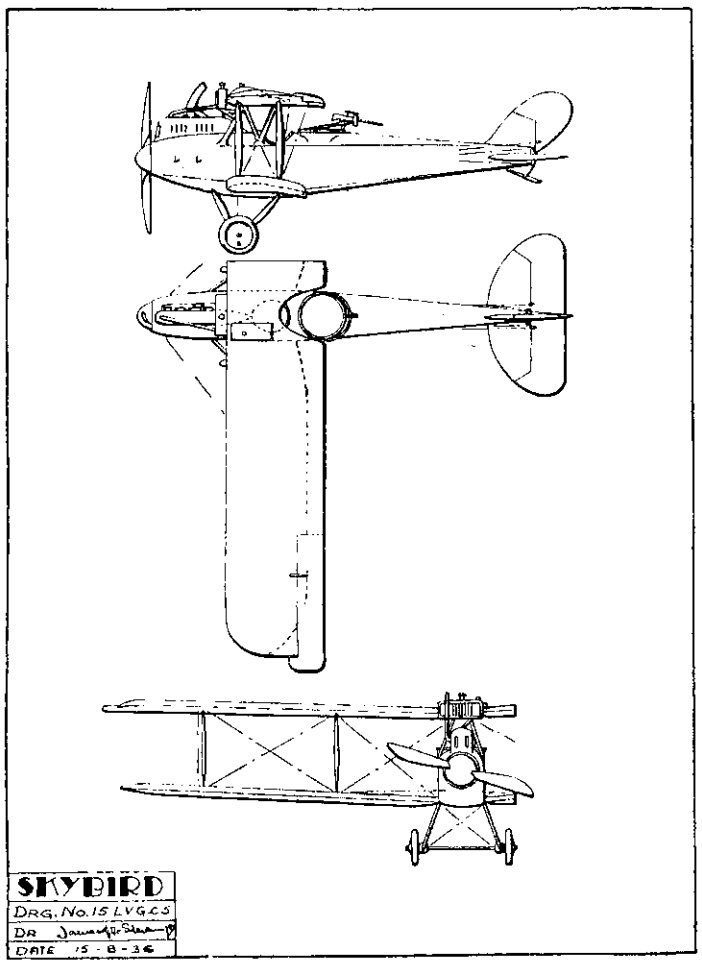
The development of the two-seater reconnaissance aeroplane during the war is very interesting. Leaving out the motley collection of Taube, Aviatik, Henry and Maurice Farmans, and the various other defenceless machines with which the combatant nations rushed into the war, the reconnaissance aeroplane, as a fighting unit, first came into being in the Spring of 1915. The German 'planes, which are the ones covered by this article, were at first heavy and unwieldy, with a top speed of 75-80 m.p.h. Gradually they became more compact; the streamlining improved, and with it the performance. The armament changed from a machine gun, crudely mounted in the rear cockpit, to a gun on a rotating ring for the observer, and a fixed gun firing through the airscrew for the pilot. It might be of interest to note that the German two-seater developed along lines which led to the tractor two-seaters of to-day. Many of the French and British two-seaters were of the pusher type, with tail booms and wires.

The Luft Verkhers Gesellschaft (L.V.G.) produced a number of good two-seaters, of which perhaps the best was the C.5 of our model. The number C.5 denotes the fifth two-seater design produced by that company. All German aeroplanes were numbered in this way: D denoted single-seat fighter; C denoted two-seater fighter; G denoted bomber. There were also some sub-categories, but they were not important.

The L.V.G. C.5 was a very typical German two-seater, with its spinner and well streamlined fuselage—far better than the average British or French two-seater of those days. Wings, motor and tail, as well as the fuselage, all bore the unmistakable stamp of their country of origin.

The upper and lower wings were of different shape and dimensions. The larger upper wing was made up by two planes joined in the centre-line of the machine; there was no centre-section. The two planes were bolted to a fore-and-aft steel tube cabane, which was supported above the fuselage by two N-struts. Neither wing had much dihedral; the upper one was actually 1°, while the lower one was 2°. Incidence in the upper wing was constant; that on the lower planes was washed out slightly at roots and tips. A cut-out was made at the centre of the upper wing to improve the pilot's view; even then it must have been pretty bad. Ailerons were mounted only on the upper planes; they were not very large and were horn-balanced. The radiator was mounted in front of the wing above the fuselage and on top of the port wing, slightly to the side of the cabane, but still over the fuselage, there was a gravity tank.

The fuselage was an extremely common type in Germany. A semi-monocoque of plywood over light formers, the general outline was good. The nose was well rounded, and although the sides were flat, the top and bottom were slightly domed throughout their length. The fins, both upper and lower, and the stubs for the tail-plane, were built integral with the fuselage. The pilot was seated in a cockpit beneath the upper plane, and he was armed with a synchronised Spandau gun. The observer's cockpit was immediately behind the pilot's and projected from the rounded top decking. The observer was armed with a Parabellum gun on a ring mounting.



The motor was a 230 h.p. Benz. As was usual with German practice, the cylinders projected above the general cowling of the nose. Contrary to the more common arrangement, there was a cowling over all the cylinders. The usual chimney exhaust led the gases over the upper wing. The spinner was a spun metal pot fixed over the hub of the wooden airscrew. Figures for the six cylinder in-line Benz motor were as follow :—

Weight dry	...	848·32 lb.
Normal power	...	229 h.p. at 1,400 r.p.m.
Maximum power	...	250 h.p. at 1,650 r.p.m.

The petrol supply was 52½ gallons, carried in wing and fuselage tanks.

The few available figures for the machine are given herewith :—

Weight empty	...	...	...	2,188 lb.
Weight laden	...	...	...	3,141 lb.
Top speed ...	...	...	...	110 m.p.h.

A rather large cantilever tail-plane and elevator unit was used. The elevator was undivided and horn-balanced. The high position rudder was placed completely above the tail—a somewhat poor position for spinning, or, rather, for coming out of a spin! All these features were general German practice.

The undercarriage consisted of wooden struts with metal fittings. The upper ends of the vees were attached to the fuselage by ball joint unions. The vees were cross-braced by wires and the shock absorbers were rubber cords. A wooden tail skid with a metal shoe, and sprung by rubber cord, was fixed to the lower fin.

The L.V.G. was considered to be one of the best German two-seaters of the 1917-18 period, and it was used in considerable numbers. The machine was usually painted with some form of camouflage marking. Undersurfaces were the usual cream colour of clear-doped fabric.

PAINTING HINTS FOR SKYBIRD MODELLERS

By DISTRICT COMMODORE C. L. GROCOTT

A WELL-CONSTRUCTED model can be made or marred in the painting, so that the following hints may prove helpful.

First, it is essential that all wood surfaces should be quite smooth and free from particles of dust, etc.

It is a great advantage to apply a coat of varnish to all surfaces before painting.

Brushes.

Good brushes are an investment (an artist will confirm this). They should be clean and soft. Sable brushes are the best, as they stand up to the strain of enamel painting and will always remain straight with ordinary care. Brushes should be thoroughly cleaned immediately after use, even when it is intended to use them for the same colour shortly after. Clean turpentine is the best for cleaning brushes, but if they get too clogged a little acetone will be necessary. Acetone can be obtained from any chemist for 3d. per oz. Acetone is always useful for thinning paint which has become too thick.

Paint.

I have experimented with a great number of different makes of paint, and without a doubt the best is the enamel supplied by "Skybirds." This enamel has an excellent gloss, is beautifully smooth to work with, and almost entirely free from foreign matter.

Painting Process.

Now we come to actual painting. It will be found distinctly advantageous to stick a thin pointed instrument such as a finely pointed bradawl, into the nose of the fuselage to hold on to whilst painting. This allows you to paint without actually handling the model. The engine and airscrew can be fitted after the paint is quite dry.

Always stir the paint well before using. When the model is a biplane be careful to revarnish the surfaces where the struts have been filed off, thus ensuring an even flow. If the paint is from a fresh tin it can be used straight away, but when paint has been exposed several times it should be strained off into a clean receptacle a fish paste pot or egg cup will do quite well. Any surplus paint can be poured back into the tin afterwards, and the pot or egg cup cleaned out with turpentine ready for the next time.

Part of an old silk stocking is best for straining.

The usual method is to place the piece of silk over the clean receptacle and slip an elastic band round to hold it taut, then pour in the paint, allowing it to filter through by itself. If paint is rather thick, thin down before straining. In all cases where you have to mix your own colour it should be strained after mixing to ensure evenness of colour. Correct proportions for mixing various colours are supplied with " Skybirds " painting outfits.

When applying paint it should be brushed on thinly, and as far as possible in one direction. Two or three thin coats are better than one thick one. Never apply the second coat before the first is thoroughly dry. Remember, patience is the golden rule.

Silver Painting.

The new silver supplied by " Skybirds " is excellent, and very fine results can be obtained if care is employed. Experience has shown me that in the case of biplanes better results are the rule if part of the silvering is done before the top wing is put on. The following is my usual method :—Fit the fuselage, lower wing and tail unit together, then silver the top surface of the lower wing, and forward part of the fuselage ; also the under surface of the top wing. The advantage of doing this is that you get a straight sweep with the brush, which is essential for good silvering. When silver is quite dry, complete the assembling, taking care to revarnish over the spots where struts have been filed down ; then when this is dry finish the silvering.

This method is particularly useful on such models as the " Shark," which has rather a lot of struts. The best type of brush for silvering is a flat sable about ⅝ in. wide. If the above hints are followed carefully, the modeller can be sure of perfect results. To summarise, just remember — *good brushes, clean brushes, smooth surfaces, patience.*

More Hints on Painting.

Since we received the above practical hints on painting from District Commodore C. L. Grocott, an interesting and detailed article on the same subject has reached us from Skyleaguer R. Trebell. Naturally we do not wish to take up our valuable space by publishing information already given, but in view of the importance of the subject we give the following useful extracts from R. T.'s article : -

Cellulose paints have the advantage of quick drying, and give a brilliant hard finish, but after a little fingering the finish becomes dull and lifeless, and if you are in the habit of showing your models to friends they will soon lose their smart appearance.

It is futile to purchase cheap enamels and varnish paints, as the basic material of a good enamel is a good quality varnish, and such varnish is dear. A lacquer finish will retain its gloss and brilliance for a long time, but cannot be quite so easily restored as enamels.

In all cases remember to keep the lids of tins tightly down when not painting. Remove any skin that forms on the surface of the paint, taking care that none falls in the paint.

The necessary preparation of the model for painting is the smoothing and cleaning of all the parts. With wood this means sandpapering the wings, fuselage, etc., as smooth as possible. Next fill in with plastic paste any small nicks or scratches, otherwise the paint will accentuate them after the job is finished. All surplus spots of glue round struts, undercarriage, legs, etc., should be removed with a penknife. After the model has been painted place it in a dustproof box or drawer to protect the finish from collecting particles of wood derived from sandpapering. It is even a good plan not to start painting until 24 hours have elapsed since sandpapering.

A crazy effect occurs when there has been an excess of driers (the media used to help the paint to dry), and is recognisable when the top surface becomes covered with lines rather like crazy paving. There is no real cure for this, but sometimes the addition of a little turpentine may help.

Putting too much paint on at a time causes large "tears" to form long trailing edges, etc., and the remedy is obvious.

Renovating Notes.

To remove old paint, brush acetone over the painted surfaces and scrape with a penknife. This is most effective, the old paint being removed at once. Acetone is a powerful solvent.

We do not advise the use of paraffin. It will dull any colour, and it is not suitable for use with enamels.

Turpentine will do all that is necessary in the matter of cleaning and thinning paint or enamel. Brushes should be thoroughly cleaned with turpentine, and for additional cleansing, acetone can be highly recommended.

Super-Skybirds.

Owing to his absence on holiday, District Commodore K. E. Nicholls has been unable to contribute the second instalment of his excellent article on Super-Skybirds in this month's issue, but we hope to publish it in in due course.

STOP PRESS NEWS

The Grumman F.2.F.

We regret the delay in the issue of this model, and apologise for any inconvenience caused to agents and modellers. The " Grumman " kits were ready early in June with one exception, the U.S.A. cockades. Special transfers have been produced, and owing to an error these were delayed three or four weeks.

Modellers will be pleased to know that transfers of these U.S.A. cockades will be obtainable by the time this August issue is out.

Some New Features.

Modellers who anticipated obtaining the " Grumman F.2.F " described in the June issue, will soon become familiar with our new " Celastoid " cockpit cover.

This new feature has already been highly praised by a number of expert modellers who have seen it, and it will prove the long-awaited answer to the modeller's prayer. Allow us one moment to pat our own backs, modellers. Thanks!

It is now possible for the modeller to finish off the cockpit interior or cabin in full detail, and cover it with a perfectly shaped replica of the aeroplane's cabin, so that all the careful detail can still be seen without the hindrance of clumsy cabin frames, which are so difficult to make to scale.

It is no longer necessary for the modeller to have a solid cabin if he wants to preserve the correct contour of his model. These new "Celastoid" cockpit covers are perfectly shaped, and will now replace the cast metal covers, which "Skybirds" were the first to introduce into solid scale modelling. With due modesty we can claim that once again "Skybirds" have given another lead in model aircraft accessories. Another innovation in the "Grumman" is the introduction in our series of a cast model of the Hamilton-Standard two-bladed adjustable pitch airscrew. Furthermore, we have added a new type of engine casting, which should prove especially interesting to our modellers.

SKYBIRD LEAGUE

SKYBIRD LEAGUE NEWS

NEW CLUBS

Since the last issue of THE AERO-MODELLER, the following new clubs have been registered in the Skybird League:

Hale, Cheshire	510
Whitley Bay, Northumberland	511
Lee, London, S.E.12	512
Calmore, Southampton	513
Tonbridge, Kent	514

ASSOCIATE MEMBERS (LATEST REGISTRATIONS).

District Commodores, Club Leaders and lone modellers can be put in touch with fellow members through Headquarters if a stamped addressed postcard or envelope is enclosed for reply. In all enquiries registered numbers must be quoted.

1024. P. C. Webb, **Godalming, Surrey.**
1025. R. W. Hawkes, **Stevenage, Herts.**
1026. S. D. Peak, **St. Aloysius College, Highgate, N.6.**
1027. A. E. Ward, **Walsgrave, Coventry.**
1028. H. Woodcock, **Denton, Manchester.**
1029. L. Cooke, **Bristol 5.**
1030. R. W. G. Sadler, **Barnt Green, Birmingham.**
1031. F. W. Bewley, **Harringay, N 8.**
1032. R. E. Edwards, **Temple Sowerby, Westmorland.**
1033. A. Baker, **Eastbourne.**
1034. J. Bedford, **Golders Green, N.W.11.**
1035. J. E. Fraser, **Billingham, Durham.**
1036. J. Minchinton, **Brockley, S.E.4.**
1037. G. W. Mills, **Sutton, Surrey.**
1038. L. W. Pomroy, **Heavitree, Exeter.**
1039. J. Harrison, **Ilkeston, Derby.**
1040. J. McLachlan, **Graigton, Glasgow.**
1041. W. H. Holroyd, **Sheffield.**

Ambitious.

Skyleaguer J. G. Pugh, one of our most practical Associate Members, aspires to the honour of District Commodore for North Wales, as he is quite sure that many new members and even clubs can be enrolled in that lovely part of the country. We are equally sure and our Skyleaguer's enthusiasm should make his efforts successful. He could conveniently make contact with Club No. 34 at Wrexham, as he has relatives there, among them being an old R.F.C. man, who flew in many a Farman, F.E.2b and Biff, and who could probably be of assistance to him. Skyleaguer Pugh has been building Skybirds since 1933 and is 16 years old this year. We have sent him the names and addresses of all the North Wales Associate Members. We are also looking forward to seeing a Skybird film that he has made and promised to forward "if successful."

Staging a "Come-Back."

Glad to hear from Skyleaguer H. G. Inchbald, of Bickley, Kent, that he has recovered from recent illness and is staging a "come back" to Skybirds. He thanks us for publishing the photograph of his Skybird lay-out, but adds, challengingly, "That is nothing to what I hope to send you shortly."

So look out for something interesting pictorially from this enthusiast. He bought a Skybird "Gauntlet" ready-made from Messrs. Hamleys recently, and declares "It's absolutely it." His letter of five full sheets only stops there because he had no more sheets. That's the spirit. This lucky member lives on the Continental air routes and sees all the air liners passing over.

A Display for Club No. 451.

Another member whom we are pleased to hear has recovered from illness is Skyleaguer P. Maynard, of Club No. 451. He informs us that the club is planning its biggest display on their first anniversary, and they are hoping that a large crowd of airminded villagers will turn up. So do we, but whether they do or not we are sure that the members of No. 451 will have a great time.

Detail Always Counts.

The importance of taking care with details when building models is once again revealed in the results of the Flight competitions held by Club No. 374. Skyleaguer L. H. Grace of that club writes: "A" Flight ran away with all the prizes, not because they have the best men, but because they go for details with care, while the others overdo it. The results were:

Wartime: Won by "A" Flight with a "B.E.2c," assembled and painted by Flight Leader P. B. D. Best.

Civil: Won by "A" Flight with a Heston "Phoenix," assembled and painted by H. Coop.

R.A.F.: Won by "A" Flight with a Gloster "Gauntlet," assembled and painted by H. Coop. (Unfortunately for "C" Flight their best modeller did not compete with his planes on three occasions, otherwise they might have robbed "A" Flight of some of its successes). By the way, a milk cocktail bar has been started by this club and a cricket team formed. This should attract new members.

Off to Bergen.

Skyleaguer F. R. Leatherdale, leader of Club No. 287A, is off to Bergen this summer, lucky fellow, and has asked us for the address of Skyleaguer D. C. Moldenhauer, of that city. This we have sent him with a request to include the best wishes of headquarters to our Norwegian member with that of the Leatherhead Club. F.R.L. and two fellow members recently visited Kenley and enjoyed a long lecture on the supercharger of a Bristol "Jupiter." Two other members went to Biggin Hill. F.R.L. tells us that he has solved a problem of fixing folding wings on to a "Shark" by riveting two strips of thin metal to the woodwork. This is quite satisfactory, and we have also suggested fitting a pin into the centre section, so that when the wing is folded into flying position the pin holds the planes in correct position; otherwise the hinge may in time allow the planes to sag.

The Badge Counts.

Skyleaguer A. Bowyer, of Chester, finds his Associate badge much admired by other boys, and it inspires them to learn about the Skybird League. He hopes to form a club some day. A worthy ambition.

Correspondence Wanted.

Although Raymond E. Edwards, of The Rectory, Newbiggin, finds his Westmorland village a difficult place to form a club in, his enthusiasm is in no wise damped. He has completed his ninth model and requests us to accept him as an Associate Member. We are very glad to welcome him and are looking forward to seeing some examples of his modelling. His range of models started with a "Hart," followed by the "Gordon," "Gauntlet," "Dragon," "Shark," "Dewoitine," "Wallace," "Vega Gull," and finally the "Heinkel." Pen pals would be welcomed by this enthusiast, especially those between 16 and 18 years old living near a R.A.F. station or civil airport. Raymond is thirty miles from an airport.

Bruce Young's Clever Notion.

We wish Bruce Young every success with his Rally Bristol, which Club Leader Daniels (Club No. 508) has sent in for the competition organised by District Commodore May Gardner, of Putney. Bruce should know the result by the time this issue of THE AERO-MODELLER is out, and we hope it's the sort of result he desired. Compliments to this Skyleaguer on an excellent idea. He has made a trailer of white tissue paper, with the following slogan painted on it: "Boys, join the Skybird League." This he secured to the tail end of his "Baby Gnome," which flew quite well with its message. Bruce is hoping that one of his masters will take a personal interest in his club. We are confident that one day this hope will be realised, for Bruce has the necessary perseverance.

Spreading Air-Mindedness in Bradford.

We have read with much interest a long Press cutting on the modelling activities of Associate Members S. Langdale Sunderland and his two brothers, who live in Bradford. Their complete airport, made by converting a ping-pong table, of which we published an illustration in our May issue, was also photographed by the Press, and the print makes a most realistic picture. "Anybody who would like to know what real air-mindedness means should visit this attic aerodrome and talk with its directors," concludes the report.

New Club in the North.

From Northumberland we learn in a letter sent by Skyleaguer G. Whitfield that J. Crondace has left his club to form one of his own and taken K. Pyle with him; but although these departures were regretted by G.W. and his club-mates, one gap has already been filled by G. Temple, who has two Skybirds to his credit. They arranged to hold their display in the school "gym." on June 19th, and we shall no doubt hear more about this. When their youngest member, P. Cobbett, first saw Skybirds model of Gatwick all he could ejaculate was: "Gee whiz, what a beauty." John Crondace also writes to us direct about his new club. There are already four members, including himself. We foreshadow friendly rivalry Northumberland way. More members and more models to both!

A Visit to Gosport.

Skyleaguer P. Went, Associate Member No. 836, sends us the following interesting account of his visit to Gosport Aerodrome:

"Such a lot has happened that I do not know where to start. However, the best place is right at the beginning. I received your letter of introduction (thanks very much) on May 28th, but as it was too late to write to Squadron-Leader Warne-Brown I went to see him, taking with me the letter of introduction and one of my own composition in case he was out.

"However, I met him and felt quite at ease when I spoke to him. I think he is very nice and he is extremely interested in our club. I told Squadron-Leader Warne-Browne of our activities, and that my club was visiting Gosport on Saturday. He said that he would fix things up for us. Then the Squadron Leader showed me three of his models- a 'Battle,' a 'Biff' and a 'B.E.2c.' They were excellent. He then showed me the best kind of sandpaper to use for the extra fine finish of Skybirds.

"Saturday came at last, and promptly at 1.30 p.m. I met Bevis and the rest of the club at a prearranged spot, and then we walked to the 'drome.' An airman introduced himself as our guide, and one of the most exciting and happiest tours of my life began. First of all we inspected three 'Gladiators' at close range (a Skybird Leaguer's dream), and then proceeded to a 'Shark.' To our great delight we were allowed to get into the cockpit and handle the controls. After that we were allowed to get into an 'Osprey' (more luck), and then we sat down and watched some daring antics in a 'Nimrod.' We held our breath as the pilot tried to commit suicide by power diving at a Handley Page 'Harrow' which was on the aerodrome.

"Next we visited the torpedo section and were shown one of the 'mouldies' with its side cut away to show its 'works.' Then we 'bombed' the fort in a model aeroplane fitted with a lead bomb and 'dragged' the ocean bed for torpedoes. Walker, a new member to be, was fortunate, and won a bomb and three excellent torpedoes. Next we went into the parachute section and saw a parachute stretched on the folding table. Then came the armoury, where we spent an hour firing the Lewis and Vickers machine guns, and also a camera gun. The timing gear of the guns was explained by the guide, and we continued to a hangar where the Squadron-Leader bought us a very nice tea. Later we sat on the grass and watched the bombing of a house by three 'Osprevs,' and the dropping of water ballast from a torpedo case by a 'Swordfish.'

"A very funny pupil and instructor stunted in two 'Tutors.' Then we said good-bye to our guide and went to see Squadron Leader Warne-Browne, whom we thanked for a very nice day. On my way home I was fortunate enough to meet Squadron-Leader Warne-Browne again and we had a nice chat. The Squadron-Leader said that he would try to let us use the 'Arts and Crafts' room at Grange. We move in soon."

What a thrilling time these lucky fellows had. We published an interesting letter on their visit from Squadron-Leader Warne-Browne in our July issue.

News from Northern Ireland.

Skyleaguer M. F. Crowe, of Club No. 458, was another keen modeller who took full advantage of Empire Air Day. He lives at Belfast and visited Aldergrove Aerodrome, where he sat in the cockpits of "Gauntlets," "Hinds," "Harts," "Tutors," "Wallaces" and "Heyfords". His club has been working hard lately and now possesses fifty Skybirds, with hopes of many more. Skyleaguer Crowe himself has twenty models, and has just finished the Blackburn "Shark," which he regards as our best model. We congratulate him on the fine pencil sketches he has sent us, one of the Hawker "Hurricane," the other of a Sopwith "Camel."

Spotted Again!

Many thanks to Skyleaguer S. J. Rawlis, of Club No. 368, Southampton, for his alert spotting of an error. Let him explain: "In your supermarine 'Spitfire' kit you say that the original 'Spitfire' was K50514, but I would like to point out that the first 'Spitfire' was built in 1932 and had the number K2880, and the present 'Spitfire' has the number K5054. I am certain that the number is correct, as being at Southampton, where it is tested, I see it nearly every day."

Quite right, S.J.R. The correct number is K5054. Our printer managed to smuggle the extra one in and we contributed to the deadly deed by failing to notice it.

S.J.R. reports two new members, one being their first lady member.

Willing Recruits!

We welcome a letter from John Larthwaite, of Lichfield, Staffs, who "intends to take up the hobby of 'Skybirds' seriously." He has already found four very willing supporters, so we shall soon be announcing a Lichfield club. Good going, John.

A Letchworth Revival.

Glad to learn from Associate Member No. 599, B. Baldwin, who hails from Letchworth, where the R.A.F. parachutes are

manufactured, that he intends to reform his old club, and he has particularly asked us to put him in touch with G. Parlour, of the same city, who recently told us of his wish to join the League. This we have done. B.B. has been planning and scheming for some time before launching his new effort. All power to his elbow. Congratulating us on the "Grumman," his personal preference is to see more U.S. military aircraft produced, especially as he wishes to make an American flying station, which he knows is only possible with "Skybirds."

Club No. 513 for Southampton.

We are delighted to record the registration of a new "Skybird" Club (No. 513) at the Tatchbury Mount Colony, Totton, Southampton. We understand that this colony has a large number of boys, who will take up "Skybird" modelling as a hobby. Five members have already qualified by completing their first "Skybird" models. We welcome all prospective members of the Tatchbury Mount Colony to the League, and wish Club No. 513 many happy days and good modelling.

Another Compliment.

Associate Member J. S. McGregor, Merton Park, who has commenced to build six "Skybirds," thinks, like many fellow members, that our greatest triumph is the Blackburn "Shark." Referring to his work on the "Battle" and "Spitfire," he tells us that he has met considerable difficulty filing out the cockpit covers; but we have recalled his attention to our article on the "Grumman," which explains how such difficulties are now overcome by the use of the transparent moulded cabin covers.

NEWS FROM DISTRICT COMMODORES

Northern Ireland.

Lady Mairi Stewart, who has been appointed District Commodore of the Skybird League for Northern Ireland, would be pleased to hear from any Skyleaguers or prospective members in this district with the object of arranging a campaign of displays and competitions, etc., to encourage interest in aeronautical scale modelling and to form a strong section of the Skybird League with suitable headquarters in North Ireland.

Will those interested kindly write to Lady Mairi Stewart, Mount Stewart, Newtownards, Co. Down?

Lowestoft.

Combining "business" with pleasure was the aim of District Commodore Kenneth E. Nicholls on his holiday. He intended cycling to Kent and London, visiting Club No. 448 (Bromley), the Cinque Ports Flying Club, Lympne, Croydon Airport, the R.A.F. Display, and De Havilland's Flying School at Hatfield. We have since heard that he completed this "aviation" tour and met many Skyleaguers. He had the excellent notion of painting the Skybird insignia on the "head" of his cycle, besides wearing his badges.

At Martlesham Heath R.A.F. Station he was lucky enough to see thrilling test flights, including a "9G" dive by a Vickers gull-wing monoplane. At the Cinque Ports Flying Club (Lympne) he met Mr. K. K. Brown, Chief Instructor, who also makes "Skybirds," and they eagerly exchanged experiences. An official tour of Croydon and a less formal inspection of the airway companies there was followed in due course by a visit to the R.A.F. Display and then Broxbourne Aerodrome (Herts), where he "was lucky enough to meet the famous Mr. Stevens" (our J.H.S. of "Skybirds"), who showed him a "marvellous" drawing of the new "Grumman" set, which the D/C now eagerly awaits.

Essex, Suffolk, Norfolk, Cambridge and Herts.

This embracing heading illustrates the comprehensive activities of District Commodore M. Kinchin Smith, who advises us that he has just been elected to the post of hon. secretary of the Westminster School Aeronautical Society. We join in with the many congratulations that we are sure he has received.

M.K.S. pays us the compliment of stating "and it was all through 'Skybirds' that my interest in the air started."

M.K.S. visited Clare recently, and he reports that G. R. Buckle, the new Club Leader, has been very active. He has allotted each flight a corner of its own on the club premises, each having its own board setting forth its records in flight and games competitions, together with the names of flight leaders, as follows:—

A. Albatrosses (changed from Atalantas)	H. T. Weller Poley.
B. Blenheims (changed from Bulldogs)	F. R. Grozier.
C. Comets	Miss L. Kinchin Smith.
D. Dragons	M. Byford.

The new leader of "D" flight, M. Byford, has been awarded a first class certificate. The club is obtaining considerable publicity, and also educating the public in air-mindedness by placing notices, articles and photographs on a notice board outside the principal "pub." in Clare. Skyleaguers will agree with us that with his activities at Westminster and Clare, M.K.S. is certainly a speed wizard, and once more we congratulate him on his excellent work for the League. Below we publish a summary of the Clare Club's summer "aviation" programme (which speaks for itself):—

Aug.	9.	Lecture: The Club Leader on "Policy and Organisation of the Clare and District Model Aero Club." Chairman: The president, Sir Gould May.
,,	19.	Lecture: A. Hodsdon on "Flying Model Aircraft." Chairman: The vice-president, Lady May.
,,	23.	Lecture: M. B. Perkins, Leader of Cambridge M.A.C., on "Flying as a Sport and Hobby." Chairman: M. Kinchin Smith.
,,	30.	Outing to Southend. Visit to airport and town. Closing date for East Anglican Skybird Competitions.
Sept.	4.	Outing to Ipswich Airport to East Anglican Flying Model Competitions. Flights from 2s. 6d.
,,	6.	Lecture: M. Kinchin Smith on "The Science of Flight." Chairman: The Club Leader. Exhibition of Winning Skybird Models.

Notes: Competitions for flying models, Skybird models, aero photo and drawings of aeroplanes are being held. Full particulars may be obtained from the competition secretary, Clare Priory.

With reference to the Clare Club's outing to Southend on August 30th, we are trying to arrange with the Southend District Commodore for local Skyleaguers to be present to meet their fellow Skyleaguers from Clare.

Hull, Yorkshire.

Heartiest congratulations to District Commodore R. H. Glenwright, who has now become a Sergeant-Pilot of the R.A.F. Volunteer Reserve. He tells us that one of his League members, N. Bursnall, has had a notice put up at his college requesting more members to assist him in forming a new club under his leadership. We shall be glad to record that N.B.'s efforts have met with success. The District Commodore reports a new member for his club. This is Miss Hilda Walker, aged 18 years. Good modelling, Miss Hilda, and we hope you will not place your fellow male members too much in the shade with your models. The D/C adds his belief that the Leader of Club No. 467, Skyleaguer G. Rymer, has a larger collection of "Skybirds" than any single person in Hull. The collection totals somewhere about 100. A century and not out! Trust a Yorkshireman to get a century.

Sussex. A Fine Capture.

Club No. 453 have obtained the consent of Mr. Dalton, Control Officer at Gatwick Airport, to hold the office of their president. A splendid stroke of business No. 453. This news comes from District Commodore Bruce Stack, who adds that he visited Mr. Dalton at Gatwick recently, and was shown everything in the control room and on the aerodrome. An American Pitcairn autogiro came in when the District Commodore was in the control room, and he thinks it a unique machine, and the only one of its kind in England. He sends us a list of his club members in their various ranks, and he supports the idea of a Skyleaguer that ranks be officially adopted throughout the League. Bruce Stack's concluding item

of interest is that with Mr. Dalton he is organising a contest for flying models, and also hoping to arrange a competition for "Skybirds" with District Commodore Medley.

Uxbridge.

The first annual District Skybird Rally (Middlesex area) was held at Northolt Aerodrome on Empire Day with great success. About forty "Skybird" models were displayed, together with a "Skybird" airport and club buildings. District Commodore Eric St. John informs us that no less than 17,000 people visited the aerodrome, and we are not surprised to hear that the "Skybird" stand was crowded, even while spectacular events were taking place outside the hangar. The competition results were:—

Open Competition (Section 1, under 14 years): 1st, Robin L. Perrin (Fairey Hendon); 2nd, Peter Jennings (Fairey Battle). (Section 2, 14 years and over): 1st, James Wright (B.A. Eagle); 2nd, Neil Brown (Bristol Fighter).

Certificates of Merit were also awarded to D. M. Rouse and R. Jennings.

Club Championship: Silver Challenge Cup won by Club No. 459, Acton, W.3 (Bristol Fighter). Club Leader H. C. Rouse, of No. 459, was presented with the Challenge Cup by the District Commodore at the close of the afternoon. Full marks go to Master James Wright in winning the first prize in Section 2, for this was his very first entry in a model competition. He and the winner of Section 1, Robin L. Perrin, won free cruises in a luxury air liner by their success. Three local newspapers reported the Rally, and summarised the work and progress of the Skybird League.

Cambridge.

Another successful display of models was held appropriately on Empire Air Day at the Duxford R.A.F. station by Club No. 22. They shared a hangar with a fleet of R.A.F. machines, and forty models were placed on view, enhanced by a background display of drawings of various types. "Amongst the distinguished visitors to the stand was Sir Philip Sassoon, the former Under-Secretary for Air, who arrived in his grey and silver D.H. 'Dragonfly,'" writes District Commodore D. E. S. Charles. The latter flew to the display with fifteen models in one of the Marshall Flying School's "Moths." Squadron-Leader Linton Jones and the Cambridge University Air Squadron gave splendid aid. In adding his congratulations on the "Spitfire," the District Commodore says that he is in a position to judge its merits, as he had already built one from the prototype with balsa.

Forest Gate, E.7.

Anthony Saunders sends us the good news that he is making a return to the modelling arena after enforced absence from "Skybirds" and the League, due to examinations. The "agony" of these was all over by June 25th—just in time for Hendon. It has been a constant temptation to forsake "swotting" for his "Skybird" kits, all new and waiting for the great work, but having resisted it the District Commodore can now take up his hobby without regrets.

Alveston, Glos.

District Commodore R. A. Barnwell, who has recently been busy with the second examination for his B.Sc. Eng. degree, is trying to devise a means of operating the Supermarine "Spitfire" undercarriage from the cockpit, and we look forward to hearing the result. "I think it is magnificent the way "Skybirds" are managing to keep right up with the R.A.F. expansion," he is good enough to say.

Putney, Wandsworth, Barnes and S.W.

If ever Headquarters offered a prize for the best report from District Commodores one of our lady D.C.'s would stand an excellent chance. She is Miss May Gardner, of Putney. The first report that we have received from a lady D.C. came from her. One glance at the report, and H.Q. realised that here was a model of efficiency. Beautifully written, concise, and informative, the report is typical of the League work performed by this lady. Congratulations M. G. We shall look forward to all your reports. Our readers will obtain an impression of her thoroughness from the following details in her report:

Summer Contest—Putney and District Division

	Points. Test.	Model.	Total.
No. 508 (13th Squadron), Wandsworth, "Bristol Fighter"	24	20	44
No. 352 (Phantom Squadron), Putney, "Dewoitine 500"	20	15	35
No. 390 (Pterodactyl Squadron), Barnes, disbanded.			
No. 194 Squadron, Wandsworth, disbanded.			
No. 456 Squadron, Putney, disbanded.			

The models were judged by "Normans," Model Aircraft Shop, Putney, S.W.15. The new club, No. 508 (Wandsworth) gained 24 out of a possible 25 points for their test paper, and their winning model was Bruce Young's "Bristol Fighter." He is a keen member of the Squadron. The award was a "Supermarine Spitfire" kit, and Miss Gardner took this prize in person to Leader Daniels, and found that his parents think "Skybirds" an excellent hobby. Leader Daniels informed her that they still have the use of an empty study at his school, where a civil aerodrome is set out, complete with radio station, control tower, large and small hangars, and about fifty 'planes. A military aerodrome is now in the offing, with a lake for seaplanes, etc. There are about nine working members, and the Headmaster has given them permission to arrange an exhibition on Parents' Day. Splendid! Just the day to shine, boys! Naturally, they are hoping to keep up their winning reputation when the autumn contest takes place.

No. 352 Squadron (Putney), who obtained 20 out of 25 points for their test paper, and 15 out of 25 for their model, originally sent in a "Gauntlet" of Miss Gardner's, which she magnanimously decided was not permissible, so the "Dewoitine" was entered as a substitute without any sprucing-up being done. As there were only two clubs competing there was naturally only one award, but as a consolation prize the June issue of THE AERO MODELLER was given.

"The club room is still the attic of Leader Pilgrim's house," writes the District Commodore, but the regular days of meeting have been suspended for the summer, although the members still carry on the good work and keep in touch. There are prospects of at least two new members in the near future.

Miss Gardner is very keen to have another club in Barnes, and she throws out the excellent bait of a "Skybird" kit to the first new club registered in Barnes before August 31st! Surely this prize will not go begging!

BREVITIES

Hubert Livsey, of Penrith, Cumberland, who has assembled a "Gauntlet" and a "Camel," has asked for particulars of Associate Membership, and would be a keen member of a club if one was conveniently situated for him.

* * *

Skyleaguer G. Dunford, of Scarborough sends us a news cutting showing himself and two other club members with their "Skybird" models. Five members of his club, No. 482, accompanied members of Club No. 399, on a 35-mile cycle ride from Scarborough to the R.A.F. Station at Catfoss, E. Yorks., and enjoyed great freedom of action amongst the R.A.F. types on the aerodrome.

* * *

All Skyleaguers gravitate towards aerodromes at the slightest excuse! Skyleaguer L. Percival, Associate Member No. 745, Tonbridge, who has been holidaying near Bognor, got views of Tangmere, Longmere, and Ford aerodromes, and spotted a great variety of R.A.F. types.

Model Engineer Exhibition.

There will be a display of "Skybird" models on THE AERO-MODELLER stand at this exhibition, Royal Horticultural Hall, Westminster, which opens on Thursday, September 16th, and lasts until Saturday, September 25th. This opportunity will also be taken to spread further propaganda on behalf of the Skybird League by issuing our literature from the stand.

COMPETITION No. 3

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4a	D.H. "Comet"	7½"	2/-	6/-
5	Sopwith "Camel"	4¾"	2/-	6/-
6a	D.H.89 "Dragon Rapide"	8"	4/6	12/6
7a	Heinkel H.E.70A.	8"	3/-	10/-
8a	B.E.2c	6¼"	2/6	7/6
9	Nieuport "Scout" (French)	4½"	2/-	6/-
10a	Gloster "Gauntlet"	5½"	2/6	7/6
11a	Fairey "Hendon" long-range Night Bomber	16"	12/6	27/6
12	De Havilland 4	7"	2/6	7/6
13b	Bristol 138a	11"	5/-	12/6
14a	Supermarine "Spitfire I"	6"	2/6	7/6
15a	Percival "Vega Gull"	6½"	2/-	6/-
16a	Lockheed "Electra" (U.S.A.)	9¼"	5/-	12/6
*16b	Grumman F.2.F. (U.S.A.)	5"	2/6	7/6
17a	Blackburn "Shark"	7¾"	4/6	12/6
18a	Supermarine Seagull V. Amphibian	7¾"	5/-	12/6
19a	Bristol Fighter	6½"	2/6	7/6
20a	Hawker "Hart"	6¼"	2/6	7/6
21	S.E.5	4½"	2/-	6/-
22a	B.A. "Eagle"	6½"	2/-	6/-
23a	S.P.A.D.	4½"	2/-	6/-
24	Fairey "Seal" Land or Seaplane	7¾"	4/6	10/6
25	Albatross D.3 (German)	5"	2/-	6/-

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