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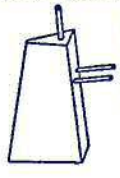

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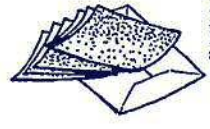

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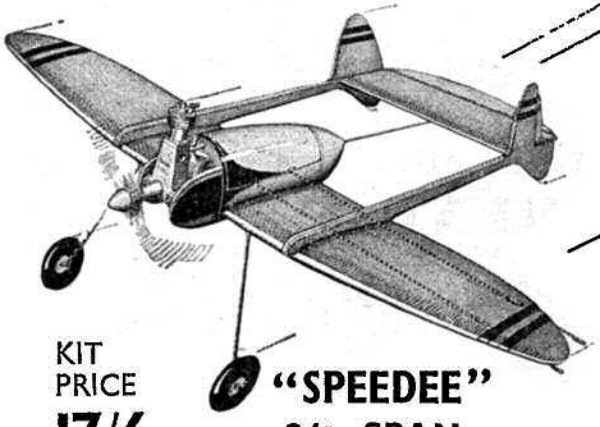

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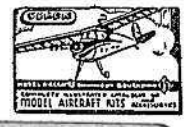

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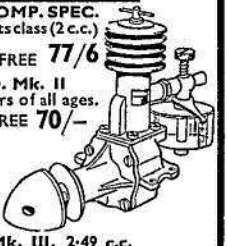

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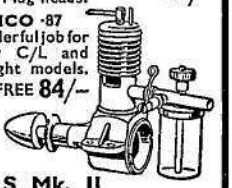

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1948's LEADING MODEL AND MODELLER.—Featuring the "Jaguar," flown to victory by R. B. Chesterton in the first post-war Wakefield Contest at Akron Field, Ohio, U.S.A.

CONTENTS

VOL. XIII No. 153 OCTOBER, 1948

EDITORIAL

PROUD HOMECOMING

AS the eight thousand horse power of " Flagship Holland " settled into silence we admired the sleek lines of this Transatlantic Constellation and at the same time caught a glimpse of grinning faces at the cabin windows. The scene was of course London Airport, 30th August, 1948, and we awaited on the tarmac Britain's victorious Wakefield team. Soon they were stepping on to home ground led by 23 year old Roy Chesterton who beat the world with flying of remarkable consistency. The team was lacking Len Stott who had remained in the States on business but had with them a very precious package containing of course the coveted Wakefield Trophy, coming home to roost after an absence of 12 years. Readers everywhere will join with us in saying " Well done Roy and fellow team mates, you have given British aeromodelling its greatest fillip in years " !

Their are many " inside " stories behind our Wakefield success—the story of E. W. Evan's " Jaguar " design for instance, an account of which readers will find in this issue, and by no means the least important—the story of how over £1,000 was raised in a matter of a few days when it was learnt that possible American arrangements for flying the team across has fallen through. The raising of this money was in itself a splendid example of the way in which friends both inside and outside the movement, with the cause of aeromodelling at heart, rally round when the occasion arises. Willing hands from the temples of big business to the youngest club member were dipped into pockets in order that Great Britain might be represented at the greatest of all International contests, and it is doubly gratifying that their enthusiasm was indeed rewarded. We give at the end of this editorial the list of contributions up to the time of going to press.

On page 585 will be found a full report on the contest by our Editor Mr. C. S. Rushbrooke, who flew over to the States with our Managing Editor Mr. D. A. Russell especially to cover the event. We will not duplicate his remarks but would mention in particular the unbounding enthusiasm of the American proxy flyers who apparently put everything they had got into the flying of the Australian and New Zealand models, so much so that one took second place. Congratulations Mr. Curth and fellow clubmates, a little more of your type of sportsmanship and good fellowship would not go amiss in the uncertain sphere of international relations at the present moment. We look forward to seeing you all in Great Britain during the 1949 Wakefield Contest when the same spirit of International co-operation and friendly rivalry will undoubtably prevail.

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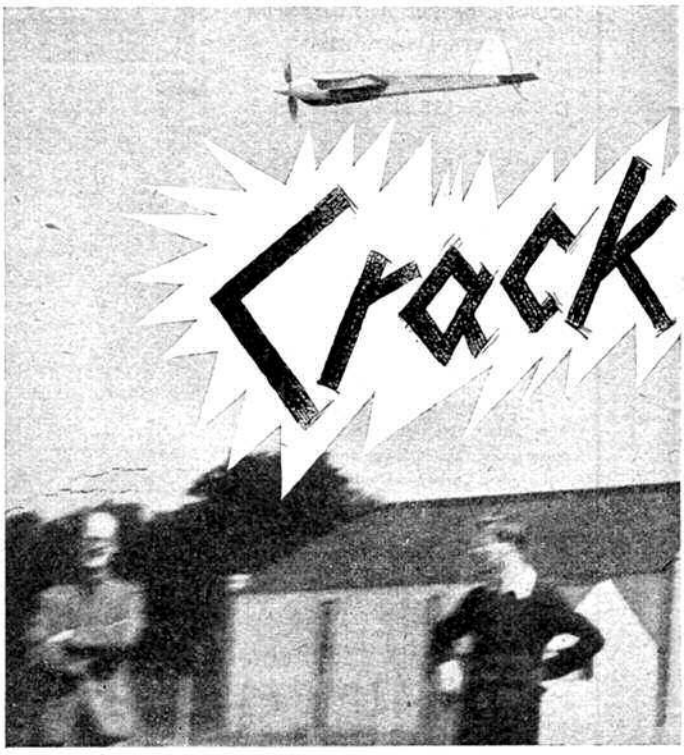
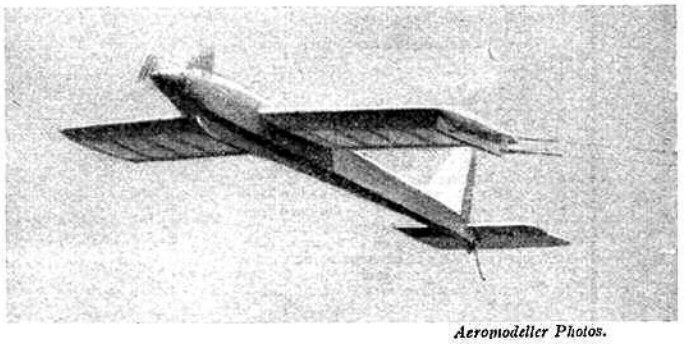
(We regret that space does not permit a full list of contributing clubs.)





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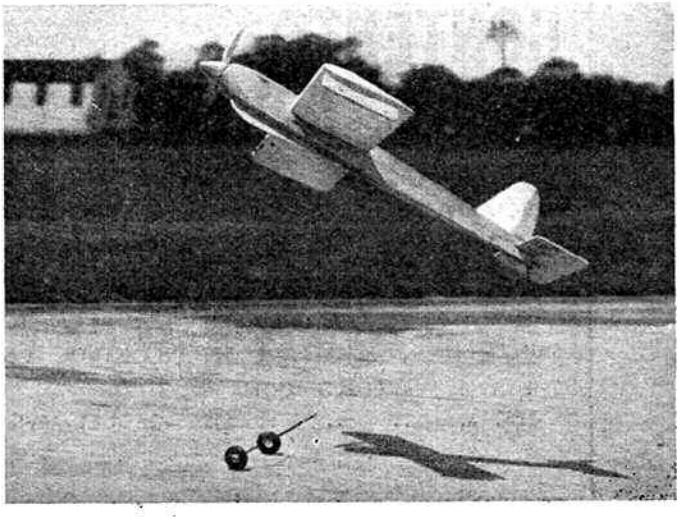


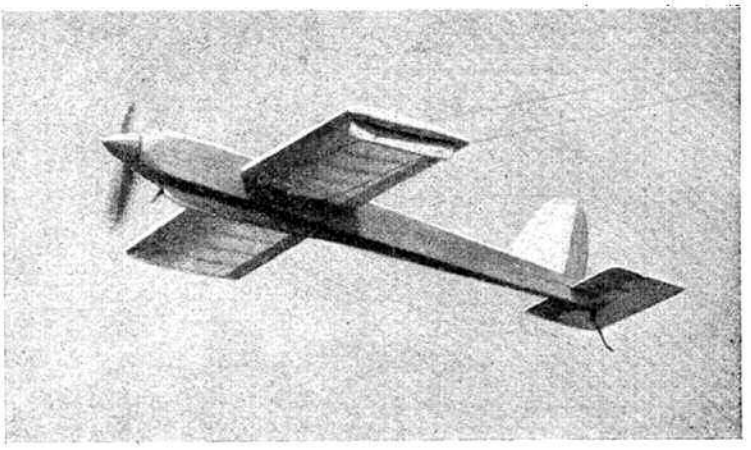
A 32 inch SPAN STUNT CONTROL-LINE MODEL

CRACKERJACK

FOR MOTORS FROM 2·5 to 5 c.c.

DESIGNED BY

H · G · HUNDLEBY & J. W · COASBY



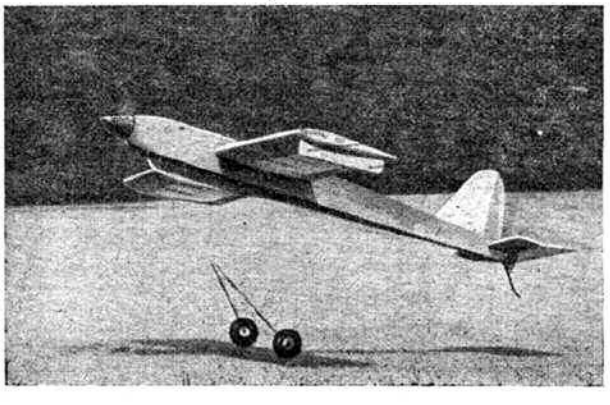
HAVING learnt our control-line flying the hard way and having tried for some considerable time to develop a really successful stunter suitable for a popular size of British engine, we were more than gratified at the performance of Crackerjack. The prototype, powered with an E.D. Mark III performs the most difficult of stunt manœuvres with an ease and reliability that make it a pleasure to handle. The model is extremely sensitive to control and less experienced flyers should watch out when the undercarriage releases We found 50 ft. the most satisfactory line length, although in calm weather this can be extended to 60 ft. with beneficial results.

Commence by building the wing, cutting all ribs from hard 1/16 sheet. Utilise a template of thin sheet zinc or aluminium for this job, it saves time and ensures accuracy. Sand and shape leading and trailing edges before pinning down and note that packing will be required in view of the symmetrical section. Cement ribs in position and also wing tips, lift from plan, and apply top and bottom sheeting as shown. Finish by sanding lightly and then cover with rag tissue and dope. Cut through the covering over the slot that takes the ply guide plate and cement plate into wing.

Fuselage. Commence by cutting bearers to shape and drill engine bearer holes and the hole for the control plate. Glue the bearers to the top and bottom fuselage sheeting with Durofix and when dry cement bulkhead F.1 and formers F.1A, F.4, F.5 and tail-block in position. Do not insert formers F.2 and F.3 at this stage. Remember also to screw undercarriage tubes to F.1 before inserting. Fit control plate and also engine bolts together with their back plates. Check assembly at this stage for accuracy and leave to dry thoroughly. Cut out fuselage sides slightly oversize and construct tail surfaces and fin whilst you are waiting. Fit all control wires to the control plate and then cement the port side of the fuselage in position. When dry slide wing into place remembering to thread the control leads through the wing guide plate. Now is the time to cement formers F.2 and F.3 in position and the wing should be accurately aligned at right angles to the fuselage. Any adjustment necessary can be made by lightly sanding these formers before glueing. Complete the tailplane and cement in place. With the wing and tail surfaces in position the starboard fuselage side can now be passed over the wing and cemented in place, remembering to thread the control lead through the side at the same time. Lightly cement the front nose block in place and thoroughly sand fuselage with block in position. When sanding is completed remove nose block, which can be finally positioned when the engine is installed. Cover fuselage with rag tissue using thick dope or banana oil and finally apply finishing coat of clear dope. Cut tissue carefully away from fin and underskid positions and cement these two items in place, also the tailskid. Note that the tail surfaces are left uncovered and finish with clear dope. A final finishing coat of coloured dope may be applied although this was not done on the prototype in order to save weight. Construct the fuel tank and also the undercarriage remembering that the latter item should be a loose fit in the undercarriage tubes. The inside of the fuselage front should be given a coat of shellac as a proof against fuel residue. Bend the necessary clips at the end of the lead-in wires and carefully adjust the length of the elevator control wire before cutting and bending through control horn.

The prototype came out at 13 ozs. complete with motor and it is not advisable to exceed an all-up weight of 14 ozs. The model should balance at a point half inch back from the front wire measured at the guide plate.

Our photographer Mr. E. J. Riding secured these splendid action shots at considerable risk to life and limb, as most of them were taken from inside the flight circle ! Note the "up" position of the elevators on the photograph below, taken just as the dolly released, then compare the photo on the left taken at a slightly later stage. The elevators have been neutralised to counteract the steep climb resulting from the dolly releasing.



A 36" SPAN SIDEWINDER STUNT CONTROL LINE MODEL

CRACKERJACK

DESIGNED BY
H.G. HUNDLEBY
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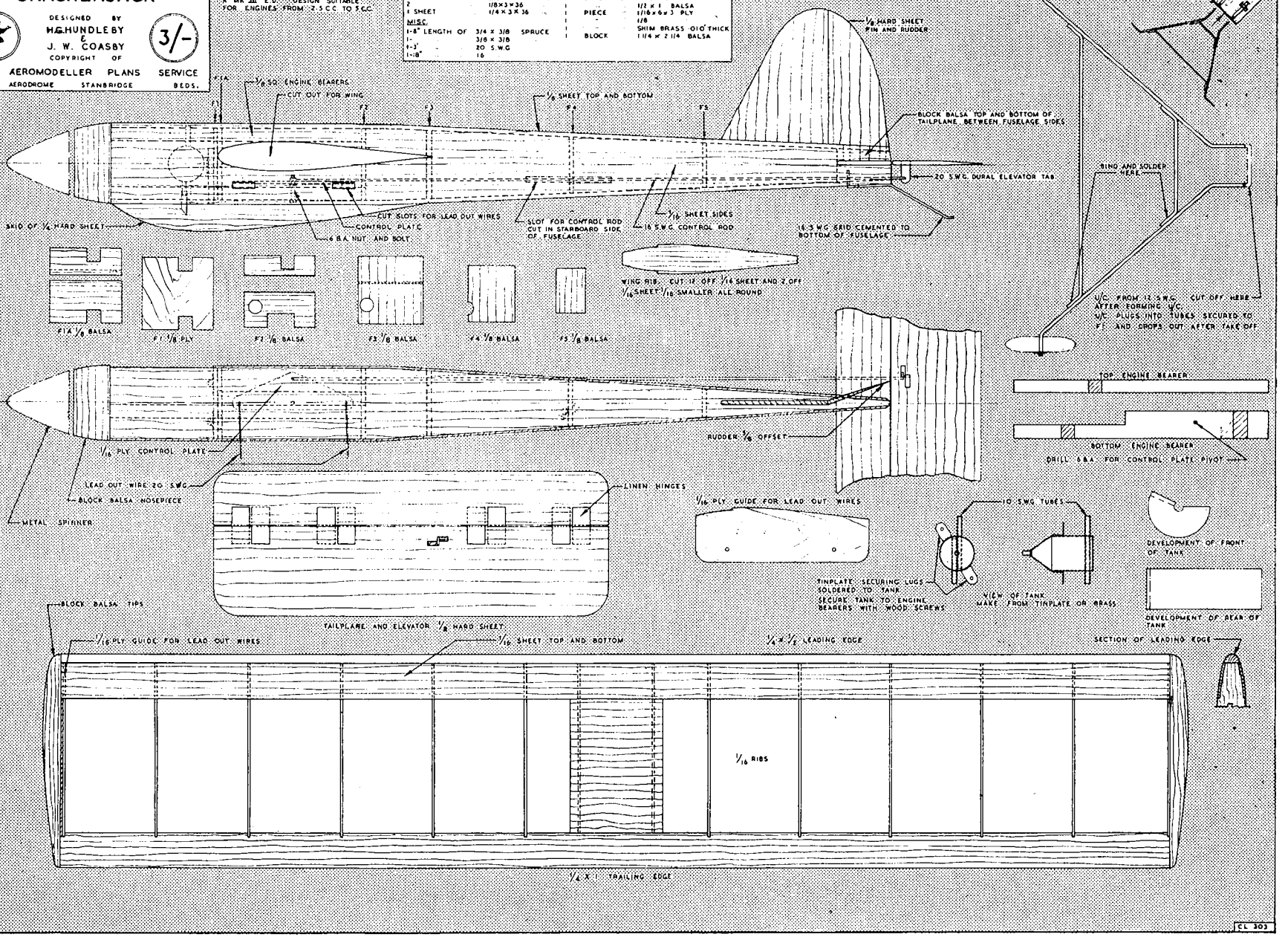
1-3" "	20 S.W.G.				
1-18" "	16				



CL 303

TECHNICAL TOPICS

BY P. R. PAYNE

TO a student of both, the state of contemporary low speed aerodynamics is closely analogous to the Newtonian epoch in physical science as a whole. Then, as now, there were a few scientific journals in which work could be published, but for the most part research workers had to rely on letters to each other as a means of getting their work known. In one respect we are better off, since the L.S.A.R.A. plays a large part in co-ordinating effort and issuing technical reports to members, but the ordinary aeromodeller has no opportunity whatsoever of gaining a balanced picture. More; he is often unable to obtain details of work which might solve what is for him an insoluble problem. In this article I shall try to give that balanced picture as it appears to one small constituent.

The number of aeromodellers engaged in serious research is rather difficult to assess, but it is probable that 50% of them come under the jurisdiction of the Low Speeds Aerodynamic Research Association.* As with most bodies of this kind there are three grades of membership: an Associate receives all reports and memoranda but does not actively participate in research, whereas an Associate Member does. Full membership is awarded on merit by the Council.

The policy of co-ordinating member's activities has given remarkable results, and owes much of its success to the Director of Research, N. K. Walker, B.Sc., and whilst only Editorial staff should praise fellow aeromodellers, it may be said that the amount of work done by the Director and the Assistant Director, R. H. Annenberg, B.Sc., is truly remarkable.

The much maligned laminar flow section is probably the most generally known result of the Association's work. Possibly we shall be able to judge fairly when all aeromodellers who use it build their wings properly, design the fuselage correctly, and put the tailplane well out of the way. At the moment we can only say it is exceptionally good if used intelligently and the section used is designed to suit the model (L.D.C.2 is no good for slabsiders), and close our ears to the people who say that having fitted a rather badly covered and *very* saggy "laminar-flow" wing on their Slicker, they have reached the conclusion that the L.S.A.R.A. is wrong.

Under R. H. Annenberg the design of sections has been developed to a very high degree, but it is believed that a considerable amount of wind tunnel and flight testing will have to be done before they can be launched out into the Aeromodelling world. The airflow over them is still the subject of much controversy, and a scientific controversy is often very confusing. More by luck than judgment the writer based his views on the work of Professor F. W. Schmitz some two years ago, and was accordingly reviled: now the pendulum seems to have swung in that direction and it is demodé to regard separation of the laminar boundary layer as inevitable. In addition, very limited flight tests have confirmed Schmitz' sub-critical measurements and it now remains to be seen whether the "critical VL number" theory can pass through the furnace unscathed.

Stability has been investigated under N. K. Walker, B.Sc., and theoretically there is now no excuse for unstable models. His work on longitudinal stability was briefly described in "Aerodynamic Design" parts 16 and 17, and his report on lateral stability (dihedral, fin area, etc.) has appeared in print elsewhere. The practical cures given for various types of instability are probably most useful for normal use, but from the theorists point of view it is most desirable to be able to design for a good flight literally from the drawing boards.

Digressing to drawing boards proper, many people seem to think that the design of a model takes ages for the confirmed theorist. The writer cannot answer for anyone but himself of course, but it takes him about 30 mins. to go through all the calculations for a sailplane, and if the wing is constant chord, another five to plot the wing section, stick it on ply-wood, and apply the fret saw. He is then in possession of an accurately finished rib template—two if the fuselage is of the flying axe variety—a rough sketch on squared paper, and about fifteen dimensions. And unless the structure is particularly complex, he then builds his model. The writer estimates that theory enables building time to be reduced by about 15% when compared with the exercises of the confirmed drawing board addict. Compared with anti-theory, anti-drawing board types, he looses 30 mins. of course .....

The maxim that parallel chord wings are probably the best seems to have converted most of those energetic people who adhered to full size practice in the past: it seems a pity that more of the theoretical gospel cannot be preached so easily, for the thought of a little extra care being needed discourages many people. The reasons why we have not advanced far beyond other nations in our hobby can probably be tabulated thus:

(*a*) Very strong conservatism.

(*b*) Strong objection to new ideas when they entail extra work.

(*c*) Systematic misinterpretation and wilful distortion.

Sections (*a*) and (*b*) are clear enough, and most readers will agree that although the remarks do not apply to them, the great mass of modellers stop short just after slots and canards. Thus our "experimental" competitions see nothing but a host of depressingly orthodox canards and tailless machines, with an occasional glider-tug to liven things up.

Section (*c*) is less obvious and needs illustrating. A small number of the writer's airscrews are occasionally made commercially available, and he was congratulated on the Aeromodeller E.D. Comp. Special design the other day: apparently it is excellent for control-line work when used with the E.D. Mk. III. This called forth a strong protest from a bystander, who averred that Payne props were useless: gentle persuasion elicited the fact that the Frog 100 airscrew was useless on the Mills Mk. II.

L.S.A.R.A. development of wind tunnel technique is scarcely headline news, but its importance in the future cannot be over rated: modellers all over the country are investigating everything from the comparative strengths of commercial cements to the effect of spinner weight on engine performance, but as much of this work cannot be mentioned at the time of writing the "balanced picture" must remain somewhat distorted. The writer will rest happy if he has shown that much is going on under the surface—very much more than most people realise, and is quite aware of the fact that he has stuck his neck out in an effort to give an honest criticism of the practical modeller's attitude to "theorists" *Beware of Imitations.*

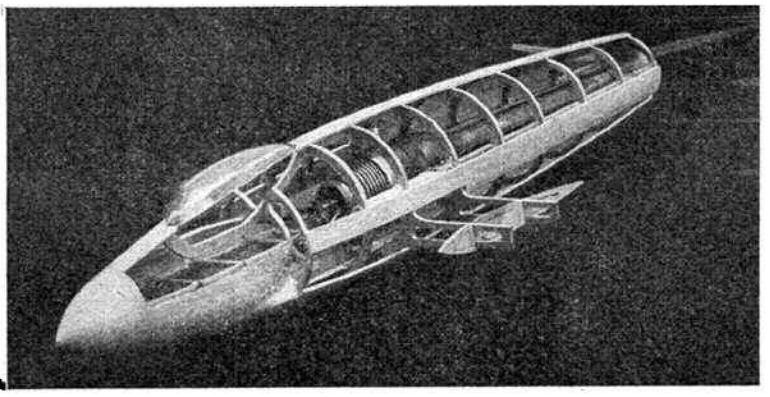
A few copies of the "Engine Analysis" airscrew designs are from time to time made available by the expert who carves them—not from the AEROMODELLER offices—but unless an airscrew is certified as being designed by the writer it has no connection with him. At the time of writing an advert. for Payne-type E.D. Mk. III props has appeared, although no such design exists. It is only fair to say that any inaccuracy in manufacturing the special blade section will materially affect the performance. In addition, methods of calculating the blade angle have been described elsewhere, but were incomplete when the design referred to above appeared, and since full details of the early design methods have yet to be revealed the writer can take no responsibility for any "designs" which may come on the market. It has been emphasised here and elsewhere before that whereas a properly designed and carved N. H. P. airscrew is the proverbial cat's whiskers, small errors have an unfortunate habit of halving the efficiency.

* *The address of the Association is:-Parkhill, Salisbury Rd., Farnborough, Hants.*

CONTROL LINE COMMENTARY

BY G · JONES

H · H · J · WATKINS



A Dynajet powered scale Attacker under construction by G. Jones.

WITH the advance of control-line ability, serious aeromodellers will be turning their thoughts to more ambitious control-line projects. Although some will be happy to sink into a rut and build an endless succession of sports-liners that merely go around and around, there will be a great number—we hope the majority—who will wish to build worth while control-line models.

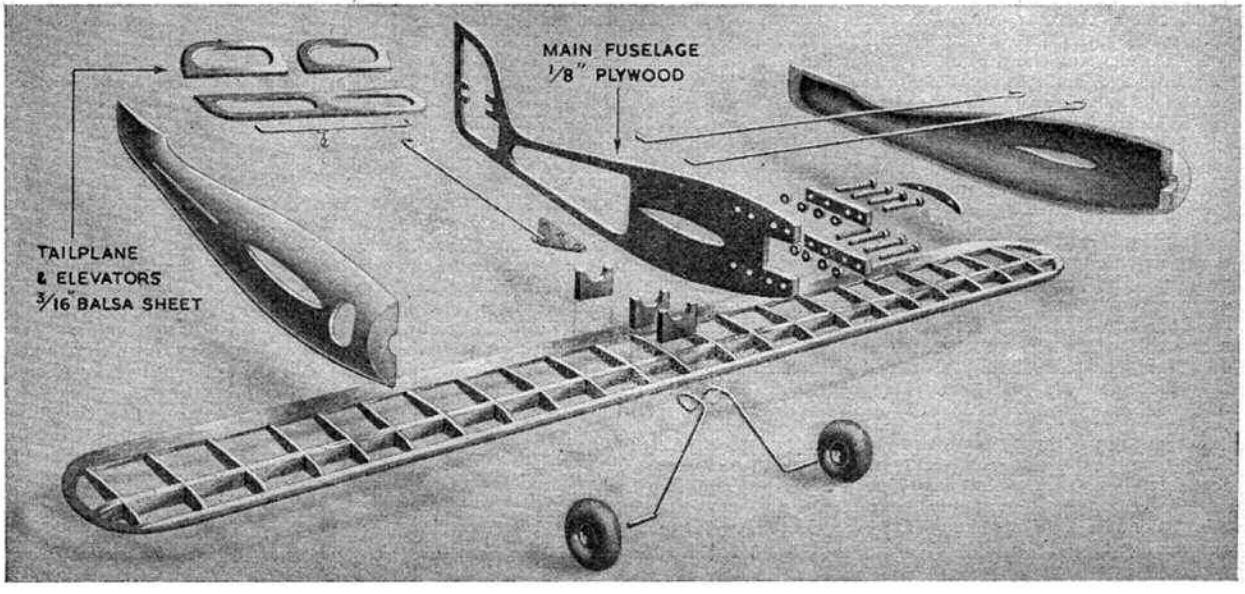
Endless possibilities present themselves in this branch of our hobby, especially for the man who desires to build working scale models that really are 100% accurate. Although sheer speed has a strong attraction to a great many, we feel that other aspects of our pet aversion will gain the ascendency they deserve. One can really engineer a model now—one does not necessarily have to make continual sacrifices of strength on the altar of lightness, or consider whether the extra fraction of an oz. entailed in an extra coat of dope is worth while, as only in the construction of super stunt models can we substantiate lack of looks, and the throwing overboard of those little extras that beautify a shapely ship. Here is the chance for the Model Aeronautical ENGINEER to shine, because one has to contend with a different set of circumstances—gone is most of the luck attending other branches of our hobby, and sheer ability at modelling and flying take up a far greater proportion of the formula governing Contest Winning expectancy. True Lady Luck is always present, and the unwary can still get a backhander from her, especially if one does not make an engineering job of the model.

This is written with a view to assisting those modellers who have advanced beyond the stage reached by the average kit job, and have some special purpose for building a certain kite—most of us have a soft spot for some special aircraft type—and what could be more natural than to want to model it? Some aircraft lend themselves to freeflight scale flying, but *everything* can be successfully control-line flown—even the Mew Gull, Beaufighter, and D.H. Comet, Dragon Rapide to mention but a very few. Jet jobs too come within our scope and photo shows Mr. Jones' 1 in. scale Attacker taking shape. Power is supplied by a Red Head Dynajet tucked away inside its shapely hull. We anticipate a speed of around 130 m.p.h. with this model, and on 70 ft. lines, provided the model comes out at its estimated weight of 3½ lbs., a pull of nearly 70 lb. will be encountered. The control plate will need to be securely mounted and really good wire used. Model is 37 in. span.

On the really advanced construction side of it, one can forget most of the razor-blade carpentry used when one built the Achilles or Cruiser Pup, or even the Flying Minutes, Fairy Facula, etc., all one needed for these admirable efforts was a razor blade, pair of pliers and the building board . . . but to be successful at engineering a control-liner you have to reach for that soldering iron, get a fret-saw and some ply, not to mention alum sheet, brass, etc. Inconel and stainless steel are outside the scope of most lads, but can be used to good effect on Jet jobs. Of course these items are needed for *advanced* work, but you can still jog along with razor blade carpentry on the less ambitious types.

Because one *can* launch out into model engineering practice control-lining is bringing many folk into this sphere who previously scorned aeromodelling and with fresh brains in the hobby, we can expect wider development.

Our claim that EVERYTHING is modelable with control-



line is rather sweeping, but we can substantiate this statement. Gypsy motored types and Radials usually speaking do not offer much difficulty, but what about the Fairy " Eversharp " nose and other Merlin layouts ? True, one can have a dirty great " pot " sticking up through the cowling, but the true-scale modellist will not want to impair the otherwise clean lines of his dream ship. So we must harken to Mr. Rupert Moore and gadgetate—in our Fairy Fantome (Pacemaker 10 c.c. Motor) for instance we have devised an extension shaft so that the motor can lie amidships. We can make use of this layout in another way—the mass weight is bang on the C.G. and so much more manœuvrability will result. This is just what the Doc, ordered for stunt work.

Diagram below shows how we overcome the choking of motors in fully cowled installations. The Mills especially, lends itself to this method. If you have a Mk. 2 Mills and do not wish to cut the trumpet air-intake off, you can purchase a Mk. 1 type choketube from your local modelshop. Talking of Mills, one can easily fit a blip-switch connect a " third line " with the cut-out, preferably through bell-crank, so that by giving the line a series of tugs, the motor is partially " cut-out " and allowed its head in rapid succession. Some folk find difficulty in fitting plastic tubing and here are a few tips that should solve your problems and ensure that the tubing fits really well.

If the pipe is rather larger than the bore of the plastic tube, it may be found easier to " bell " the plastic tubing by warming near a fire, match or other form of heat until " workable " and then pushing a pencil-point into the tube. Repeat until desired amount of " belling " has been attained. The tubing is apt to " bubble " if too much heat is applied, therefore we find it far better to warm the metal piping and force the tube on to it . . . you can use more force using this method. The uses of plastic tubing are endless and ideal where one is apt to get a lot of diesel fuel. For instance, we used rubber tubing for cockpit coamings—it looked very realistic on rubber models before the war, and so we fitted it to the S.E.5a—but handling the model with oily fingers we found it did not last long, so the Sopwith Tripe was fitted with plastic tubing and we get no trouble whatsoever.

From a strictly performance point of view, it would seem that one has to lose a bit of flyability in order to preserve a perfect scale outline, although not as much as with free-flight scale. In our present state of development we recommend something like the " Jinker " (exploded drawing shown opposite) which is ideal for stunt training. This model has actually been looped on 15 ft. lines. This design will be just as horrific to the " classic-minds " as is the Pylon free-flighter, but like the Pylon and similar " outrages " its design can be substantiated, and so has to be tolerated. The missing link is now being sought out and we feel that we *can* build super-stunters that are also super-perfect scale types. First thing to realise is that one requires more power to offset the extra drag and weight imparted by the frills and flounces of the scale model. A balance must be struck and we are striving hard to this end even now.

We think it is about time that a ruling was made about scale, semi-scale and reputed semi-scale models. We feel that a scale model should be perfectly scale, but would it be fair to call a model " semi-scale " just because one gets about ¼ in. of cylinder poking out from a neat cowling? Whilst we feel that a few items are allowable, a greatly extended undercart which detracts from the scale appearance should rule a model as semi-scale. Only a percentage of forward rake on an undercarriage should be allowable, if a model is to retain a scale certificate. We feel that if a full sized prototype is taken as a basis of design but that extreme latitude taken in designing a model from it, then it should bear the name " semi-scale ". For the man who prefers to build a model that is conceived from his own mind, but could be built as a man-carrying aircraft, we feel some better name than " semi-scale " should be coined. Furthermore a cabin or cockpit " let into " an otherwise gormless contraption should not enable it to enjoy the label " semi-scale."

Here are our findings from experiments conducted to date in our efforts to strike a balance between power-loading, line length and wing loading, in relation to manœuvrability.

Model " A ". 1 in. scale S.E.5a. Weight 17½ ozs. Wing section, lifting, flat under surface. Power Mills Mk 1. Prop. 9 by 5 ins. Hydulignum.

Model " B ". 1 in. scale S.E.5a. Weight 19½ ozs. Symmetrical section. Power same motor and prop. as Model " A ".

Model " C ". 30 in. span Jinker. Area 100 sq. ins. Motor Mills Mk 2. Prop. 9 by 4 ins. Tekniflo. 9½ ozs.

Model " D ". Same Jinker with wings trimmed to 24 ins. Weight 9½ ozs. otherwise same as " C ".

Model " A " was very lively and a treat to fly on up to 25 ft. lines. Capable of over the vertical wing-overs with an experienced flier. On longer lines however, she was inclined to wander in the slightest breeze and apt to slide in on the lines in vertical wing-overs.

Model " B " was really the same model with different wings. On 25 ft. lines was just like a brick and would not rise above shoulder level. On 45 ft. lines she was beautiful to handle, and vertical wing-overs were obtainable with practice—one had to fly them all the way however and if one merely put the elevators up, she would mush and fly around very slowly in a stall. On 60 ft. lines a similar result to Model " A " on 45 ft. lines resulted.

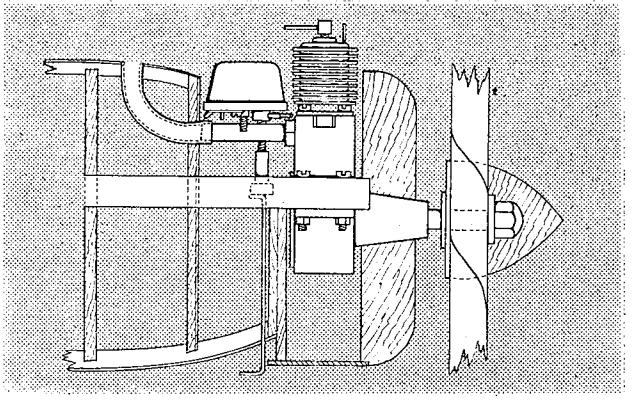
Model " C " on its second flight on 15 ft. lines did a vertical wing-over straight from take-off, made one loop and every circuit apart from the loop was an over the vertical wing-over. Mr. Jones, the pilot, resembled a dancing dervish in his futile efforts to keep the lines uncrossed.

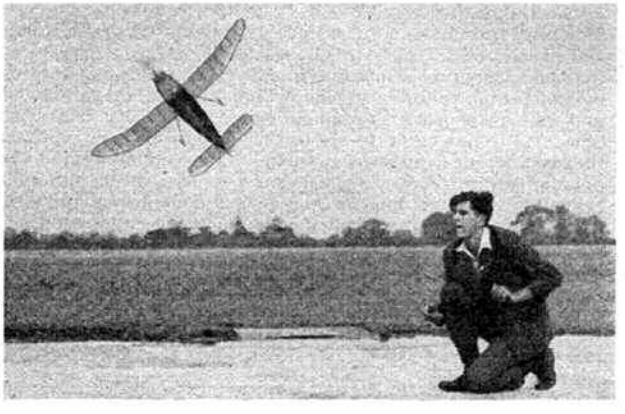
Model " D " shows every ability to vertical wing-over on 15 ft. lines, but looping is rather out of it as with the higher-power and wing-loading the model is faster and takes more " altitude " to recover from a loop. Model " C " showed it could keep looping as four consecutive loops on 15 ft. lines were attempted and achieved with what looked like apparent ease.

With the experiments on our original S.E.5a we followed the logical development and built a 1/10th scale, fitted with the first Jagra-dyne 3 c.c. Diesel. Weighing 27 ozs. she had a very nice take-off on 60 ft. lines and the flying speed was around 25-30 m.p.h. so that it was almost impossible to even approach giddiness whilst flying her—in fact the very opposite to Model " D ". On this 1/10th S.E.5a the writers have spent their happiest flying moments, and we have tried everything from spruce and silk spar models to rocket jobs.

The Jinker then was a means to an end, and is an ideal type for stunt training—but use lines around 40 ft. as she is fast and lively.

In conclusion we would like to state that we do not for one moment think that control-line will oust free-flight, in fact, it may not even prove as popular once the novelty has worn off—BUT it has come to stay. There is a thrill encountered that is different from other branches of aeromodelling and the possibilities are endless. You can pursue a dozen different branches of control-line to their logical conclusions and still have as many more awaiting development, or exploration. If the folk who take a savage delight in howling down the other bloke's achievements, and trying to show that their way is by far the best, will stop their niggling, and agree to disagree, whilst pursuing their own choice—there's plenty of room for everyone—a much happier state of affairs will come into being.





THIRD INTERNATIONAL WEEK AT EATON BRAY

CONTINUED · BY D. J. LAIDLAW DICKSON

WHEN flying commenced for the Experimental sections of the International meeting at Eaton Bray positions for the Aeromodeller Championship Trophy gave every sign of a close finish. Leading the field with 38 points was Luchetta of Switzerland, but, as he was not competing in either the Experimental or Rubber events, the lead was virtually in the hands of Fillon with 34 points, followed by Muller with 29, and then Messrs. Minney, Houghton, Poile, Schaffner and Datz with 20 each.

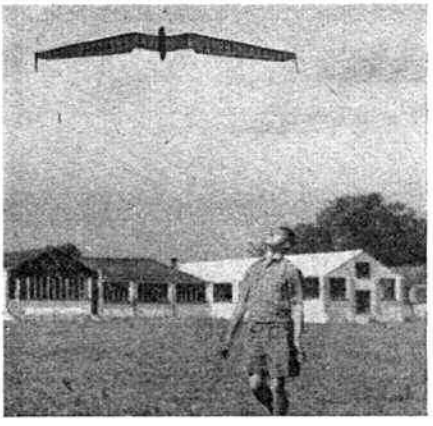
The Experimental contest commenced with some very interesting Dutch entries. Notable were Luxemburg and Vriend with tailless gliders which put up performances worthy of orthodox models and Van der Caaji with a tandem glider that he played on the towline like an aerial fish. The well deserved winner came from Belgium in the shape of Lamot with a large Canard glider which scored maximum flight points. This model, incidentally, he had been regularly flying out of sight time after time during the week. In the aerobatics section, Morriset repeated his victory of last year with an example of glider towing when both models flew out of sight after their separation. Fillon tried a " pick-a-back " glider release but failed to have his usual polished flight. In the unorthodox section Minney was a lucky winner with his Jetex powered model which " flew over ".

Owing to work-day obligation, perhaps, support for the control line section was not large, but Houghton of Luton put up what is claimed to be the new record in Class III with 91 miles per hour flying an American all metal " Invader " kit powered with a " glow-plug " Sportsman McCoy. Labarde of France was second with 85 miles per hour in this class, his engine purring so sweetly that it was difficult to believe it had really put up the speed. In Class IV young Laniot, fresh from his victory as French Junior Champion gave a splendid exhibition of speed flying with a 10 c.c. Micron powered model clocking 102 miles per hour.

Sunday was reserved for the two rubber powered events and as has so often been the case this summer high wind mingled with showers made flying anything but a sinecure. In the F.A.I. section Van der Schenk was the only entrant to exceed a flight of two minutes and this notable effort of 185 seconds would have been enough to win for him even without his modest 65 seconds second flight. In many cases models were flying out of sight in less than a minute, and, in the case of all but the most expert launchers, were being dashed to the ground in an astonishingly short space of time. The Wakefield event suffered from similar conditions and casualties were high. Here only four flights exceeded 100 seconds being 127 and 110 from Eric Smith of Leighton Buzzard, who proved the winner flying a Jaguar, Van der Schenk, who seemed to have mastered the conditions very well, with 114 seconds, and a single flight from R. H. Warring of 110 seconds which resulted in the loss of his model and his chance of victory. Robyn of Belgium managed two quite moderate flights for second place.

Deteriorating weather conditions led to an indoor presentation of the AEROMODELLER Trophy to E. Fillon so that for the second year in succession the championship has gone to a French visitor. Thus another Eaton Bray International meeting has come to an end with, we hope, new friendships formed and new contacts made. While the rewards go to the victors it is not out of place to congratulate the many entrants who occupied quite lowly positions in the final results that gave little indication of their very sporting efforts under conditions which may have been strange to them.

Photos from top to bottom: Fillon complete with what appears to be a French "Jaguar"; Ferber looks worried as he piles on the turns; Minney of Luton with his Wakefield away nicely; Vriend of Holland holding an interesting Swiss Wakefield built by Paul Spalinger.



Aeromodeller Photos:

Top left, shows W. Poile launching his well-finished flying wing, whilst right are various continental flyers with a selection of wings and canards. They are left to right, Vriend, Lamot, v. d. Caaji and Luxemburg

EATON BRAY THIRD INTERNATIONAL WEEK
"AEROMODELLER" TROPHY RESULTS

1. Fillon	France	63	7. Van Schenk	Holland	35
2. Minney	G.B.	52	8. Houghton	G.B.	30
3. Muller	France	51	9. Robyn	Belgium	28
4. Tournadre	France	48	10. Poile	G.B.	27
5. Luchetta	Switz'land	38	Labarde	France	27
Jossien	France	38			

Experimental Contest, 7th August, 1948

A. Jet, Rocket and other unorthodox power units.

1. R. Minney	G.B.	31

B. Acrobatics, glider towing, etc.

1. J. Morisset	France	65
2. Fillon	France	62
3. R. Minney	G.B.	37

C. Tailless, Tandem Canard and Ornithopters

1. A. Lamot	Belgium	82
2. W. Poile	G.B.	81
3. W. Luxemburg	Holland	80

D. Control Line Models,

Class 3.

1. C. Houghton	G.B.	91 m.p.h.
2. Labarde	France	85 m.p.h.

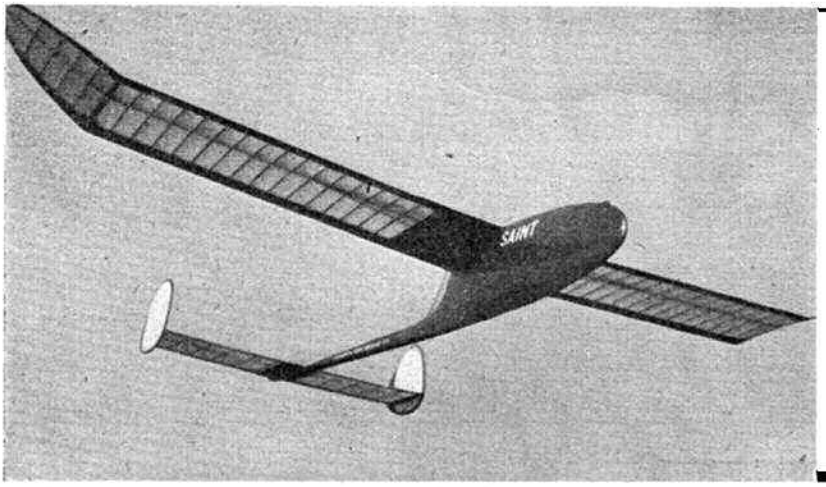
Class 4.

1. Laniot	France	102 m.p.h.
2. Fillon	France	81 m.p.h.

Wakefield Contest, 8th August, 1948.

1. E. Smith	G.B.	127	110	237
2. Robyn	Belgium	93	73	166
3. Van Schenk	Holland	114·25	40	154·25
4. Tournadre	France	79·5	72	151·5
F.A.I. Rubber.				
1. Van Schenk	Holland	185	65	250
2. R. Macpherson	G.B.	98	68·2	166·2
3. Tournadre	France	72	72·75	144·75
4. F. J. Evans	G.B.	81	50	131

Above, France's Junior Control Line Speed Champion Laniot receiving assistance from M. Maraget. Below, left, an assistant releases M. Labarde's speed model and right M. Jossien launching his helicopter in the experimental contest



SAINT

A 51 ins. SPAN HIGH-EFFICIENCY "SUITCASE" TYPE SAILPLANE

BY M. J. RICHARDS

This model is undoubtedly a good looker as the accompanying photographs demonstrate. The lower picture shows the designer with his original.

THE model was designed to satisfy the 1948 F.A.I. Regulations and gives a very pleasing performance. The original was lost from an eighty-foot line during a demonstration to the Forestry Commissioners. Although it was chased for eight miles, it eventually disappeared into some cloud after thirty minutes. The moral is—always set your dethermaliser. A second version was lost on its first outing, in the process, setting up a new club record of nineteen minutes, fifty-two seconds. This time, a defective fuse must have gone out—another (expensive) lesson learned. In still air the "Saint" will turn in consistent flights of from two and a half to three minutes from a three-hundred-foot line.

Wings. The $\frac{1}{16}$ inch ribs are first glued to leading and trailing edges only, the mainspar being threaded through the slots afterwards. Next the 1/4 by 1/16 inch subsidiary spars can be threaded into place and the tongue glued in last of all, after the main framework of both wings has been completed. If the tongues are set in both wings at the same time it will be easy to ensure the same dihedral on both wings. The 1/8 slot in the tongue allows it to be tilted relative to the spar without weakening this member.

With the dihedral on the main panels incorporated in this way, it enables the box to be built in one piece which greatly adds to the strength.

Owing to the comparatively large size of the leading and trailing edges, care will have to be taken to ensure the correct section when sanding them to shape.

Fuselage. The boom is first built and forms the backbone on which the pod is assembled.

The two longitudinal members of the boom are from hard balsa as are the forward spacers, but softer wood is used for these towards the tail end for the sake of lightness.

When the framework has been completed, the two 18 s.w.g. hooks may be bound in place and finally the 3/32 soft sheet glued to both sides. The sheeting should be done on both sides straight after one another and then weighed down along its whole length for a period of at least twelve hours. In this way a perfectly straight boom can be made.

This being finished, the seven formers and top keel may be glued in position and the wing box cemented between F5 and F6. When this junction has been suitably reinforced with gussets the rest of the centre section may be added, finishing with the sheet covering of same.

After all internal details have been finished, the pod may be planked with strips of 3/32 balsa. These are bent sharply at the rear end and faired smoothly into the boom.

Tail Unit. The tailplane is of conventional structure and presents no difficulties, but here again nothing should be spared to ensure lightness.

The fins are wound from 1/32 sheet, reinforced on the bottom to prevent wear. The interior bracing is from very soft stock.

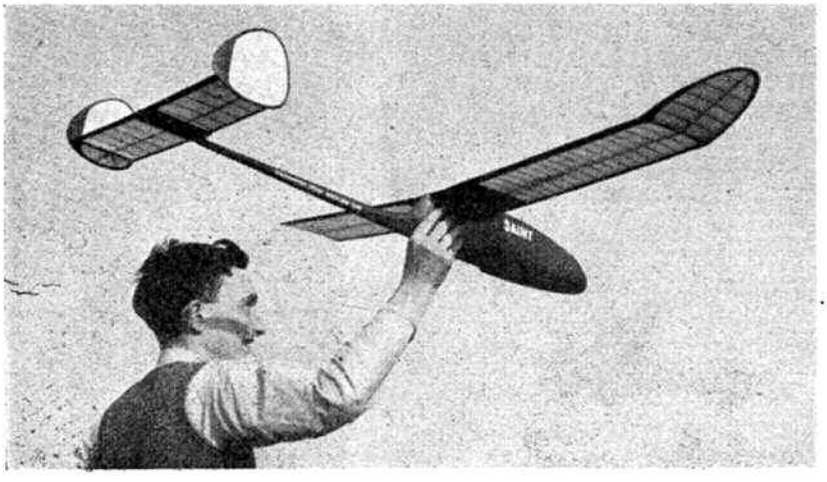
Covering and finish. The wings are covered in good quality English tissue (not rag) and given one coat of dope and two of banana-oil.

Japanese tissue was used on the tail-unit and one coat of banana-oil is sufficient treatment.

The boom is given two coats of banana-oil and no colouring.

When a satisfactory contour has been achieved on the pod, it is given three coats of grain filler with careful sanding between each. Finally three coats of coloured dope may be applied—sprayed if possible—ending in a suitable curve at the junction of pod and boom.

The sheeted portions of the wing are also given three coats of coloured dope.



Flying. In flying trim the model should balance at 40% of the chord from the leading edge. Little of importance can be learned about the trim from a hand launch and tow-line flights should be commenced as soon as possible. Starting with the model slightly nose heavy, ballast should be taken out until there is a perceptible stall present, whereupon a little ballast may be replaced. In this way the most efficient trim can easily be found. If the model is accurately built, no alterations in settings should be necessary.

A 51" WING SPAN HIGH EFFICIENCY MODEL

SAINT.

DESIGNED BY

M.J. RICHARDS.

3/-

THE AEROMODELLER PLANS SERVICE

THE AERODROME, STANBRIDGE, BEDS.

WING SPAN	51 INCHES
AIRFOIL SECTION	DAVIS A=93 B=17
WING INCIDENCE	+ 4½°
WING AREA	291 SQ INCHES
WING ASPECT RATIO	8·94
LENGTH	34½ INCHES
MAX CROSS SECTION	6 SQ INCHES.
TAILPLANE AREA	71 SQ INCHES
TAILPLANE INCIDENCE	+ 1°
TOTAL WEIGHT	11 OUNCES.
WING LOADING	4·35 OZS PER SQ FT.

MATERIALS REQUIRED.

1	STRIP	½" x ½" x 36"	MEDIUM BALSA	1	SHEET 1/16" x 3" x 36"
1	"	½" x ½" x 36"	SOFT	1	" 1/16" x 3" x 36"
1	"	⅜" x ⅜" x 36"	HARD	2	SHEETS 1/32" x 3" x 36"
1	"	⅜" x ⅜" x 36"	SOFT	3	" 1/32" x 3" x 36"
2	STRIPS	⅛" x 3/16" x 36"	MEDIUM	1	BLOCK 3¼" x ¾" x ½"
5	"	¼" x 3/16" x 36"	HARD	1	SHEET 12" x 12" x 1 MM PLY
1	STRIP	¼" x 3/16" x 36"	SOFT	1	LENGTH 4" — 18 SWG PIANO
1	"	⅛" x 3/16" x 36"	MEDIUM	1	SMALL PIECE 30 SWG ALUM. SHEET.
1	"	½" x 1/16" x 18"	SOFT	1	TUBE PLASTIC WOOD.
1	"	⅛" x 1/16" x 36"	SOFT		

ALL WOODS UNLESS OTHERWISE STATED ARE BALSA

TAIL PLANE PLATFORM

HARD 1/16" SHEET.

NOTE DIRECTION OF GRAIN.

C/S LE CARVED TO AIR FOIL AFTER PLANKING

C/S FAIRED INTO POD WITH PLASTIC WOOD AFTER COMPLETION OF PLANKING

POSITION OF C/S RIBS SHOWN DOTTED

1mm PLY

1/32" HARD SHEET

HOLE FOR 'PLUG'

1/32" SHEET GUSSET

BALLAST BOX

¼" x ¼" HARD

HARDWOOD NOSE BLOCK

F1. F2. F3. F4. F5. F6. F7.

1/32" SHEET GUSSETS

END VIEW OF 1/32" SHEET GUSSETS.

PLANKING BENT ROUND F7 & GLUED TO OUTLINE OF 1/32 SHT.

1/32" SHEET.

W1. 1MM PLY. 4 OFF

W2. HARD 1/16" SHEET. 4 OFF

4 OFF

W3. W4. W5. HARD 1/16" SHEET 2 OFF

2 OFF

POSITION OF SLOT IN W4. SHOWN DOTTED

NOTE. POSITION OF SLOTS FOR ¼" x 1/16" SUBSIDIARY SPARS TO BE TAKEN DIRECTLY OFF PLAN OF WINGS ON TO RIBS WHEN CUT OUT.

W6. SOFT 1/16" SHEET 34 OFF

W7. 1/16" SOFT SHEET 2 OFF

W8. 1/16" SOFT SHEET 2 OFF

W9. 2 OFF. 1/16" SHEET SOFT BALSA.

W10. 2 OFF. 1/16" SHEET SOFT BALSA.

BAMBOO PEG FOR TAIL PLANE RETAINING BAND.

SOFT BALSA PACKING

SOFT BALSA FILLING

BOOM SANDED TO STREAMLINE SECTION AFTER COMPLETION OF PLANKING

1/16 x 1/16 HARD

FORWARD OF HERE SPACERS FROM ¼" x 1/16" HARD REMAINDER FROM ¼" x 1/16" MEDIUM OR SOFT

POD PLANKED WITH 1/32" MEDIUM SHEET & FAIRED INTO BOOM

BINDING

PLASTIC FILLING

HOOKS 18 SWG

SKID FROM 1/16" SHEET HARDWOOD

WHOLE LENGTH OF BOOM COVERED WITH SOFT 1/32" SHEET

ALUM. HINGES

RUDDERS 1/16" SHEET

FORMERS. 1 OFF EACH 1/32" MEDIUM SHEET.

POSITION OF LE

POSITION OF BOX

POSITION OF 1/32" SHEET POD END SHAPE

F1. F2. F3. F4. F5. F6. F7.

⅛" x 5/16" SOFT STRIP

⅛" x ½" SOFT

TAIL PLANE POSITION.

1MM PLY LET IN TO PREVENT WEAR

FINOUTLINE 3 LAMINATIONS 1/32" SHEET

¼" x 1/16" SOFT BALSA GLUED ALONG BOTTOM OF RIB MAINSPAR NOTCHED TO RECEIVE IT.

¼" x ⅜" MEDIUM

BAMBOO LOCATING PEG ¼" LONG

LOCATING PEG

5/16" x 1/16" MEDIUM.

GUSSETS SOFT 1/16" SHEET

½" x ⅜" MEDIUM

TAIL PLANE RIBS 13 OFF. SOFT 1/16" SHEET (RIBS NOTCHED ¼" & MAINSPAR 1/16")

NOTE ORDER OF CENTRE SECTION ASSEMBLY.

1. GLUE FORMERS 1-7 & UPPER OUTLINE IN POSITION.
2. GLUE BOX BETWEEN F5 & F6
3. GLUE L.E. & T.E. TO RESPECTIVE FORMERS.
4. ADD 4 W2'S & 2 W1'S
5. REINFORCE JUNCTION OF BOX & FORMERS WITH GUSSETS & FINALLY COVER TOP & BOTTOM WITH 1/32" SHEET.

⅜" SHEET GUSSETS

W1.

1MM PLY DIHEDRAL KEEPERS

TIPS FROM 10 LAMINATIONS OF 1/32" SHEET

TIP MAIN SPAR TAPERS FROM ⅜" x ⅜" TO ⅛" x ⅜"

MAIN SPAR ⅜" x ⅜" HARD

¼" x 1/16" SPARS (HARD)

W2. W2. W2. W2.

W3. W4. W5. W6. W7. W8. W9. W10.

NOTE ALL WOODS USED IN CONSTRUCTION OF WING TIPS FROM SOFT STOCK

3/16" SHEET GUSSETS

3/16" SHEET FAIRINGS

TOP & BOTTOM OF BOX FROM 1mm PLY BACKED WITH HARD 1/16" SHEET

SIDES OF BOX FROM ⅛" x 3/32" HARDWOOD

BOX BOUND WITH COTTON & GLUED

NOTE FROM W3 TO W5 WINGS ARE COVERED TOP & BOTTOM WITH 1/32" SHEET.

½ DIHEDRAL HERE.

T.E. ⅜" x 1/16" MEDIUM.

L.E. ½" SQ MEDIUM

TONGUE BUTTED TO W5

W1. W3. W4. W5. W6.

W7. W8. W9. W10.

TONGUE FROM 3 LAMINATIONS OF 1MM PLY NOTCHED TO RECEIVE MAIN SPAR.

(TILTED TO GIVE 3½ DIHEDRAL WHERE SHOWN)

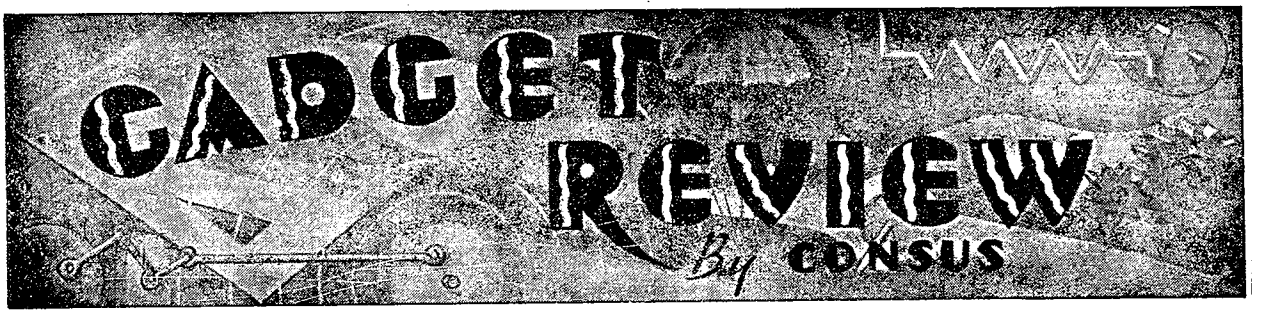
3/16" SHEET GUSSETS

⅛" SHEET GUSSETS

3½ TOTAL DIHEDRAL AT TIP.

Q.303

FULL SIZE DRAWINGS OF THIS ¼ SCALE REPRODUCTION ARE AVAILABLE PRICE 3/- POST FREE, FROM THE AEROMODELLER PLANS SERVICE.



CONSUS, going back to his long vests again after the Summer (which occurred on one day just before International Week) notes that his stock of gadgets is dwindling fast. Now before a certain section writes in irately and demands that if that's the case why the ——— did he, the old ———, reject that absolutely cracking idea they thought out in bed the other night, and which anybody except that ——— could have seen would work perfectly if they took the trouble to try it ?

The answer is that that cracking idea seemed less cracking under unbiased inspection. Someone said to Consus the other day, " Oh, yes—gadgets ! . . . Mechanical devices that perform an operation in twice the time and with three times the trouble of ordinary methods—but *much* more cleverly ! " That is the reason why Consus is finding less material for the feature—plenty comes in but plenty has to go back. A gadget must be an improvement on an existing device to be of use—not just another (however clever) way of doing a simple operation. Don't let ourselves fall into the trap of intricacy for its own sake. Away then, gadgeteers, make sure it's useful before you send it—and please try it out first. That alone will save you and us a lot of tuppence ha'pennies.

In case you are wondering about the peculiar looking object in Fig. 1, it is neither a freak banana nor a graduated sausage. No, no. It is L. TRIDE'S brainwave for preventing those half hour motor-runs and the blushes of those spectators who are accustomed to less colourful descriptions of air-draulic timers. All one needs is a suitable sized piece of celluloid tubing—a fishing float is usually ideal. Fill it with salt or fine sand, cement up the ends and bend a right-angle two inches from its larger end by placing in hot water. Then empty the tube and strip the carburettor down to the jet only, as shown, swinging it to the horizontal position. Cement a small piece of tubing over the cut-out holes on the jet, and leave to set thoroughly. Cut the bent tube to be a tight fit over the latter, slope the tube forward at about 80° and bore a $\frac{1}{8}$-in. hole in the top facing forward. All that now remains is to graduate the tank for various engine runs.

Bring your parasol—it may be small, it may be big—he will fix them all with what he calls a soldering jig ! . . . And although it's really the umbrella man's turn in the next item, the words, even if parodied a little, aptly fit W. S. COWAN'S simple gadget in Fig. 2. This enables you to solder a wire parasol wing mount with accuracy—a very difficult business when one tries to hold the bits in the hand or a vice. Just obtain a piece of wood 6 ins. square and $\frac{1}{4}$ in. thick, or thereabouts, cut two 3/32 in. deep grooves in it directly at right-angles, drill a central $\frac{1}{8}$ in. hole at the junction, for clearance of the iron—and there you are.

Any um-ber-rellas ? If you have one, Consus will now tell you what you can do with it—though not quite in the way he might like to . . . Here is the use they are put to by G. WOOLLS of Bristol, who found cantilever bamboo undercarriage legs gave him trouble on landings. Streamlined, they weren't strong—and strong, they were too thick and heavy. So he hit upon the idea of despoiling an old umbrella and using the channel section steel ribs. A piece of bamboo is bound and glued to the top to plug into the fuselage, and a 16 s.w.g. stub axle is soldered to the bottom for the wheel. This makes a very strong leg with no more resistance than wire but stiffer and stronger.

Now for a contribution to delight the heart of the true gadgeteer. Here is an original contra-prop unit, designed by D. THORPE of Ventnor, for rubber-driven speed models. The original has completed several hours of running driving two 9 in. diameter two-bladed props with 12 ins. of 3/16 in. by 1/30 in. black rubber to each motor. Consus had hoped to make Fliar Phil a confederate in this issue and to have a photograph of the machine to which this device was fitted appearing in " Model News," but unfortunately this feature is held over for a month owing to the illness of the Chief Hasher himself. He is now recovering however and says no one will keep him out of the November issue ! So Gadget Review addicts can look forward to seeing a photograph of Mr. Thorpe's model in that issue. A later version of this contra-prop device is now fitted with gears of equal size and this has improved the performance. Full constructional details are not given here because obviously the mechanism would have to be altered to suit individual requirements.

For rubber duration enthusiasts comes the folding prop, illustrated in Fig. 5, designed by W. OLDFIELD of Manchester. The principle is simple, the counter weight and wire being directly connected to the folding blade so that when the blade folds the weight moves forward, thus compensating the backwards C.G. shift.

Another idea from Mr. Oldfield is a method of utilizing the advantages of twin tow-hooks without losing the steep climb of a single hook. The tow-line is attached to the main single hook in the usual way, and a V-line extension is fitted on to the tow-line a short way below the ring. The arms of the V end in wire clips which are clipped onto the trailing edge of the main wing, one each side of the fuselage. To steepen the climb the clips are moved nearer the tips, and vice versa.

If you are a lover of the more massive form of petrol model and, like G. WAY of Prescot, have trouble with the shock-absorbing qualities of the normal type, you will undoubtedly be interested in his solution to the problem shown in Fig. 6. The cantilever undercarriage legs run in brass tubes, the angle of which can be altered to suit a particular aircraft. The tubes are embedded in the wooden undercarriage block, which is strongly glued to a suitable former and to the longerons. A wire ring is fixed at the apex of the shallow V cut in the top of the block and a small screw is inserted at each side, as close to the covering of the model as is practicable. Strong rubber bands are now connected between the screws and the wire ring, passing through the loops in which the undercarriage legs end. Any landing shock is now transmitted directly upwards and absorbed by the movement of the undercarriage leg against the rubber bands.

All semi-scale and scale rubberdubs will know the predilection for being wiped off that most wing mounted undercarriages on low wing models seem to possess. To overcome this, E. KASPEROWICZ of Lincoln uses the hinged shock-absorbing system shown in Fig. 7. The leg is built up and hinged as shown in the diagram ; the springing is by means of rubber bands which hook over the peg fitted in the wing and the notched end of the swivelling leg. The system allows the use of spats without the fear that they will catch on take-off or landing and thus tear out the undercarriage legs.

That concludes your quota for October—Consus now departs to his devil's kitchen to see what colourful concoctions he can cook up for Christmas (crikey !).

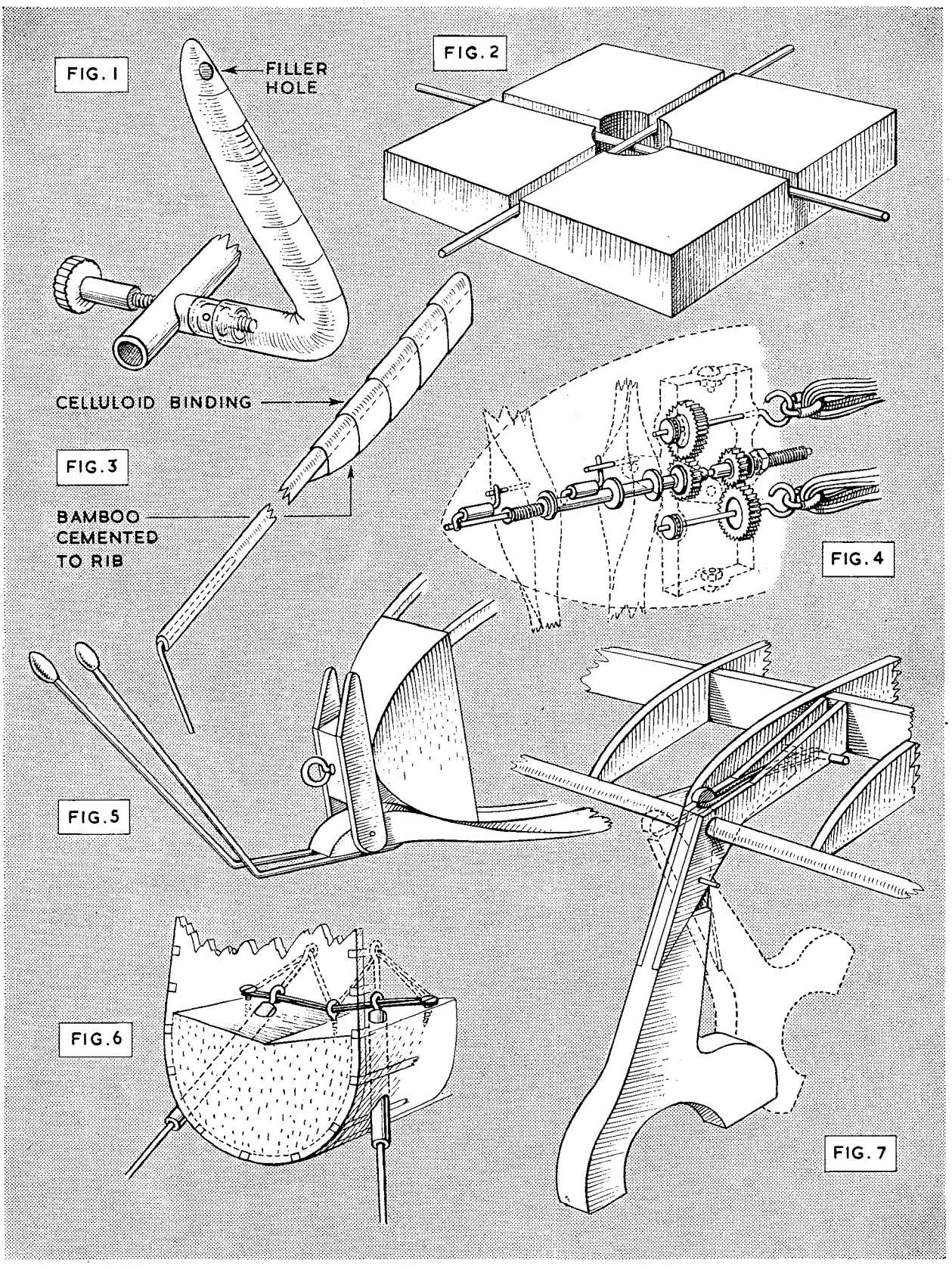
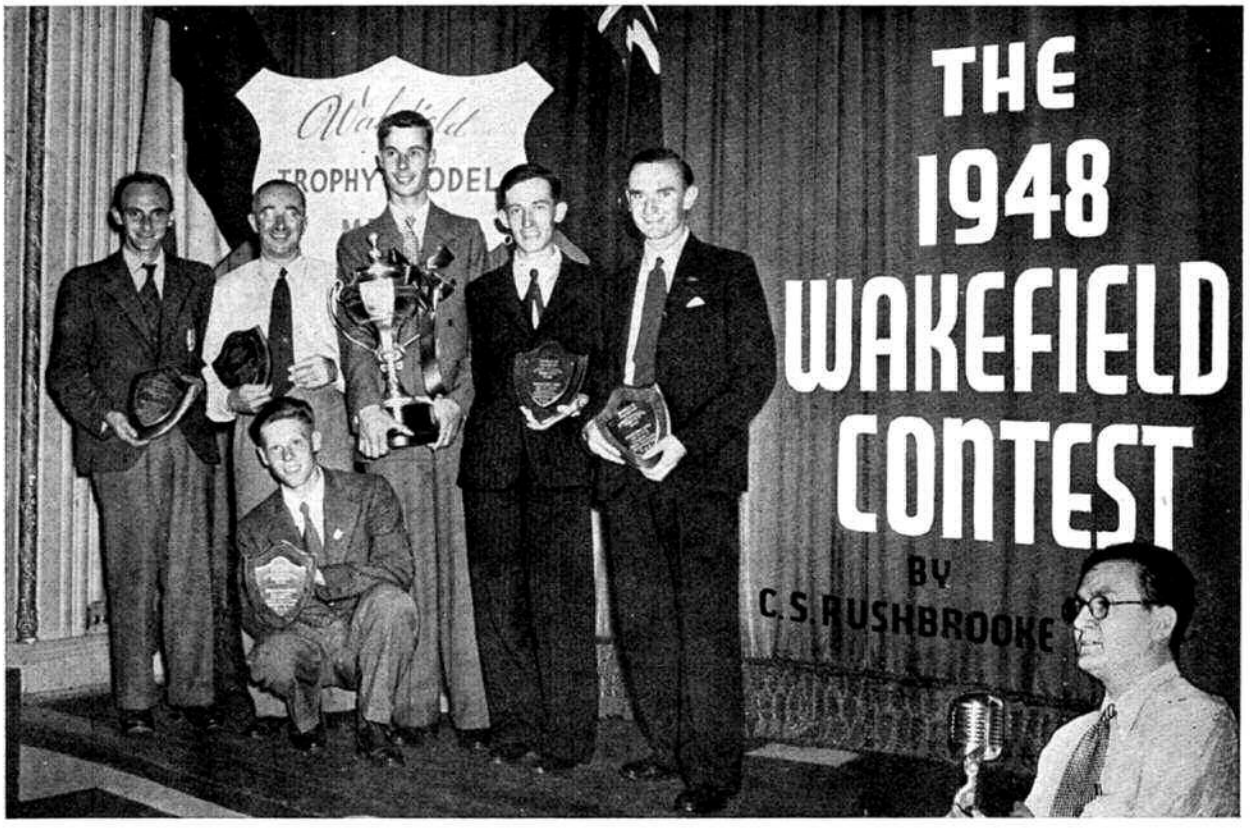


FIG. 1
FILLER HOLE
FIG. 2
CELLULOID BINDING
FIG. 3
BAMBOO CEMENTED TO RIB
FIG. 4
FIG. 5
FIG. 6
FIG. 7



AFTER a break of ten years, during which time we were "otherwise engaged," the Wakefield Trophy contest came back into the calendar with a highly successful meeting staged at Akron Airport, Ohio, on August 27th. I use the superlative, for the event was both well staged and organized, and ended in the return of the coveted Trophy to these shores after a sojourn in the States from the date when Jim Cahill took top honours at Guyencourt in 1938.

As you know from previous reports, the British team was enabled to make the trip in order to compete, and arrived in New York in the very early hours of Wednesday the 25th—over 18 hours late! A blown cylinder when over the Atlantic caused their plane to turn back to Shannon, and the bar receipts at that airport must have shown an appreciable rise!

Frank Zaic and I met the boys at LaGuardia and accompanied them later in the morning to Floyd Bennett Field to embark on a Dakota for the 500-mile trip to Akron. (This, and the return trip per Catalina, were laid on by the Navy Air Arm, to whom our thanks are due.)

Arrival at Akron showed the forerunner of things to come. Disembarking at 4 p.m., we were met by an enthusiastic delegation including members of the Women's Chapter N.A.A. (sponsors and hosts for the meeting) and well-known modellers including "Russ" Nichols, Al Lewis, Frank Cummings and the team of four Belgians. But the greatest "welcoming agent" was heat—and the Weather Man continued to turn it on throughout the meeting till the majority of us were literally wet rags.

The day before the contest was taken up by a meeting of the contest directors, a lunch at one of Akron's large stores, and test flying in the evening. During the afternoon, Zaic and I briefed the specially selected team of Navy timekeepers in their duties, and I pay tribute here to the keen and unbiased work put in by that squad throughout the contest.

Processing of all models took place at night on the conclusion of test flying, and was not finished until 2 a.m. In only one case was a model found to be slightly out on specification, and this was easily rectified.

With an elaborate layout, including marquees for the teams and their models, first aid tent, large blackboard and a Coca Cola stand, the meeting got under way at 10.20 a.m. after a delay to allow a heavy ground haze to clear.

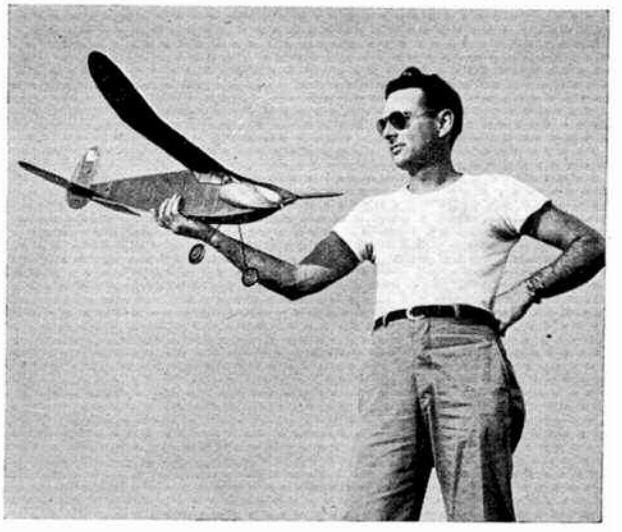
Everything was all set, with each contestant allocated a pair of timekeepers (and a full Jeep equipped recovery service in operation) when Roy Chesterton opened the contest as first man off for G.B.

In view of the still hazy conditions, Roy allowed a fairly short fuze to the dethermaliser, and got away to a beautiful start. The smooth, easy climb of his machine was remarked on by all, and it was evident that here was a model to be reckoned with. His time of 4 : 46·5 was a triumph of accurate judgment of conditions.

Model followed model with such rapidity that, with the exception of four requiring major repairs following rubber failure, the complete first round was over in 65 minutes! Chesterton's time was top in this first leg, Bob Copland being the only other competitor to reach the four-minute mark. Coryell (U.S.A.), Frost (Australia) and Pregaldien (Belgium) each bettered three minutes, but generally the times were far below what we expected in the prevailing conditions.

This factor was a great surprise to us from England, as it had long been prophesied that we wouldn't stand a chance under "American conditions," yet here were experienced men unable to get more than 1½ to 2 minutes from top class machines! It soon became evident that in spite of an almost dead calm and the blazing heat (it went up to 102 degrees during the day) the air was "dead" and models returned to *terra firma* when there should have been minutes of flight still left in them.

Piggott had bad luck on his first flight, the prop catching something on release, and the job fluttered around some 3 feet up and touched down at the end of 10·3 seconds. King was worried by incorrect trim which pursued him into the second round, apparently attributable to warp caused by the



Top left, Otto Curth, proxy flyer for Marsh of New Zealand, with the model that he successfully flew into 2nd place. Note the pylon wing mount, mono-wheel undercart and underfins.

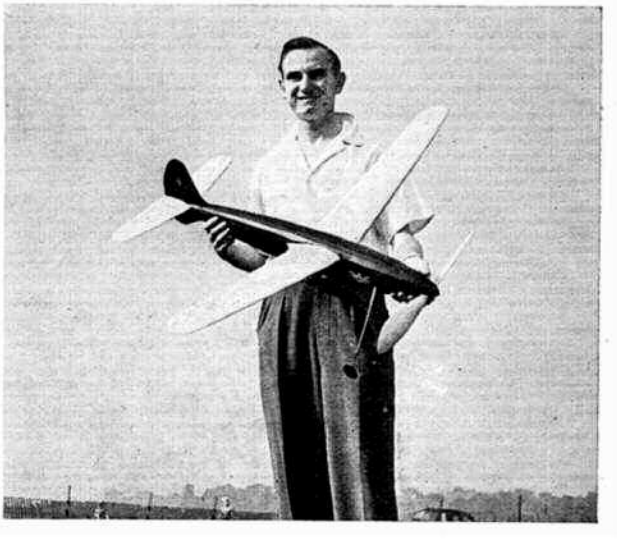
Top right, Bob Holland of U.S.A., with his orthodox high-wing cabin job that placed third.

Left, Coryell of U.S.A., who apparently believes in plenty of rubber space, with the model that earned him fourth place.

Bottom left, Milligan of Canada, fifth man. Note his multi-spar-wing.

Bottom right, our own Bob Copland with his familiar streamliner. Note that Bob and Roy Chesterton are the only two out of the top men who do not use folding airscrews.

Opposite, Contest H.Q. with Frank Zaic presiding amidst scales and checkers.



excessive heat, as the job was beautifully trimmed on test the night before.

From the initial round it was evident that motor trouble was going to be a big factor. Motor after motor cracked, and much repair work was soon under way. The Belgians were severely bothered in this direction, and their generally high placing says much for their perseverance, particularly that of Carl Goldberg who flew proxy for this team.

The real slogger on repairs was Frank Cummings, a coloured boy from Los Angeles, flying proxy for Frost of Australia. The way that lad sat down and completely rebuilt the nose of the model—no less than *four* times—was an education. (To those who have deprecated the proxy flier system—here was their answer! Tribute must also be paid to the Chicago boys who had toiled for a month testing and trimming the New Zealand entries.)

Perhaps the most worried team was that from Canada, as motors and models smashed with appalling regularity. So bad was the trouble that the quality and dependability of the English rubber became the chief topic of conversation as the day progressed. (Doughty was the only man in our team to break a motor—as I knew to my cost! It's no joke being on the holding end of a model when 12-14 strands of ¼-inch give way.)

With the start of Round 2 the order of flying was thrown open, and this condition obtained for the balance of the contest.

Chesterton decided to get his flights completed early, and sent his model away for the second time—and met near-disaster! From a smooth take off the model climbed rapidly but stalled. Going into a tail slide, the model lost a full fifty feet of altitude before recovering and climbing away once more to complete a flight of 6 : 02·4. We all sighed with relief when the model picked up, and many were the anxious eyes following the flight!!

It was during this round that the American thermal started to assert itself, and many models disappeared from sight. Jim Cahill's unusual looking job was lost following a flight of 7 : 44·2 and was unfortunately not recovered—the only machine that did not complete the programme.

Flights of 5–8 minutes now became common, but apart from "Ches," our lads could not hook on to a thing. Copland, Stott, Piggott and Doughty could only get very mediocre flights, and King was again troubled by the trim gremlin. None of the chaps were getting sufficient altitude, and models just sank out of the sky when the power run finished.

B. B. Marsh's New Zealand model, flown proxy by Otto Curth, put in the top time in Round 2, clocking 12 : 11·1 out of sight. The model just rocketed up and caught a kindly thermal, and this did in fact prove to be the top individual time of the day.

By this time we were (literally) sweating on the top line, anticipating what Chesterton could pull out of the bag on his last flight. My advice was to ignore the dethermaliser and go all out, and with all possible assistance he got under way for the final effort.

Again that beautifully smooth take-off, steep climb slightly to the right, and we settled down to an anxious wait. The underslung fin and free-wheeling silver prop enabled the timers to keep it in sight for 8 : 32·9, and the model had not been recovered by the time we left Akron!

Well, there it was—an average of 6 : 27·3, and as far as we were concerned it was a waiting game, anxiously watching the score board.

Flight after flight was chalked up, but it was obvious that (apart from an extraordinary duration by one of the tail-enders) the main opposition would be from Marsh (who needed a 4½-minute flight) or one of the American or Canadian boys who were well up in view of their second round durations. However, as most of these wanted flights of over ten minutes to beat Chesterton, attention was focussed on Marsh's machine.

The model was duly launched, but could do no more than some 2½ minutes, and much of the tension eased from us.

Flights in the third round tailed off considerably, and it was obvious that high times were finished. Time was allowed for the return of Cahill's model, but with no success, and it was accepted that the Trophy would be flown for in England in 1949.

I am not straining the truth when I state that no one was more pleased at this prospect than our American competitors, and one and all agreed that a fine, consistent model had won. All looked forward to coming over here next year.

Hard-working officials rapidly cleared final details, and we all adjourned for a much-needed shower and clean-up in readiness for the evening banquet.

Held in the "Mayflower" Hotel, this culminating function was lavish and extremely pleasant. Roy Chesterton was seated in the place of honour and was handed the coveted Trophy by the previous holder, Dick Korda, who—in true modelling spirit—made the statement that "he was pleased the best model had won, and not on a lucky flight."

Team captains introduced their members, the British team receiving individual plaques commemorating their success. It was my privilege to address the gathering, giving a general background of the Wakefield contests, during which I was happy to thank the proxy fliers for their sterling efforts.

Following a somewhat protracted speech by Major Al Williams, American air race pilot, the evening was enlivened by a witty speech by "Air Trails" editor, Al Lewis, in connection with the presentation of an illuminated address to Frank Zaic in recognition of his work in connection with the American Wakefield Committee. This timely award was accorded with acclamation, as Frank is as popular abroad as with his own countrymen. The British team will remember with gratitude his attention and efforts on their behalf.

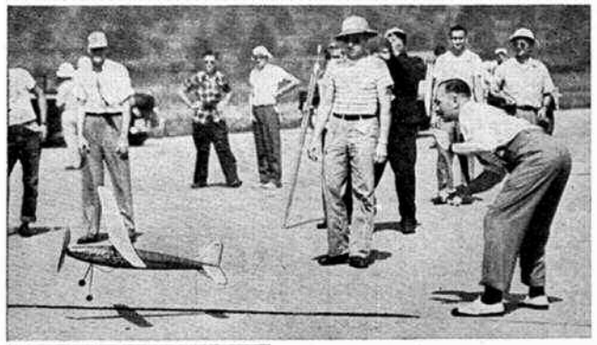
A typical Lewis/Zaic quip was that nowadays Frank, as a "big business man" could afford a few days away from the office, but Al knew him in the days when he had no business and worked seven days a week!

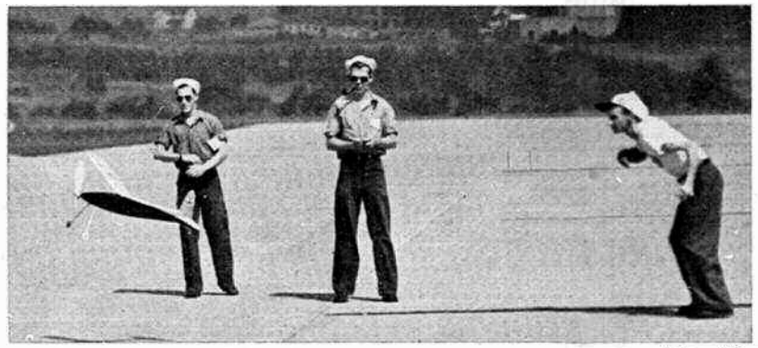
The evening ended with handshakes and congratulations all round, and many expressions of satisfaction that the 1949 contestants would travel to England. Many of the party found their way to Room 705 for a final "session" which lasted well into the early hours of Saturday.

The day following was something of an anti-climax, with a general reaction setting in and most chaps taking the opportunity of catching up on sleep and recovering from the effects of heat. After numerous delays, a Navy Catalina (PBY) landed, and soon we were on our way back to New York.

A fine smooth ride brought us over the lights of New York just before 9 p.m., and a wonderful sight it was. Strings of coloured lights stretched everywhere, with a splash of brilliance locating Coney Island. A quick ride to Times Square and a snack was the prelude to bed after an extremely hectic week, and was followed by a snappy tour and buying session on the Sunday morning prior to seeing the boys off.

So ended the first post-war Wakefield, with success—dare I say rather unexpectedly—coming our way. The efforts made to get our team across had proved worth while, and the goodwill, hospitality, and general good fellowship encountered made us truly grateful that the premier event in the aero-modelling world had once more got into circulation.



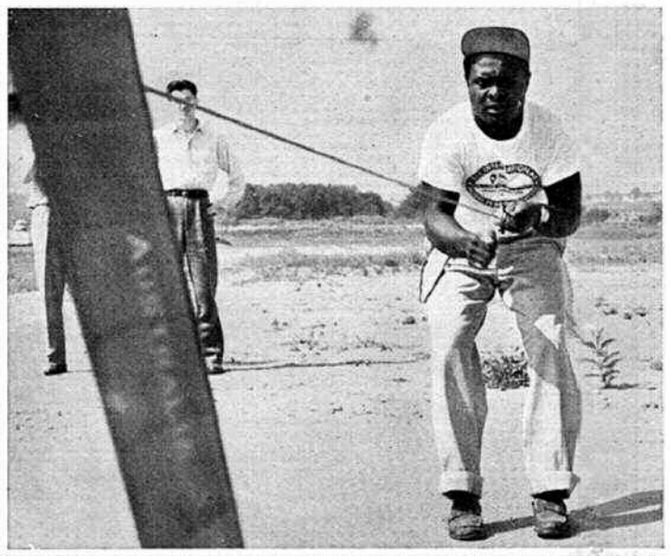


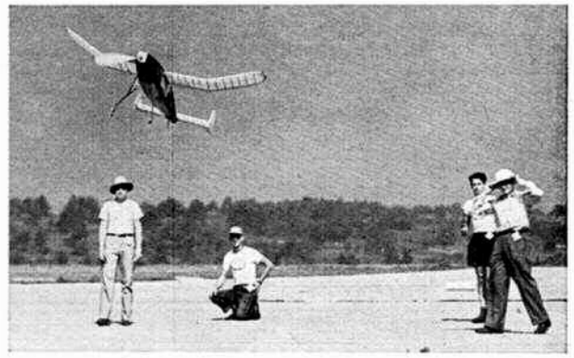
Photos. from left to right are as follows: — Above, Len Stott and his "Flying Minutes" in action; centre, Chuck Doughty urges his model away and right, Carl Goldberg holds, while the Navy protects the rubber.

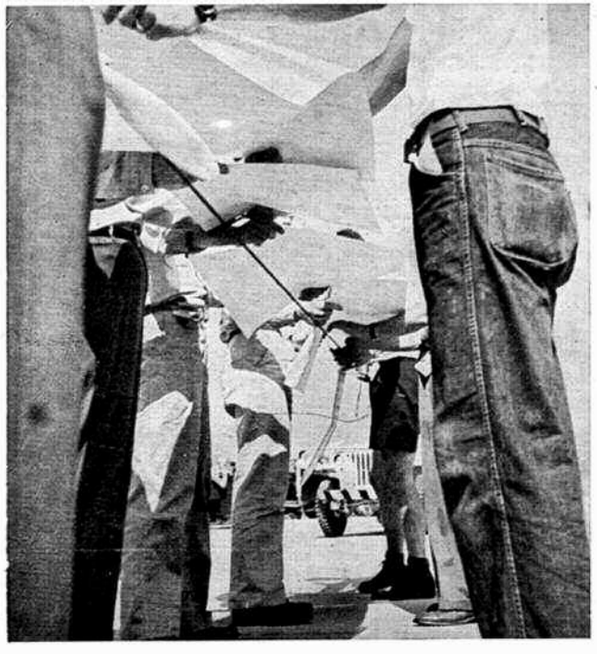
Centre left, "Rushy" holding for Doughty, note the headgear; right, Cummings really concentrating on winding Frost's model; extreme right, Lippen's model climbing steadily away.

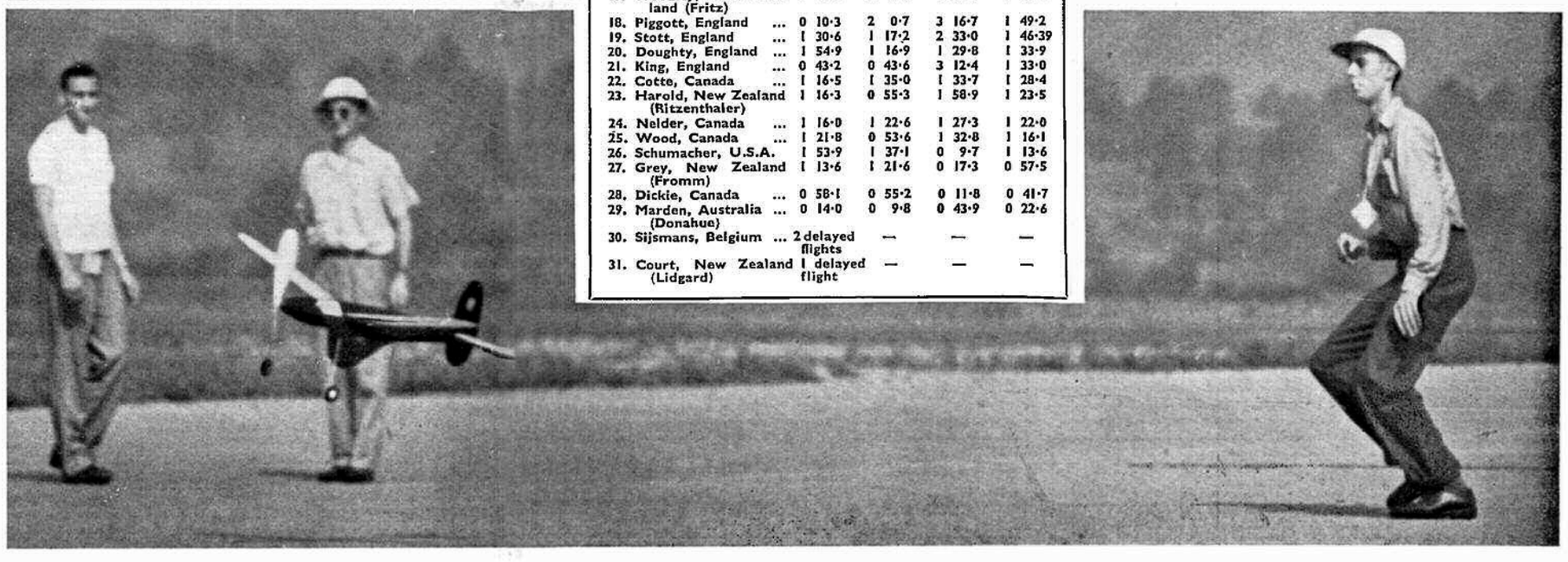
Below left, "underneath the arches". A bevy of rubber protectors in action. Right, top man Roy Chesterton with his world beating Jaguar in action. Note the heavy heat haze.

Photos.: Courtesy of Al Lewis.









OFFICIAL RESULTS

WAKEFIELD INTERNATIONAL COMPETITION

AKRON, OHIO, U.S.A.—AUGUST 27, 1948

Contestant and Country (Proxy)	First Flight	Second Flight	Third Flight	Average
	m. s.	m. s.	m. s.	m. s.
1. Chesterton, England	4 46·5	6 2·4	8 32·9	6 27·3
2. Marsh, New Zealand (Curth)	2 58·2	12 11·1	2 28·3	5 52·5
3. Holland, U.S.A. ...	2 3·2	6 34·3	4 51·5	4 29·7
4. Coryell, U.S.A. ...	3 28·0	7 37·2	1 42·8	4 16·0
5. Milligan, Canada ...	1 12·3	8 48·4	1 16·6	3 45·8
6. Copland, England ...	4 9·3	3 8·3	2 31·9	3 16·5
7. Cahill, U.S.A. ...	1 48·5	7 44·2	—	3 10·9
8. Lippens, Belgium ...	1 57·1	5 22·1	1 45·8	3 1·7
9. Van Hemelrijck, Belgium	1 3·4	7 0·9	0 13·4	2 45·9
10. Bunton, U.S.A. ...	1 24·9	1 33·0	5 14·2	2 44·0
11. Pregaldien, Belgium	3 21·7	1 41·9	2 32·3	2 32·0
12. Joostens, Belgium ... (Goldberg)	2 36·2	2 33·6	1 15·8	2 8·5
13. Korda, U.S.A. ...	1 43·6	3 4·0	1 32·7	2 6·8
14. Frost, Australia ... (Cummings)	3 26·2	0 58·4	1 47·3	2 4·0
15. MacDonald, New Zealand (Broderick)	2 47·9	1 43·8	1 20·7	1 57·5
16. Walter, Canada ...	2 57·4	1 28·6	1 22.8	1 56·3
17. Woodley, New Zealand (Fritz)	2 5·6	2 5·6	1 20·1	1 50·4
18. Piggott, England ...	0 10·3	2 0·7	3 16·7	1 49·2
19. Stott, England ...	1 30·6	1 17·2	2 33·0	1 46·39
20. Doughty, England ...	1 54·9	1 16·9	1 29·8	1 33·9
21. King, England ...	0 43·2	0 43·6	3 12·4	1 33·0
22. Cotte, Canada ...	1 16·5	1 35·0	1 33·7	1 28·4
23. Harold, New Zealand (Ritzenthaler)	1 16·3	0 55·3	1 58·9	1 23·5
24. Nelder, Canada ...	1 16·0	1 22·6	1 27·3	1 22·0
25. Wood, Canada ...	1 21·8	0 53·6	1 32·8	1 16·1
26. Schumacher, U.S.A.	1 53·9	1 37·1	0 9·7	1 13·6
27. Grey, New Zealand (Fromm)	1 13·6	1 21·6	0 17·3	0 57·5
28. Dickie, Canada ...	0 58·1	0 55·2	0 11·8	0 41·7
29. Marden, Australia ... (Donahue)	0 14·0	0 9·8	0 43·9	0 22·6
30. Sijsmans, Belgium ...	2 delayed flights	—	—	—
31. Court, New Zealand (Lidgard)	1 delayed flight	—	—	—

WAKEFIELD WINCHELLISMS

BY "RUSHY"

The terrific rate of climb, high aspect/ratio, and general high finishing position of the Belgian entry makes them a positive "threat" next year. Watch out for the winding technique of Van Hemelricjk.

* * *

I attempted to contact the B.B.C. from the field via "Screwball" Jim Walker's radio/telephone car unit, but unfortunately we were unable to raise the local relay station. The usual cable had to serve instead. Case of a missed scoop!

* * *

Apart from Chesterton, the British team's showing was well below the par expected. Models that could be relied on to go o.o.s. nine times out of ten were dropping at much more than normal sinking speed!

* * *

Those of you who think you have control-line flying "buttoned up" had better ask our team members what they thought of Jim Walker's demonstration. And as for radio control . . . a wonderful show. And what a car—and what a collection of apparatus!

* * *

Not one complaint was lodged, and not one grouse was heard (if one can discount the blue air when a motor busted). Surely a record for any meet, and a fine compliment to the organization.

* * *

Some indication of the heat is that all our chaps had to take salt tablets to offset the results of excessive sweating. When anyone slapped me on the back I just splashed!

* * *

If the profits from the sales of "Cokes" were made available to the A.M.A. they wouldn't have to collect much to send their team next year!! I drank 17 *!*

* * *

Would Bob have improved on his performance if he had used that interesting variable pitch prop? And will Len Stott knock the final "S" off the title of his machine?

* * *

1938 *winner Jim Cahill had an interesting model employing a wide, airfoil section fuselage. Rear motor peg was offset to give a straight pull from the sidethrusting prop shaft.*

* * *

King (who lost his model at the Trials) had built a new job in between rush hours created by his induction into the R.A.F. His new job was therefore virtually untested.

* * *

I surmise that the New Zealand boys will find greatly increased duration in their models now that the Chicago boys have "put the fluence" on them.

* * *

To quote from one of the official papers: "Regardless of which nation wins the Trophy, we will have witnessed the resumption of a rivalry whose very essence is a spirit of goodwill, a project in International relations that could teach the U.N. the rudiments of a peaceful world."

* * *

I prophesy a new export business for us—Dunlop rubber. The overseas boys were prepared to sell their souls for some!

* * *

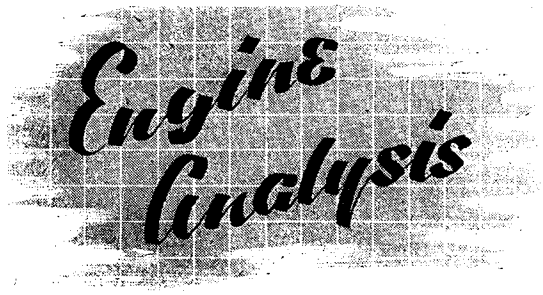
Special tribute is due to Lt. Joe Schuh of the U.S. Navy for his personal attention during the boys' stay as guests of the Navy at Akron. And did he look slick in all white uniform at the banquet!

* * *

Who took a course in barter before making the trip, and how many Kemps produce how many Ardens?

* * *

In a total trip of eight days the boys only managed some 20 *hours in New York, most of which was spent in sleep—and the shops were shut, too!!*



NUMBER SIX BY LAWRENCE H. SPAREY

AS it has been pointed out by readers and manufacturers, and, indeed, as we are well aware ourselves, *static thrust* tests are of little value to the practical aeromodeller, and may, in fact, be actually misleading. Little or no idea of the performance of an airscrew under actual flying conditions may be gained, and it is even possible that an airscrew showing lower static thrust figures may be a more efficient performer in the air than one showing a higher static reading.

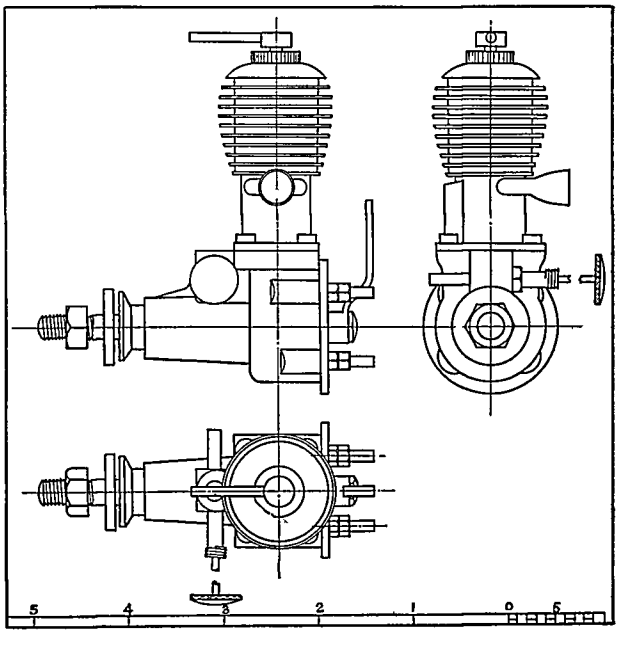
In view of this, it has been decided not to take static thrust tests of AEROMODELLER propellers specially designed for high flight performance, as considerable work is entailed in the design, making and testing, to no useful end. We have under construction a special apparatus designed to give figures of airscrews under actual flight conditions. This will be shortly completed, and we then hope to give performance figures of those airscrews which have not been featured in static tests.

TEST

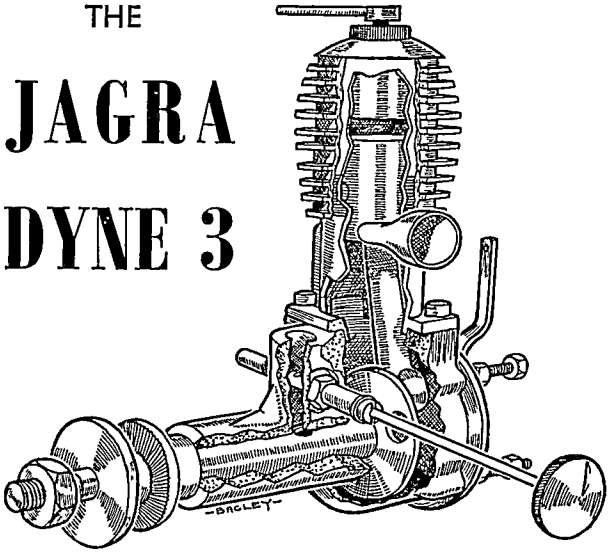
Engine: "Dyne 3" 3 c.c.

Fuel: Mi'ls Diesel Fuel, 2 parts; Ethyl Ether, 1 part.

Starting: Hand starting was used throughout, and little difficulty was experienced, with engine either hot or cold, once the control settings had been mastered. The engine was run inverted, as the position of the carburettor air-intake indicated that this was desirable. The air-intake is situated on the top of the main bearing housing—a crankshaft inlet valve being used—and as gravity feed of the fuel seemed indicated, running in an upright position would have tended



THE JAGRA DYNE 3



to flood the carburettor when the engine was stopped. A cut-out is fitted to the back of the crankcase, and engine is stopped by release of crankcase compression.

Running : The engine runs well over a limited range of speeds, but seems most happy around that point where greatest B.H.P. was found to lie. This usually indicates good design of ports and timing. Unlike most small diesel engines a single exhaust port is used, yet the engine shows no marked signs of insufficient port area. The "Dyne 3" would not, however, be called a fast running engine, as power dropped considerably around 8,000 r.p.m.

B.H.P. : The b.h.p. curve of the "Dyne 3" is steeper than that of some small diesels. The graph shows that a b.h.p. of ·072 was found at 4,100 r.p.m., with a steep rise to a maximum of ·103 b.h.p. at 6,300 r.p.m. A steep decline in b.h.p. is then evident up to about 8,000 r.p.m. It is possible that the use of a single exhaust port may account for this fall off in power at the higher speeds. Many modellers do, however, prefer an engine which is "doing its best" at a comparatively low rate of revolution, and it is a feature which usually makes for long life.

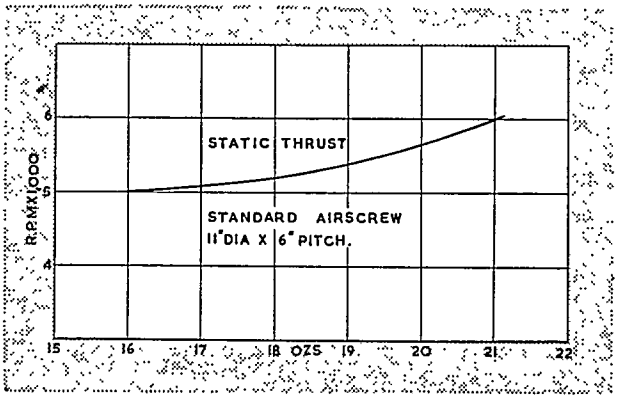
Power Weight Ratio: ·239 b.h.p./lb.

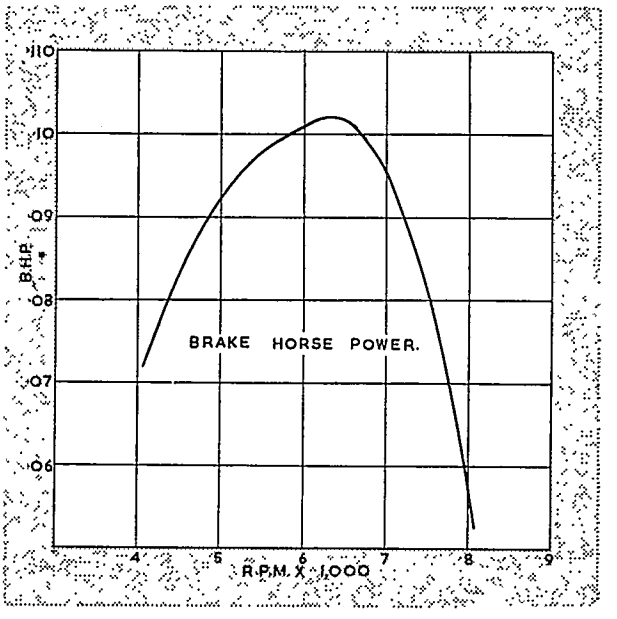
Static Thrust : As a measure for comparison, static tests were undertaken with a standard symmetrical airscrew of 11 ins. diameter and of 6 ins. pitch. As would be expected from the steep fall off in power for decreased revs. (as shown in the B.H.P. graph) the static thrust also declined rapidly with r.p.m. At 5,000 r.p.m. a static thrust of 16 ozs. was measured, rising to 21 ozs. at 6,000 r.p.m. This compares quite favourably with other results.

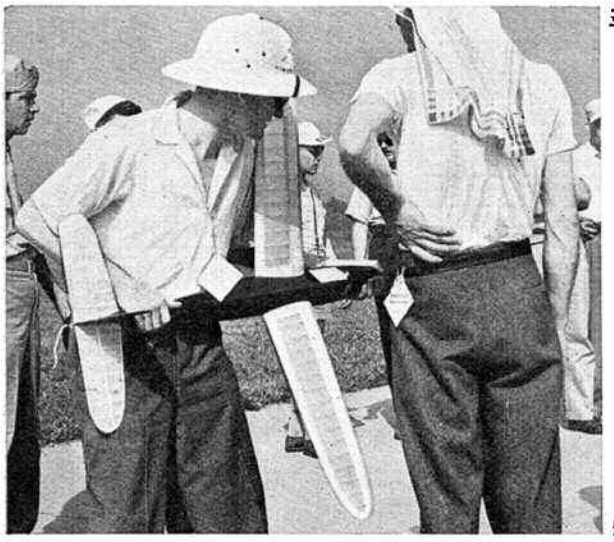
Remarks : Owing to the combination of a radial mounting with the cut-out in the crankcase cover plate, a somewhat complicated engine mount must be devised for this engine. No fuel tank is supplied, so that this also must be incorporated by the builder. Theoretically, a cut-off by means of a release of crankcase compression is ideal, as the engine is automatically scavenged as the engine dies off, and a clean, unflooded crankcase is presented for the re-start. The cut-out fitted is reasonably effective, but is uncertain at speeds above 7,000 r.p.m.

GENERAL CONSTRUCTIONAL DATA

Name : Jagra Dyne "3".
Distributors : Watkins Stores, Cardiff.
Retail Price : £5. 10s. 0d.
Delivery : Ex Stock.
Spares : Ex Stock.
Type Compression Ignition : Two stroke.
Specified Fuel : Mills Blue Label.
Capacity : 3 c. cms. ·183 c. ins.
Weight : Bare 6·9 ozs.
Compression Ratio : 16 : 1 adjustable.
Mounting : Radial. Designed for inverted position but will run in any position.
Recommended Airscrew : 12 ins. diameter, 6 ins. pitch. Free flight.
Tank : No tank provided.
Bore : $\frac{5}{8}$ in.
Stroke : $\frac{5}{8}$ in.
Cylinder : Hardened steel, honed and ground to 0·0001 in.
No. of Ports : 1 inlet, 1 transfer, 1 exhaust.
Cylinder Head : Cast dural screwed to cylinder 11 fins.
Contra Piston : Cast iron, ground and honed.
Crankcase : Single diecast in dural.
Piston : Cast iron, ground and honed. Flat top.
Connecting Rod : Phosphor bronze, machined from solid bar.
Crankpin Bearing : Plan, integral with connecting rod.
Main Bearing : Housing integral with crankcase, bushed with cast iron.
Little End Bearing : Plain.
Crankshaft Valve : Rotary valve in crankshaft.
Special Features : Jagra speed control valve which permits full engine control for control-line flying. The engine is also made with a fixed tank including cut-out.







The DESIGNER'S STORY

BY E. W. EVANS

BEHIND the success of Roy Chesterton's winning model lies the story of the Jaguar design. Full credit is due to a former member of a British Wakefield team, E. W. Evans, veteran flier who has been designing and flying Wakefield models for twenty years or more. We have seen the Jaguar in action at flying meetings all over the country during the last season and now in view of its world wide success feel sure that readers will be more than interested in the story behind the development of this fascinating design. Accordingly, we approached E. W. Evans, and here from his own pen is an account of the evolution of the world's top-line Wakefield model.

Bob Copland holds the Jaguar whilst Chesterton puts on those winning turns.

WITH a possibility of the Wakefield Trials being held in 1947, the model was given serious thought during 1946. As is my practice, every angle on the model was to be thought out before even looking at the drawing board. Every spare minute was given to thinking the model out and as the months passed by I had eventually a clear mental picture of how I intended to design the model. When considering all this, I tried to keep my mind free from convention and what I, or anyone else, had done in the past. Appearance was to be a second consideration, though I am by nature a lover of beautiful lines. In consequence of this complete mental study, I was able to lay out the drawing in two or three evenings.

Requirements. (1) High power to weight ratio (50–50 aimed at). (2) Ease of construction and repair. (3) Freedom from gadgets. (4) Largest practical diameter airscrew without detriment to glide. (5) Undercarriage to be positioned nearer the centre of gravity to allow for more rapid take-off. (6) Largest wing-span without increasing aspect ratio to a ridiculous proportion. (7) Dethermalizer to be incorporated. (8) Drag to be kept to a minimum. (9) Large degree of inherent stability. (10) Positive adjustment of all surfaces. (11) If possible, adjustable crashproof wing fixing and no trimming weights, with mid, or shoulder wing location. (12) Portability. (13) Normal duration of 4 to 4½ minutes.

On the Drawing Board.

Having decided the aspect ratio and tail moment arm, my first consideration was the fuselage. A diamond section had been decided upon as this married up with various other considerations. In order to keep the weight of this unit down to a minimum it was obvious that normally the crosspieces account for more weight than the longerons (circular or eliptical cross sections were rejected on account of weight, which in my opinion is more important than the small reduction in drag—if any). It was therefore decided to enclose the rubber motor in the smallest practical fuselage, the Wakefield rule $L^2/100$ to be arrived at by the inclusion of a lower fin which could carry the undercarriage (also reducing its length and weight) and bring the central of lateral area into the position I had chosen. Careful use of $\frac{1}{8}$ in. $\times \frac{1}{10}$ in. crosspieces in the fuselage further reduced weight, some of which are used flatwise to give additional rubber room. The final result of this unit was reduction of wetted area, ample strength and the lightest possible structure.

Having made various types of retracting undercarriages (and propellors), a fixed type had been decided upon, to be made of wire, which gives less drag than bamboo. The actual form of this unit was already thought out and gives movement in all required directions with adequate strength. It is of unusual design; 2 in. wheels were considered the practical minimum and are fitted with internal fixings.

In order to provide the largest wing span possible, a mid-wing location was chosen which, in conjunction with the diamond fuselage, reduces angular differences at the point of junction to a minimum, making fillets unnecessary and further reducing weight. The wing fixing itself called for a lot of thought and fulfils all the conditions I required. Having considered the wing section, the specific requirements were: low structural weight and freedom from warping under varying temperatures. This is an essential for competition work. Careful stressing gave me a wing with the lowest possible weight and a large safety factor. Freedom from warping was proven beyond all doubt and in America no trouble whatsoever was experienced.

The tail unit was considered from all points and again careful stressing gave the desired weight and strength. Twin rudders were never considered, due to the fact that these need to be larger than the area of a single fin, and their vulnerability to damage. This again allowed for a minimum weight.

The rear motor peg was positioned to give maximum room for the rubber and bring the C. of G. as far forward as practicable. This in turn allows for better streamlining at the rear part of the fuselage.

Folding propellors were rejected, due to the centre of gravity movement which could not be *easily* corrected, though I realised the glide might suffer. Careful designing of the propellor gave the desired results and the gliding angle is better than many folders. A spinner was omitted as this would require fairing into the fuselage, with extra weight.

The power anticipated proved to be ideal, and the motor, if properly handled; will absorb 1,050 turns, giving a power run of about 90 secs. (See my article on rubber motors.)

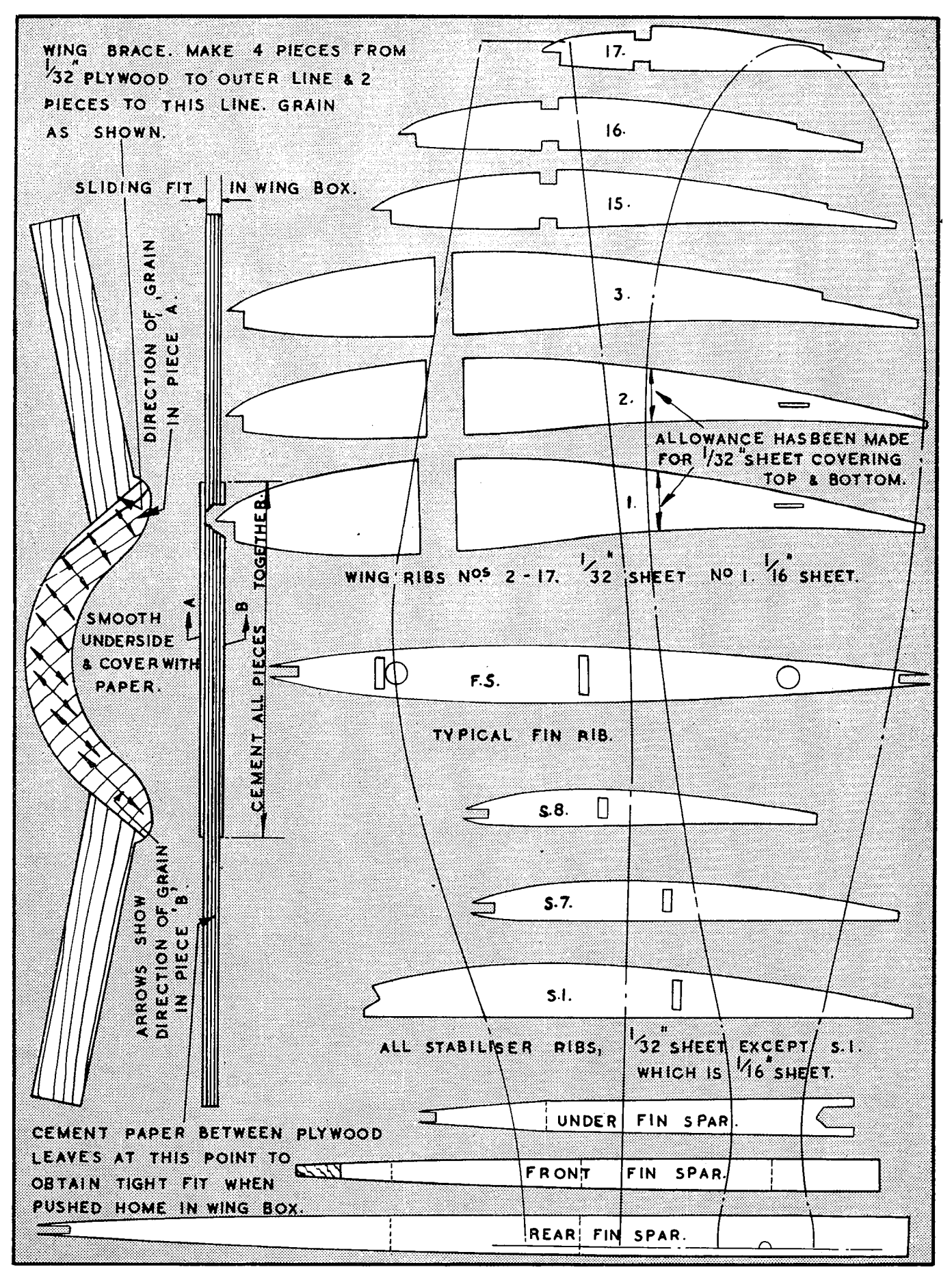
No alterations or modifications were found necessary and the test model flew perfectly from the drawing board.

First tests with snow on the ground proved rather alarming —the field was small and on low power the duration was too much for the space available. The glide was flatter than I had hoped for. The motor weighs just under 4 ozs. and the airframe 4¼ ozs. Two machines were built, the totals being (1) 8¼ ozs. and (2) 8⅛ ozs.

Like many others, my life's ambition is to win the Wakefield Trophy for England. I am at least happy to have helped.

Summary of Features.

(1) Streamlining carried out in a *practical way*, without additional weight.
(2) High power to weight ratio, without sacrificing strength.
(3) Long power run with a particularly pleasing gliding angle.
(4) Total weight kept to the required minimum.
(5) Freedom from failures. (Structural.)


WING BRACE. MAKE 4 PIECES FROM 1/32" PLYWOOD TO OUTER LINE & 2 PIECES TO THIS LINE. GRAIN AS SHOWN.
SLIDING FIT
IN WING BOX.
DIRECTION OF GRAIN IN PIECE A.
SMOOTH UNDERSIDE & COVER WITH PAPER.
A
B
CEMENT ALL PIECES TOGETHER.
ARROWS SHOW DIRECTION OF GRAIN IN PIECE 'B'.
CEMENT PAPER BETWEEN PLYWOOD LEAVES AT THIS POINT TO OBTAIN TIGHT FIT WHEN PUSHED HOME IN WING BOX.
17.
16.
15.
3.
2.
1.
ALLOWANCE HAS BEEN MADE FOR 1/32" SHEET COVERING TOP & BOTTOM.
WING RIBS Nos 2 - 17. 1/32" SHEET No 1. 1/16" SHEET.
F.S.
TYPICAL FIN RIB.
S.8.
S.7.
S.1.
ALL STABILISER RIBS, 1/32" SHEET EXCEPT S.1. WHICH IS 1/16" SHEET.
UNDER FIN SPAR.
FRONT FIN SPAR.
REAR FIN SPAR.

THE JAGUAR. 1948 WINNING WAKEFIELD MODEL.

DESIGNED BY E.W. EVANS. SILVER MEDALIST ME EXHIBITION ETC

PERFORMANCES

TEST FLIGHTS FLOWN IN RAIN.

800 TURNS	3 MINS	4 SECS	
850 "	3 "	27·5 "	
900 "	3 "	55·5 "	

TIMED & WITNESSED BY S.M.A.E. TIMEKEEPERS.

1ST PLACE ME CUP Nº 2
1ST " N.M.E. CUP
1ST " N.M.A.C. WAKEFIELD COMP.
2ND " S.M.A.E. " "

WEIGHTS OF FINISHED PARTS I/C 2 COATS OF DOPE.

FUSELAGE & UNDERCARRIAGE	1·9 OZS	
WING & CONNECTING BRACE,	1·0	"
STABILISER & FIN	6	"
PROPELLER & NOSE BLOCK	1·0	"
RUBBER & BOBBINS 14 STRANDS 1/4 X 1/24	3·8 OZS	
WING AREA 205 SQ INS.		
TOTAL	8·3 OZS	
ACTUAL "	8·25 "	

NOTE SHAPE OF L.E.

1/32 PLY APR. 2 1/8 LONG.

1/16 HARD BALSA SHEET GRAIN VERTICAL.

1/32 SHEET GRAIN VERTICAL.

1/8 X 1/16

1/8 SHEET.

1/8 X 1/16 HARD BALSA SPARS.

1/32 SHEET TOP & BTM

COVER 1/32 SH BALSA TOP ONLY.

1/4 X 1/16

1/16 SHEET

1/32 PLYWOOD

NOTE, 1/32 PLYWOOD STRIPS CEMENT TO SPARS BEFORE ASSEMBLY.

WING ROOT SHOWING ANGLE END RIB.

WING DIHEDRAL 4 1/8

PATTERN 1/32 SHEET 'V' DECKING. STABILISER.

SKETCH. WING ROOT CONSTRUCTION

1/16 SHEET

1/32 SHEET EACH SIDE.

1/16 SHEET

1/16 SHEET EACH SIDE OF ALUM HINGE

PAPER TUBE TO FIT 1/8" DOWELS

1/32 SHEET EITHER SIDE TRIM LOWER EDGE TO FIT 'V' DECK

REAR FIN SPAR

FRONT FIN SPAR.

BASIC FUSELAGE, SIDE & CROSS STRUTS 1/8" SQ EXCEPT WHERE SHOWN OTHERWISE

1/8 X 1/16

FRONT U/C LEG. MAKE PORT SIDE TO DOTTED LINE 1ST BD TO FULL LINE-16 SWG.

CEMENT IN PLACE AFTER CHECKING INCIDENCE.

5/16

HOW TO CHECK INCIDENCE.

1/8 SHEET.

1/32 BIRCH MOTOR PEG.

1/32 PLYWOOD

1/8 SQ

SKETCH STAB. DECKING.

WING INCIDENCE 5/16

1/8 HARD BALSA SHEET

1/32 SLOT TO FIT TAB ON WING ROOT

1/8 SQ CEMENT TO LONGERON.

1/8 SQ

1/32 PLYWOOD CAR

DOUBLE COVER FIRST THREE BAYS.

COVERING LINE OF LOWER FIN COVER FUSELAGE FIRST.

1/8 SQ CENTRE ONLY

1/8 VERY HARD SHEET BALSA.

SHADED PORTION SHOWS LENGTH OF 1/8 SQ DIAGONAL BRACES.

1/32 SHEET FOR COVERING PURPOSES ONLY

ATTACH FUSELAGE COVERING TO LOWER LONGERONS.

DOUBLE COVER

1/8 X 1/16

1/8 X 1/16 CEMENT TO UNDERSIDE OF LONGERON.

20 SWG HOOK

FILL IN NO1 BAY WITH 1/16 SHEET.

CEMENT SLIGHTLY LOWER THAN SHOWN TO OBTAIN TIGHT FIT ON WING BRACE. NOTE. ANGLE.

TWIST TO REMOVE

1/32 BIRCH PLYWOOD

1/16 BIRCH

BIND U/C BOX WITH Nº 40 THREAD BEFORE INSTALLING & COAT WITH CEMENT

SIDE

PLAN

1/16 SHEET

1/8 SQ

1/8 SQ CEMENT AS ARROWS INDICATE.

1/8 SQ

1/16 SQ STRINGERS.

1/16 SHEET OUTLINE

1/16 SHEET OUTLINE

1/16 SHEET

1/16 ROUND BIRCH PEG BALSA BLOCK.

20 SWG HOOK.

2 PIECES 1/32 PLYWOOD KEY PIECE MADE FROM 4 PIECES SHEET

BALL RACE CUP WASHER SOLDER TO SHAFT

1/32 PLYWOOD

16 SWG

18 SWG BRASS TUBE.

BRASS TUBE

1/16 SHEET.

SKETCH U/C BIND & SOLDER

TRACK 11"

LOWER PORTION FITS BETWEEN LONGERONS

WHEEL 2" DIA

PATTERN U/C REAR LEG 18 SWG.

1/8 SQ DIAGONAL BRACE AT STATIONS A B & C.

1/32 PLYWOOD CAP CEMENT TO WHEEL AFTER SOLDERING WASHER

1/32 PLYWOOD

16 SWG BRASS TUBE.

1/8 BALSA

1/16 BALSA

ST BD U/C LEG IN UPPER BOX. PORT U/C LEG IN LOWER BOX.

TEMPORARY 1/8 X 1/4 BRACE TO OBTAIN VERTICALITY OF LOWER FIN OUTLINE CEMENT LIGHTLY LONGERONS 1/16 BLOCK.

POWER 14 STRANDS 1/4" X 1/24 X 48" LONG OR 18 STRANDS OF 1/4" X 1/30 X 48" LONG, MAXIMUM TURNS 950 STABILISER & REAR U/C LEG FIXED WITH RUBBER BANDS. APPLY TWO COATS OF CEMENT TO ALL HIGHLY STRESSED PARTS BEFORE BRINGING PIECES TOGETHER. AVOID GETTING CEMENT ON THE INSIDE OF WING BOXES - PUSH 1/8 SQ BALSA THROUGH DURING BUILDING PROCESS. THE WING BRACE SHOULD SLIGHTLY BRUISE THE UPPER PIECE OF 1/8" SHEET AS IT IS MOVED FOR ADJUSTMENT. C.G. IS SHOWN IN ITS CORRECT RELATION TO THE WING. THRUST LINE OFF-SET TO RIGHT & FIN TAB SET TO GIVE RIGHT HAND CIRCLE DURING GLIDE.

1/8 DOWEL

1/32 SHEET

1/8 SQ

1/16 SHEET

1/16 SQ

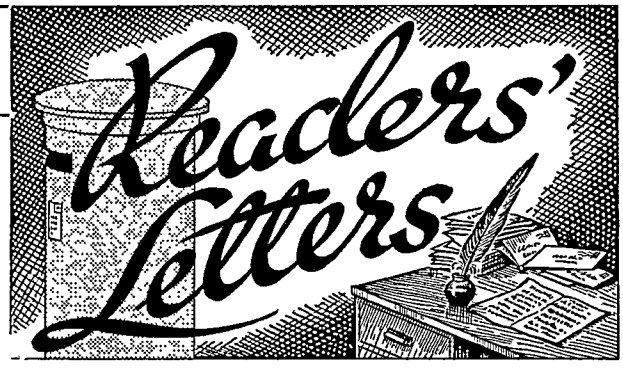
BALSA BLOCK.

1/16 X 1/16 T.E.

1/16 SHEET TIPS

1/16 X 1/16 HARD BALSA.

The Editor does not hold himself responsible for the views expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters.



DEAR SIR,

To reply adequately to Mr. Gibbings' letter in the August issue would require several articles, for although he has dropped some of the points raised in his first letter, he has found others, and I should like to answer these before dealing with the more serious implications of this controversy.

Transition.—I think we may claim this as being the subject of the most futile argument ever to see the light of day in this journal. If Mr. Gibbings wishes the term to be confined strictly to phases of the moon, in future, I will hasten to humour him. I really don't mind, and I'm sure my readers, if any, understood what I meant at the time.

Tailplane Efficiency.—An excellent book on Nomography has been written by Dr. Brodetky, M.A., B.Sc. (G. Bell & Sons, Ltd.), and this should be of assistance to Mr. Gibbings. He can then compare the first two scales of my nomogram with standard examples, and notice that they allow for *all* the factors except wake allowance, which is the third scale. Alternatively, the nomogram may be checked by trying an example and checking with a slide rule.

Static Thrust.—My airscrews have a habit of stalling violently near the hub under static conditions, but although this fault is peculiar to them it is not damning; after all, an airscrew is designed for flight conditions, and static tests are only of real use to the advertisers and a limited number of theorists. Mr. Gibbings' argument may be paraphrased by saying that his beard isn't as long as mine. Does it matter? In any case, my airscrews *do* give quite a bit more static thrust, despite its unimportance.

Torque.—Mr. Gibbings seems here to have answered Mr. C. Rupert Moore in the same issue. I should like to add that a fine pitch airscrew will probably have more torque if it is revving at a higher speed than a comparable coarse pitch one (see Sparey's b.h.p. curves), but provided the engine is turning at the speed corresponding to b.h.p. maximum its dimensions are quite unimportant. In any case, the thrust variation (more revs, more torque, more thrust) has the effect of negating any variations in practice.

Leighton Buzzard. P. R. PAYNE.

DEAR SIRS,

Re breaking of control lines mentioned in July Editorial. Perhaps the following will assist those modellers who haven't the necessary formula to hand:—

$$\text{Centrifugal force} = \frac{Wv^2}{32{\cdot}16\,R}$$ Results in lbs.

where W = weight of model in lbs.
v = velocity in ft. per second.
R = Distance from C.G. of model to centre of rotation. (Radius) in feet.

Edmonton. ALBERT E. HATFULL.

DEAR SIR,

I see by your Editorial in the September issue that I am not alone in being disturbed by the unpleasant publicity given to the Aeromodelling Movement in the press of late.

While I personally cannot understand the nephelococcygian minds of those who reel dizzily round with a projectile on a piece of string, I fully appreciate that the yo-yo game has a large following and that its chief advantage is that it needs very little space. May I propose that addicts of this pastime approach their local schools for permission to use school playgrounds? Most schools have a well-surfaced area ideally suited to control-lining, and permission to use such spaces is seldom withheld.

For many years aeromodellers have been restricted by common-sense and conscience only—let's keep it that way as long as possible. One bad accident—and ouch! the construction of some of those control-line jobs!—and we shall have our hobby clamped in a strait jacket. If everyone would think "would I like to have to pass a proficiency test and licence each power model—in the same way as a motorist—because some idiot at the other end of England knocked out a small boy's eye or broke a crusty M.P.'s greenhouse?"—we might begin to get a more prudent outlook. We want to fly tomorrow, not only today.

Canterbury. V. E. SMEED.

DEAR SIR,

Quite recently an aeromodeller acquaintance of mine expressed to me the view that organisers of contests should offer substantial prizes in order to make the contests a success.

It was suggested that without good prizes as incentives the contests would not be well supported, and American Meetings (at which countless engines and even full size aircraft are apparently offered) were quoted as an example.

That this view should be held by a keen aeromodeller came, frankly, as rather a shock to me, as if it is at all widely supported, it appears to me that the age when model flying, and friendly competition solely for the fun of the thing, satisfaction of besting of the other fellow is giving way to a pure calculated business with some sort of practical gain in view.

The views of others on this subject would I consider, be of advantage to all competition organisers, as it would help to give them an idea as to whether or not competitors do enter solely with the intention of trying to get a "cheap" engine or kit.

Bristol. G. WOOLLS.

DEAR SIRS,

As a new reader of the "AEROMODELLER" I must express my amazement at the absence of articles dealing with radio-controlled model aircraft.

Radio control has obvious advantages over all other means of control, and at the present moment there are large quantities of ex-service wireless equipment available on the market at very low prices which will permit construction of equipment at a cost within the limit of the average constructor, I refer of course to equipment for operation on 28 megacycles.

Building equipment for the 28 M/cs is a simple matter as compared with 450 M/cs, although it has this advantage coupled with low cost, the physical dimensions are much larger, examining a 28 M/c transmitter, it will be found necessary to use crystal control with frequency doublers or treblers as the best means of obtaining frequency output, whereas this is not practical on 450 M/cs owing to the increase in frequency multipliers, therefore the only possible means of obtaining frequency control is by a pot oscillation. On 450 M/c it must be remembered that the technique in construction differs considerably to that of 28 M/c, and difficulty is experienced in obtaining valves that will work at such a high frequency.

I should therefore be pleased to open this letter to discussion and any brickbats if only to stimulate this modern technique of aircraft control.

Hillingdon, Middlesex. L. HARRIS.

THE 1948 ALL HERTS MODEL AIRCRAFT RALLY

DESCRIBED BY TED BUXTON

WEDGED in between two days of gales came a reasonably good day, Sunday, 22nd August, and the 3rd Annual All-Herts Model Aircraft Rally at the Handley Page Airfield, Radlett (by kind permission of Sir Frederick Handley Page). This meet, organised strictly for the contestants' enjoyment, attracted 348 entries into the 8 events from 55 clubs, some as far distant as Southampton, Worcester and Warwick. The "five minute rule" was applied in the rubber and glider events, and this proved a poor device as a whole gang of flyers were reeling off over five minutes for both flights. Results were therefore decided on total times. A second idea incorporated into the Rally was to set only a minimum motor run of 10 seconds, and no maximum, in the power event, thereby eliminating all the rules describing penalties and disqualifications. This rule worked out fine.

At 10.45 a.m. contestants in the rubber and glider events (run concurrently) commenced performing and, as mentioned above, two five minute flights were a not unusual return. The sun on damp countryside was producing risers in an A+ manner. Norman Peck, a St. Alban's boy, worked out a neat winner in the rubber event, with ace U-control stunt man, Dennis Allen, trailing him for second place. Reg Parham, all the way from Worcester, held down third. The glider event, producing slightly higher times than the rubber, had B. Woolams of Watford, as number one, J. Grover of Croydon in second place, with Derek Eastwell, St. Albans, third. To illustrate the favourable conditions for high times let us explain we met this boy Derek Eastwell in the morning and asked him how he was doing. He had just lost his glider and was now going over to take his rubber flights. We met him again later without his rubber job, that had by then, gone too.

The boys edged for a 10 seconds motor run in the power duration contest and turned in some sharp ratios. Norman Marcus, top flight Croydon boy, put on a repeat performance to win the event with an aggregate of two ratios of 25·5 with an Ohlsson 23 powered job. W. G. Johnson, from way up in Warwickshire, built up an aggregate of 23·8 for second with a model using one of the hot new Rawlings diesels for power.

Heading photo shows the "headquarters" of a visiting club beneath the nose of a Vickers Voletta. Centre, R. C. Prentice of the West Essex club with his winning Mills powered stunt model. Left, "unplugging the booster" during the power duration event.

L. Stitchbury, of Finchley, made his Mills job collect a 22 aggregate for third place.

At 4.30 p.m. the control line events were started with three speed circles and one stunt. For the first time at a meet in this country, over 100 m.p.h. was turned in.* Circulating his white "Hornet 60" powered speedster fast, Lt. Jim Hedges, of Johannesburg, South Africa, over here in the Air Force, wound it up to 105·88 m.p.h. The ship was of regular design with the cylinder in the open but faired away behind. He used spark ignition. F. Sharpe, from Whyteleafe, Surrey, took second in the 5 to 11 c.c. class with his Nordec R.G.10 clicking off a crisp 100·2 m.p.h.

D. R. Powell, of Upton, snagged top speed in the 0 to 2 c.c. division with 62·48 m.p.h. His speedster was a small, rudderless job with a helmet cowl streamlining a Mills from which the fins had been removed. But right up behind Powell was L. E. Sharp, Bushy Park, whose Arden 099 ship turned in 62·2 m.p.h.

For the stunt event, the Southern California Model Congress points schedule (now adopted by the A.M.A. with minor revisions) was used. This schedule is more balanced than that of the S.M.A.E., and although less extensive, tests ability just as thoroughly. Inverted flight had to be accomplished with reversed controls, i.e., the handle could not be turned over. Ron Moulton, Don Brockman and Freddie Page acted as judges. The first two men, R. Prentice using a Mills Mk. I, followed by Sid Sutherland with a "Super Cyclone" job, both of West Essex, did everything except overhead eights. But third man, F. Deudney, was judged a slick performer. Being new to stunt flying, Deudney had left certain manœuvres off his flight pattern sheet since he was not sure he could do them. After completing his pattern as listed and having some fuel left, he really gave the spectators a terrific show. Without moving, he wrung horizontal eights, vertical eights, overhead eights, overhead inverted flight and a host of other stunts as yet un-named from his little 1·8 c.c. Elfin powered model.

During the afternoon the Concours d'Elegance was judged by Mr. A. F. Houlberg. S. Miller, from Luton, won top place for the second year, exhibiting his gas model "Blue Lady", a job well known for its grade 1 and de luxe finish. R. Toms and D. Hickie took second and third.

Before presenting the prizes at the end of the meeting, the Mayor of St. Albans expressed admiration at the manner in which model aeronautics fostered creative ability and promoted such good sportsmanship. And so with the presentation of the awards, the 3rd All-Herts Rally closed, a meeting attended this year by some 6,000 persons.

* *Sorry, Ted! August 7th, Eaton Bray, Laniot (France), 102 m.p.h.*

RESULTS

Concours D'Elegance.

1. S. A. Miller — Luton
2. R. Toms
3. D. Hickie — Uplands

Rubber Duration.

1.	N. C. Peck	St. Albans
2.	D. J. Allen	W. Essex
3.	R. T. Parham	Worcester
4.	J. G. Hall	Croydon

Glider Duration.

1.	B. E. Woollams	Watford
2.	J. S. Grover	Croydon
3.	D. G. Eastwell	St. Albans
4.	F. Adams	Barnes

Power Duration.

			Ratio	Power
1.	N. G. Marcus	Croydon	25·5	Ohlsson 23
2.	W. G. Johnson	Warwickshire	23·8	Rawlings
3.	L. Stitchbury	Finchley	22	Mills 1
4.	A. R. Webster	Potters Bar	20·6	E. D. Comp Special

Aggregate of two ratios given (two flights).

CONTROL-LINE.

Speed Event : Class I (0 to 2 c.c.)

1.	D. R. Powell	Upton	62·48 m.p.h.	Mills Mk. 2
2.	L. E. Sharp	Bushy Park	62·2 m.p.h.	Arden .099

Class III (5 to 11 c.c.)

1.	Lt. J. W. Hedges,	Johannesburg	105·88 m.p.h.	Hornet
2.	F. Sharpe	Whyteleafe	100·2 m.p.h.	Nordec R.G10

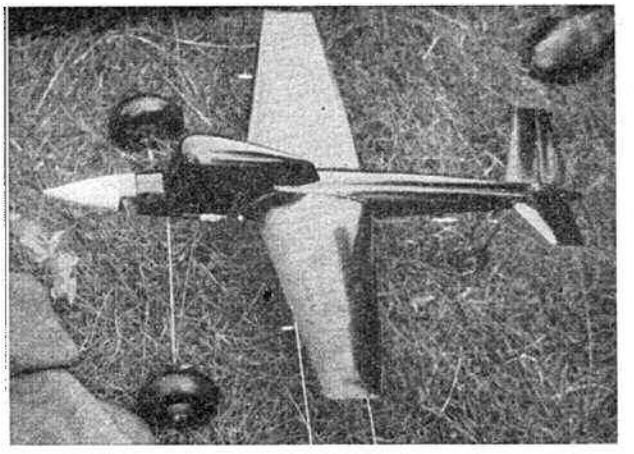
Stunt Event.

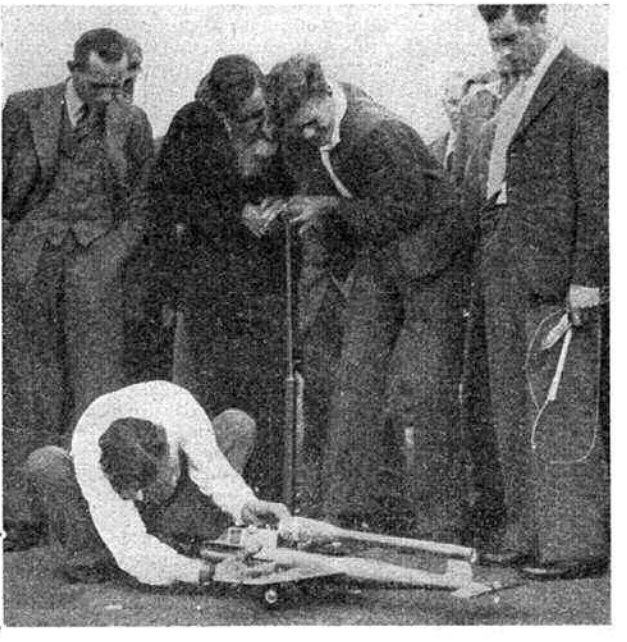
1.	R. C. Prentice	W. Essex	Mills Mk. 1.	262 points
2.	S. Sutherland	W. Essex	Super Cyclone	252 ,,
3.	F. E. Deudney	W. Essex	Elfin 1·8 c.c.	250 ,,

Maximum points possible : 310

ALL-HERTS CHAMPION—D. G. Eastwell—St. Albans.

CUP FOR FASTEST SPEED OF THE DAY, regardless of type of power Lt. J. W. Hedges Johannesburg 105·88 m.p.h. Hornet





Top photo shows a very purposeful looking Fox powered speed model built by Cyril Shaw. Centre, Tommy Tucker with a collection of speed and stunt models. Right, the British Juggernaut Jet Unit is incorporated in this speed model and provides plenty of exercise for the two "pumpers."

PRACTICAL MOULDING

BY L · G · TEMPLE

E. V. PULLEN'S recent article on the subject of moulding transparent thermoplastics is a useful apprenticeship to a most fascinating subject, one which I have studied for many years. By ordinary methods, quite creditable mouldings can be achieved which would no doubt satisfy most model builders, but I feel that some further information is necessary before amateurs can produce perfect results. Transparent mouldings as seen on professional models of the Science Museum type quite definitely have faults which put them clean out of the running; they are not optically perfect and nearly always have a fair amount of ripple or distortion: some even show slight wrinkles or bubbles. It is of these faults, overlooked by most people, that I wish to write now.

Moulds should never be cut off the rest of a model's surface and used straight away. They would then produce mouldings which would be oversize by thickness of the plastic used. It is much better (in the case of all built-up scale models and flying jobs it is imperative) to construct a separate mould, using templates to ensure accuracy; carve to the *inside* dimensions of the finished plastic part. One thing which nobody has previously mentioned is the finish on the mould, but it is of vital importance. Do not merely sandpaper a wooden mould, for the first thing one notices in the production of good plastic parts is that every little irregularity shows up on the inner surface of the finished part. I have tried many methods of obtaining a surface on moulds which will not mark the plastic, and firstly, here are a few examples of what not to do: I give these because they are some of the things most likely to enter an aeromodeller's head.

Do not finish off the mould with any of the following: clear dope, banana oil, cellulose dopes or varnish of any kind. These are all liable to blister with heat and may even adhere to the moulding. Do not cover the mould with flannel or other cloth, although I have heard of this being recommended in working with Lucite in full-scale jobs: anyway, it marks the surface, believe me! Nor should very fine rubber be used over the mould; it is generally not smooth enough and often will not withstand the heat.

The two methods which I have used with complete success are: coating with cold-setting phenolic resin, and with an American concoction known as Plastico Roc. A baked stove-enamel finish would also be good as long as the enamel were dried at a higher temperature than that used during moulding processes. Whatever method is used I cannot stress too strongly the absolute necessity for a perfect surface. Unless one is content with mouldings of the usual calibre, the treated mould should first be rubbed down with fine abrasive, such as crocus cloth, No. 400 Wet-or-Dry, or flour paper—depending on the material used to coat the mould—and should subsequently be polished to the ultimate degree of gloss. When using phenolic resin I polish with Wet-or-Dry, followed by a commercial wadding polisher; with Plastico Roc, which is water-soluble, I use flour paper and then cellulose leveller. Whatever means used, the surface must be as perfect as that on the highest grade cellulose coachwork.

Now a few notes on the steps to take preparatory to moulding.

The most important fact which emerged during my early experiments, before making the successful but not perfect cockpit covers as typified by that on Celestial Horseman, is that the plastic sheet should not be heated too quickly and that the mould should be pre-heated. This is what is frequently done in full-scale plastic moulding processes, but whereas these moulds are of metal, steam filled, mine are of wood, but are placed so close to an open coal fire as to bring them within the radius of working temperature for the material used. In this way the entire operation takes place with the plastic in limp and very mobile state, whereas by removing the sheet of plastic from the fire and attempting to work it while it cools, poor results are sure.

The reason for most of the surface imperfections on professional and high class amateur mouldings is that the sheet was worked while cooling, therefore causing it to "drag." This is where other writers slip up, and where I did too in the past.

Next in importance is the use of gloves. These should be well saturated in water before beginning operations, or else could be made of asbestos impregnated fabric; at any rate they must protect the hands from considerable heat. It is all very well saying that the plastic can be held in tongs, but when moulding with the job at a heat of considerable intensity, thorough protection is a must, and bare hands holding hot material are not nimble and sure enough; tongs are no good at all for a small moulding under a foot long.

When attempting a fair sized moulding over four or five inches long, use plenty of stout short pins to fix the plastic firmly to the extremities of the mould, and also bend it over underneath the mould if possible because it has considerable "spring" in it while cooling off. These preliminaries can be concluded on what some would consider a frivolous note. Wear a towel round the head and face, well damped and wrung out. This not only protects one from the heat, but prevents perspiration dropping onto the mould immediately before the plastic is pulled over it, thereby ruining a good job.

Now for the actual moulding methods which give good results. These are:—

1. The "pull" moulding made over a male (carved) mould.
2. The "cavity" or hollow female die method.
3. The open female moulding plate used in a jig.

I purposely omit one of the most popular methods used in full-scale aircraft transparency manufacture—the compressed air, or bubble, blowing method; it is rather too complicated for the average modeller, and is only used when the part to be made is more or less symmetrical, *i.e.*, blister turrets, certain blister canopies, and so on.

The pull moulding is much the easiest to do successfully. Heat the mould, mounted firmly on a tall support and a baseboard, at the same time as the sheet of plastic is heated. I find that for average, *i.e.*, about 1/16 in. or 3/32 in. thicknesses of sheet, the heating time should be about 20 seconds in front of a bright red coal fire. Personally I prefer a coal fire to an electric heater as the heat does not get so localised (because of the large fireplace built to radiate the heat). It is a matter of practice to get the plastic sheet heated to exactly the correct state, but the thing to watch is that it does not heat too rapidly, which would cause small bubbles to appear, nor too slowly, which would mean the surface lustre would dim. With the sheet *and the mould* at working temperature, and the whole lot still close enough to the fire to keep them really hot, pull the sheet down quite quickly all round the mould. On large jobs it is best to have two people, or else pull down one side, pin it, and pull the other side. The great idea is to obtain an even pull all over the sheet, and this will mean that if these are flattish sides and sharp ends on a canopy the plastic must be pulled just as hard down the sides as at the ends. The natural tendency is to concentrate the pull at the sharp corners: this inevitably results in an uneven moulding which distorts the light.

It is most important that the gloved hands should not touch any portion of the plastic sheet which will appear in the finished, trimmed moulding; the soft and pliable heated material will mark so easily.

Turn the edges of the hot sheet underneath the mould and take out in the cold air to dry. A line should preferably be drawn round the mould before use, showing the size to which the finished part must be trimmed, and when the job is cold and still on the mould, scribe this line onto the plastic so as not to trim to a lopsided base-line when the job is removed from its mould.

It should not be necessary to re-heat and re-pull any portion of the moulding. I used to do so originally, before I took to working the whole job right on top of the fire, and it always meant a very cloudy and distorted moulding which needed hours of polishing.

Secondly, the cavity method. In full-scale manufacture the dies used in this scheme are of soft metal and are buffed to a mirror surface. I have tried the plaster-of-paris die method and find it to be difficult to eradicate. This method

is really only satisfactory if both the male mould and the female (cavity) die are finished to a tremendous gloss.

For really perfect results it is important to utilise two features of design when making the mould and die : a stripper plate and some positive form of locating pegs. A stripper is a flat sheet of hardwood which is placed above the top surface of the cavity die block and is positioned around its edges by shims : these should be ·01–·015 in. thicker than the plastic material used so as not to trap it while the job is being moulded. The stripper plate ensures that the plastic sheet is drawn smoothly into the cavity die : without a stripper, the moment the male mould is pressed onto the plastic, as was described in the recent AEROMODELLER article, the whole outside edge of the sheet will lift and wrinkle as it is drawn into the die.

The use of positioning pegs is obvious. Without them the male mould may or may not descend in a vertical plane and in correct relationship to the cavity die. In fact in most cases it definitely does not. These features are shown in Fig. 1, which is a drawing of a correctly designed jig for this type of moulding.

The third method, the open female die plate, is a simplified version of the cavity die. In full-scale manufacture the cavity die is to be preferred, as the female die may be, in effect, a hollow box with a dent in the lid representing the cavity die : the whole thing is kept at working temperature by steam passing through passages inside the casting. As modellers will not make steam heated dies for their " one off " mouldings, the open die plate seems much more to the point for their purposes.

The set-up is exactly the same as the preceding type except that in place of a solid block containing a hollow cavity there is a flat wood plate about $\frac{3}{4}$ in. thick for a moderate size canopy ; the exact overall size of the male mould, plus the thickness of the plastic all round, and a drawing allowance of ·002 in., is cut in the plate. The edge of the drawing allowance of ·002 in. is cut in the plate. The edge of the cut-out portion must be highly polished and its upper surface must be radiused to approximately the thickness of the plastic used (Fig. 2). The operation of drawing the moulding is exactly similar for both these methods. The whole job is done close to a fire, at working temperature as in pull moulding. First, lay the stripper plate to one side and heat a piece of plastic previously cut to fit inside the shims on the die plate ; when hot, lay it on the die plate, place stripper plate on its shims, clamp it down with the turnbuckles shown in the drawings, and slide the male mould onto the locating pegs. Push quite gently, and if necessary use graphite grease on the mould and dieplate. If the plastic is kept at working temperature throughout it will slide smoothly under the stripper plate and down round the mould, resulting in a satisfactory moulding.

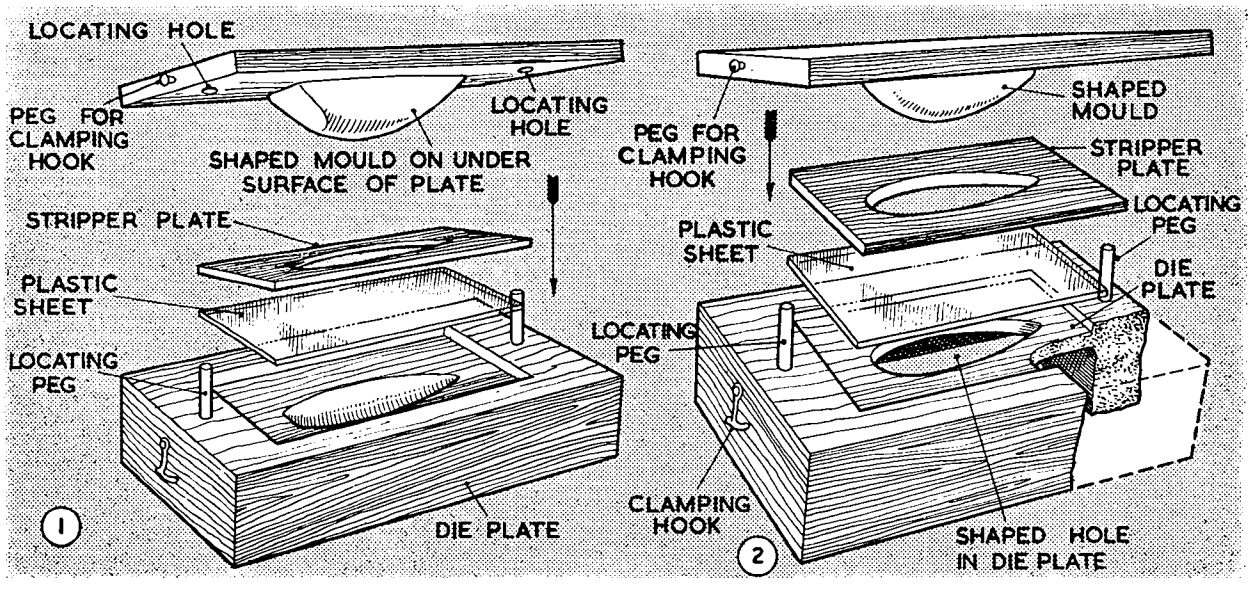
The method recently described in the AEROMODELLER, and elsewhere, of pinning a sheet of plastic onto a dieplate (in effect stretch moulding) is in practice generally not much good. Many people might get results to satisfy them, but for first class mouldings I am afraid I cannot recommend this method. If one succeeds in preventing splitting or blushing one always obtains distortion. When other people, including professional firms, state that they use this system with success, my only answer is that they are not as critical as I am and that mouldings they use I throw away.

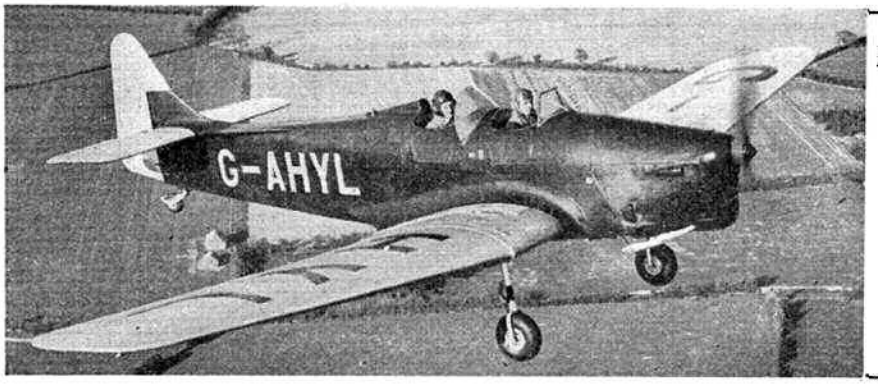
A few rather odd, but thoroughly practical and tested, observations of a general nature may prove helpful. It is very important to see that no speck of grit or dust remains on the mould during operations, or else it will cause an impression on the inside of the finished moulding ; therefore, dust the mould quickly and thoroughly before every job, using for preference a very slightly damp non-fluffy chamois leather or piece of glove.

To test a finished moulding for clarity and distortion, place it over a paper covered with the smallest possible news print. It should be possible to see every letter absolutely clearly and normally, no matter whether one looks downward or at oblique angles. Next, to test for ripple on the inner surface of the moulding, hold it up to strong daylight, look through it obliquely from the inner surface, and any small ripples will show up clearly. The final test for perfection (very few model mouldings could ever pass this one), place the moulding on clean white paper so that strong sunlight falls on it through the plastic ; a perfect job will show no signs of marks on the paper, but the slightest ripple or distortion will throw a shadow.

Plastic mouldings may be polished before use, which will bring a mediocre job up to a certain degree of lustre, but very rarely can a polished, poor moulding compare with a good one. Perspex may be buffed with an impregnated pad as sold by certain plastic firms, or with the special polish used in the Service. Cellulose acetate sheet is best polished with ordinary Brasso or with cellulose leveller.

A word of warning ! Most writers say how easy it is to make your own plastic mouldings. I would disagree : in my experience it has been easy to make opaque coloured plastic parts and not too hard to make passable cockpit covers : but to produce really perfect transparent mouldings has taken me four years, and that is with as much more comprehensive knowledge of plastics than possessed by most modellers. Perhaps these hints will help others to achieve a perfect result in less time than that.





AIRCRAFT DESCRIBED No. 12

THE MILES M14A

HAWK TRAINER

BY E. J. RIDING

FAIRLY large quantities of ex-R.A.F. Magisters are now being placed on the civil and overseas markets, where they are known by their pre-war name, Hawk Trainer Mk. III. Several flying clubs in this country are using Hawk Trainers for instructional duties, among them being the Portsmouth, Redhill, Bournemouth, Wolverhampton, Wiltshire, and Fairey flying clubs. Two machines from the latter concern are shown in the accompanying photographs, the flying shot being taken near the club's aerodrome at White Waltham, near Maidenhead.

The history of the M.14A dates back to about 1936, when the Air Ministry decided to lay down a specification for a monoplane trainer on which to train pilots to become accustomed to the Hurricanes, Spitfires, etc., that were then in production under the R.A.F. expansion scheme.

Meanwhile at Woodley, the flying school operated by Phillips & Powis, Ltd., had been using Miles Hawks and Hawk Majors for some time, thus providing a good deal of operational experience from which the firm were able to benefit when producing a design to fulfil the Air Ministry specification.

Accordingly the Magister was put into quantity production, and was turned out by the thousand at Woodley for the next six or seven years.

During the war a great amount of work was sub-contracted to various coach building and woodworking firms, such as Park Ward's, of Willesden, who built many Magister wings, etc., as well as doing repairs and construction of other Miles types. Magisters were also supplied to the air forces of Eire, Egypt, Rumania and Turkey, and since the war they have been exported, under civil registration letters, to France, Belgium, Spain, Sweden and other European countries.

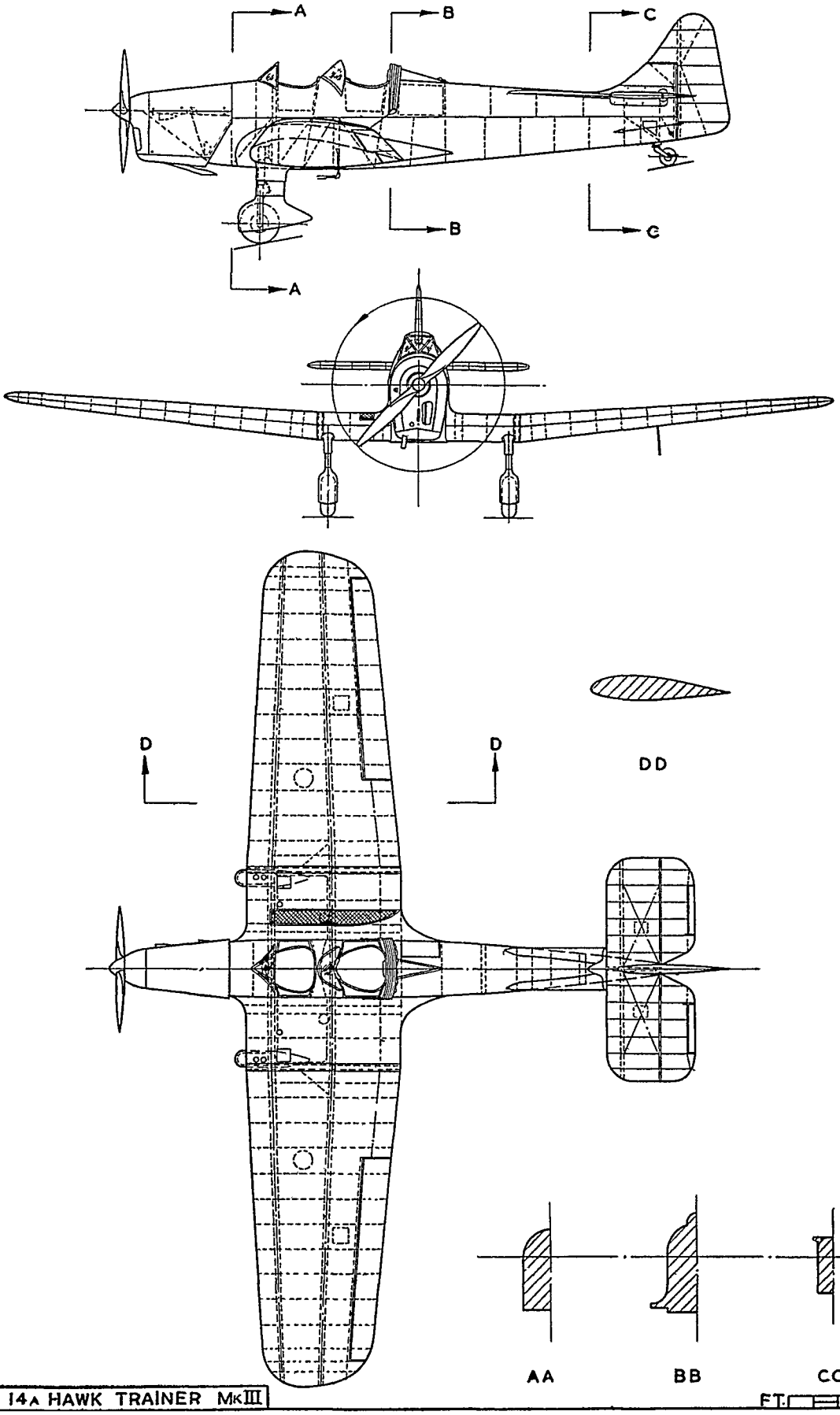
Construction. All wood. The fuselage is built up from square section spruce longerons and cross members with a plywood covering, the whole being surmounted by a plywood decking, supported by light wooden formers.

Anti-spin fins have been fitted to this decking immediately forward of the tailplane. The wings employ spruce and plywood box pattern spars supporting girder-type ribs with plywood covering. The wings are built in three portions—the centre section which is detachable from the fuselage, and the two outer extension planes. The undercarriage shock legs are attached to castings bolted on to the front face of the centre-section front spar and are suitably faired in with the wheels semi-enclosed by spats, although these latter are generally discarded when flying from heavy ground. Fuel capacity is 22 gallons, contained in two tanks housed in the centre plane. Full dual control and instruments, vacuum-operated split flaps and Bendix wheel brakes complete the flying equipment. The front windscreen has a sturdy crash pylon embodied in its construction to prevent injury to the occupants in the event of the machine overturning on the ground. Power plant: One four-cylinder, in-line, air-cooled inverted D.H. Gipsy Major.

Colour. Portsmouth and Redhill machines, G-AIDF, G-AIYB, G-AIYD, aluminium all over with light blue letters and flash. Fairey Flying Club, fuselage dark blue all over with aluminium letters. Wings and tail surfaces aluminium with black letters. The Fairey trade mark insignia is carried on the rudder. Registration numbers G-AHYL, G-AHYM and G-AKUA.

SPECIFICATION: Span, 33 ft. 10 ins.; length, 24 ft. 7½ ins.; height, 10 ft. 0 ins.; tare weight, 1,286 lbs.; max. loaded weight, 1,900 lbs.; max. speed, 145 m.p.h.; cruising speed, 115 m.p.h.; landing speed, 42 m.p.h.; ceiling, 18,000 ft.; range, 400 miles.

AEROMODELLER Photo.



MILES M 14A HAWK TRAINER MK III

FT.

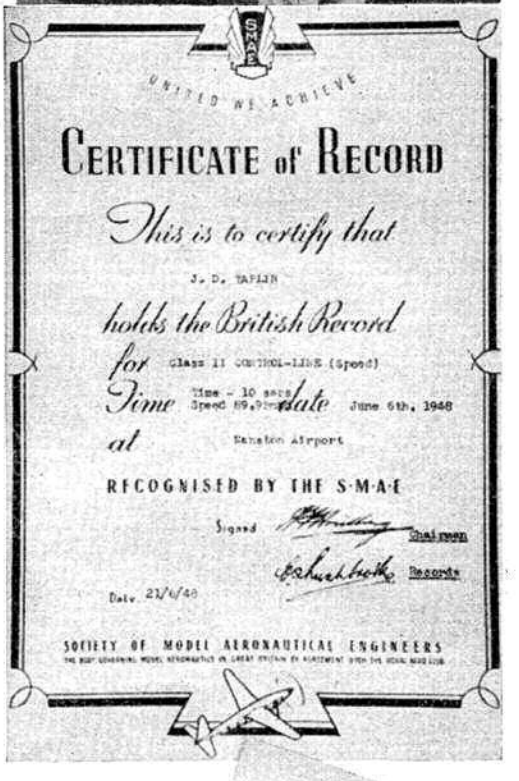
E.D. PROVIDE THE PROOF

The remarkable and almost unbelievable performances put up by E.D. Powered Craft necessitates publicity of actual proof of recent performances. Experts have nodded their heads doubtfully on receiving reports. Proof is here for all to see. J. A. Taplin, son of the accepted expert Col. Taplin, is shown above holding the Aircraft which he flew at 89·95 m.p.h. powered by an E.D. 2 c.c. COMPETITION SPECIAL DIESEL ENGINE.

Pete Cock seen below won the British Nationals beating 10 c.c. American Power Craft. His exceptional skill on Control-Line flight completed a performance which proves that British products are still " Second to none ".

A new addition to the E.D. range of Diesels, is the new 1 c.c. The outstanding leader in its class, and well within reach of everyone's pocket. Price **£2 5 0**

Prop. 9" **5/-** extra.



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Pete Cock winner of British Nationals 1948. Craft powered by E.D. Competition Special.

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S. & U.

An impressive display of models and modellers by the Lancaster and Morecambe Model Aero Club.

I START this month's News with an apology to those Press Secs. who have taken advantage of the extra few days grace in forwarding reports following the announcement of a new date in last month's AEROMODELLER. When making this statement, it was entirely overlooked that I would have to clear up the current column before leaving for America on the 20th August, therefore this issue is written a few days earlier than usual, and a number of reports must of necessity be held over. Sorry chaps, but it was an oversight, and I take all the blame.

By the time you read this the Wakefield Finals will have taken place, and it is hoped that a full report can be got across in time for this issue. It will therefore be redundant for me to say much on the event, other than to again hope that one of our chaps is successful in bringing the Trophy back to this country. It won't be for want of trying.

The Contest Board of the American A.M.A. announce that an official record has been recognised for a speed of 179·033 m.p.h. put up by a jet-propelled model flown by Glenn H. Tempte of Minneapolis. The model has a wingspan of 19 inches and is 27 inches in length. Total weight was 28 ounces. It is confidently expected that the 200 m.p.h. mark will be reached this season. It may be very clever, but believe me—I'm keeping well out of the way when these thunderbolts start hurtling around . . . I want to live just a little longer.

The New Zealand Model Aeronautical Association held a form of De-centralised Nationals, with somewhat patchy results. Members of the Auckland club just about cleared the board, R. N. Hewitson collecting no less than six firsts and three seconds in the sixteen classifications. Top time in the r.t.p. event was Hewitson's 1 : 40, so they still have a long way to go to catch up with us in this class of flying, but times in other outdoor events were comparable with our best. (I understand that a full team of New Zealand models are being sent to Akron for the Wakefield, so we shall see what they can do in our favourite class.)

L.A.C. Wilson, writing from Egypt, gives news of the Kasfereet M.F.C. which will interest you. He writes :

" Our club house is a Nissen hut, and pretty well equipped with tools including a circular saw. We are fortunate in having a fair sized airfield right on the doorstep, but this unfortunately is composed of sand and pebbles—apart from the tarmac runways. The undersides of fuselages, wingtips and airwheels do not take very kindly to this, whilst engines require frequent stripping and cleaning due to the sand menace.

" Thermals are abundant—too much so at times. In one day five sailplanes were lost—the wind blowing in the direction of the Great Bitter Lake (on the shores of which this camp is located). The best of these flights was a little over 12 minutes, but the model kept going o.o.s. and coming back to view again, and was clocked for a further 20 minutes, and then again for another 15 minutes before finally disappearing from view.

" Several rubber models have been built, but this class is not very popular as rubber very quickly deteriorates in this climate. Our main source of balsa supply is scrapped Mosquito's. Our last one has been well butchered, and we are anxiously awaiting the write-off of another !"

The first open rally held by the **SOUTH WESTERN AREA** took place at Haldon Aerodrome, Teignmouth, on 2nd August, and in spite of a downpour of rain and poor transport, a hundred entries turned up from seven clubs. Results :—

Open Rubber	**R. Perrett**	**Torquay**	**5 : 47·8 agg.**
	T. Cruise	,,	**4 : 43·4 ,,**
	E. Godwin	**Torbay**	**3 : 45 ,,**
Open Glider	**J. Higgins**	**Torquay**	**6 : 48·4 ,,**
	L. Long	**Torbay**	**4 : 50·8 ,,**
	J. Pomeroy	**Totnes**	**4 : 12·4 ,,**
Power ratio	**M. Biggin**	**Exeter**	**359**
	C. Elliott	**Teignmouth**	**349**
	J. Worrall	**Torquay**	**273**

The power ratios must be wrongly quoted, or some new method of working out the results must have been used. How did you arrive at those figures South West ? Best time of the day for rubber driven models was by R. Perrett with a flight of 3 : 02, Higgins making best with gliders at 4 : 00.

Over 3,000 spectators and nearly 500 entries were the official figures given at the close of the " Daily Dispatch " Rally held at Woodford Aerodrome with the co-operation of the **MANCHESTER & DISTRICT COUNCIL** of M.A.C's. Rain and wind spoilt matters, but the events started (and finished) to schedule, and some very good flying was witnessed. Whitefield members took a lion's share of the honours, as the full results show.

Open Glider	**R. Woodhouse**	**Whitefield**	**7 : 02·25**
(Seniors)	**R. Christianson**	**Sale**	**4 : 29**
	F. Best	**Leeds**	**4 : 28·5**
(Juniors)	**J. O'Donnell**	**Whitefield**	**4 : 31·5**
	H. O'Donnell	,,	**3 : 47·9**
	M. O'Donnell	,,	**3 : 16·2**
Open Rubber	**J. S. Eckersley**	**Bradford**	**4 : 51**
(Seniors)	**J. Hodgkinson**	**Rochdale**	**4 : 45**
	G. D. Peckett	**Bradford**	**3 : 36·8**

(Juniors)	G. Martin	Blackpool	4 : 00·5
	J. O'Donnell	Whitefield	4 : 35
	H. O'Donnell	,,	2 : 42·5
Power ratio	S. Woolley	Crosby	6·65
	H. Motler	Accrington	6·3
	K. Hindle	,,	5·7
Control-line	J. G. Eifflander	Macclesfield	405 points
	M. Booth	Blackpool	377 ,,

J. O'Donnell was champion of the Rally, and the O'D family (aged 15, 11 and 9 respectively) flew five models away, one just before the contests for over eight minutes.

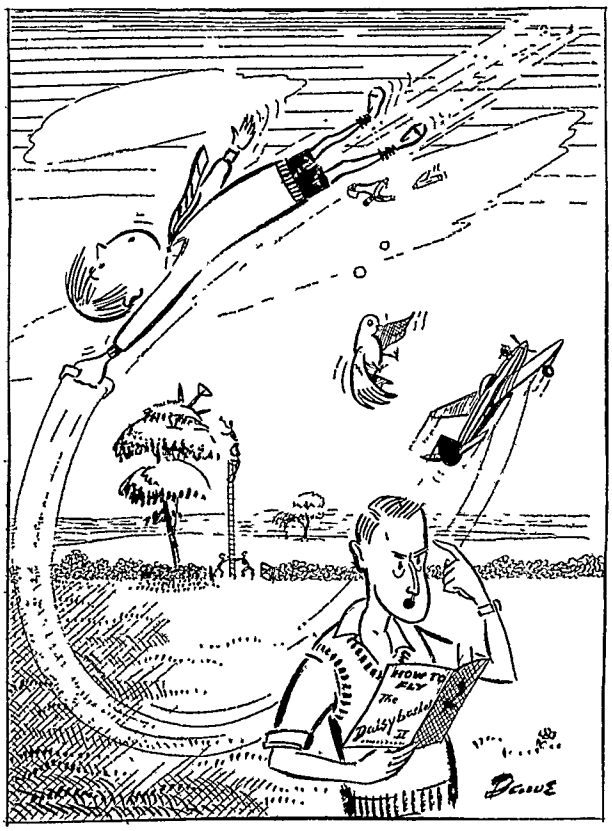
The **REGENTS PARK & D.M.F.C.** whilst flying at Fairlop watched Vic Scott's "Slicker" fly away for 8 : 00 o.o.s. with a 25 sec. engine run. Not official unfortunately, so Sid Norris's flight of 5 : 06 makes him club record holder. Dick Vahey sent his "Albatross" away for 4 : 58 so now holds the club glider record.

First report from the **SOUTH BRISTOL M.A.C.** shows a good membership, just about to start in on new facilities including building room, r.t.p. flying, flat roofs for controlining, and a canteen. Club records to date are—R.T.P.—C. Hill 1 : 35·4; Rubber-M. O'Keefe 4 : 30; Sailplane—P. Dowden 5 : 45; Power duration—C. Hill 3 : 00 and Power Ratio 7·66 by T. Lawrence.

RADLEY COLLEGE M.A.C. had a good day out on Port Meadow, Oxford, when M. P. Elliott's model caught a thermal and went over the University spires after 17 minutes.

Now using Church Lawford airfield, the **RUGBY M.E.S.** have been putting up some useful times. R. Hollingsworth topped both the power and rubber classes with flights of 5 : 21 and 1 : 13 respectively, while J. Middleton clocked a neat 58 secs. with a biplane r.o.g.

The **LUTON & D.M.A.S.** have flown in all kinds of weather during the last month, ranging from dead calm with super-sunshine to howling gales and driving rain at Eaton Bray during International Week. Two of the promised large gliders turned out to take 1st and 6th places at E/B, flown by Bob Minney and A. J. Hucklesby. The former went o.o.s. after 32 minutes. (The same model won the club's Faunch Cup the previous Sunday on its first outing.) Minney, as reported elsewhere, came second in the International Week championship, and Houghton put up a speed of 91 m.p.h. in the Class III control line section, which is being put forward for a new record.



"Let's see now—Instructions : The Daisybasher II is foolproof—a child can loop it."

As usual, the **AMPLEFORTH COLLEGE M.A.C.** has had bad luck with the weather, a comp. for all types at which Lord Pakenham was to have been present being cancelled. R. A. Twomey won the Brackenbury Cup in the evening after things had quietened down a bit. The day for the K. & M.A.A. Cup proved just the opposite, perfect conditions being in force, but thermals few and far between. P. James was the only competitor to find them consistently and aggregated over 9 minutes. The club power record has been raised to 6 : 47 by M. Pitels' "Slicker 50".

July 18th was the day for the **BLACKHEATH M.F.C.** annual rally at Epsom, and again old man weather showed a miserable countenance. Towards the evening things brightened and thermals were in evidence, and Jimmy Wingate of Streatham and Mobb of Blackheath obtained the best times of the day with 7 : 27 and 6 : 13 respectively. Results :—

Open Glider	T. Boxall	Brighton	11 : 35·6
	P. Allater	Surbiton	10 : 43·3
	P. Giggle	Brighton	8 : 43·5
Open Rubber	R. Clements	Luton	12 : 45·9
	D. Piggott	Croydon	11 : 59·2
	F. Playle	Hayes	9 : 06·3
Wakefield	J. Pitcher	Croydon	8 : 07·3
	J. Miller	N. Heights	7 : 20
	J. Wingate	Streatham	7 : 08·7
Sealed Times	J. Hayes	Malden	96·5 secs.
(95·5 secs.)	A. Hills	Croydon	93·5 ,,
	K. Donald	S. Cross	91 1 ,,

The **NORTHAMPTON M.A.C.** attended the Worcester club meeting on August 8th and succeeded in taking a 1st, 2nd and 3rd. H. W. Revell won the rubber event, with F. Adams runner-up, whilst D. Bason took third place in the power event.

Although suffering from many handicaps, the **EAST LONDON M.A.C.** is now settling down. Flying meetings are held on Fairlop every Sunday, with control line flying on Wanstead Flats each Thursday evening. K. Hill won a recent glider comp. with an aggregate of 3 : 55 and D. Farrell walked off with the rubber class with a total time of 2 : 38.

In almost perfect weather, the **BLACKPOOL & FLYDE M.A.S.** held an F.A.I. glider contest, won by G. Martin with an aggregate of 6 : 42·9, followed by C. J. Davey 5 : 18 and A. B. Munden 4 : 17. An unfortunate occurrence during the contest was the discovery that Randle's machine was not to F.A.I. ruling, thus depriving him of second place. Let it serve as a warning to those who present themselves on competition days with models which they think are O.K. Munden leads in the club championship at the moment with 420·4 points, closely followed by Davey.

A number of **SOUTH NOTTINGHAM M.F.C.** members stuck it out at Eaton Bray for International Week in spite of the weather, and went home with a varied assortment of Continental and Yankee engines. Dick Noble is progressing with controlining, and everyone is readying for the N.A.C.A. meeting in September.

And so I leave you for a month, which from past experience will be somewhat hectic. Much will have taken place before I sit down to bash club reports again, and let us hope it will turn out as we wish. If I bring back all the engines, rubber, grub and other goodies I have been commissioned for I shall have to change my ticket from a Constellation to half the Queen Mary. Here's hoping.

The CLUBMAN.

NEW CLUBS

QUINTON M.A.S.
C. J. West, 14, World's End Avenue, Quinton, Birmingham 32.
TIPTON & DUDLEY M.A.S.
R. O'Nions, 12, Gate Street, Burnt Tree, Tipton, Staffs.
TOTTENHAM M.F.C.
F. J. Ferry, 14, Church Road, Tottenham, N.17.

SECRETARIAL CHANGE
GREENOCK COMMUNITY CENTRE M.F.C.
G. A Hunter, 7, Chapel Street, Gourock.

CLASSIFIED ADVERTISEMENTS

PRESS DATE for December issue—November 1st.
ADVERTISEMENT RATES:
Private **Minimum 18 words, 6s., and 4d. per word for each subsequent word.**
Trade **Minimum 18 words 12s., and 8d. per word for each subsequent word.**
Box numbers are permissible—to count as 6 words when costing the advertisement.
COPY and Box No. replies should be sent to the Classified Advertisement Dept., The "Aeromodeller," The Aerodrome, Billington Road, Stanbridge, Beds.

FOR SALE.

Brand new 199 "Arden" with electrics, £8 10s. Willmott, 269, Hampton Road, Ilford, Essex.

15 c.c. "Magpie" engine, bench run only, with coil and condenser, £10. Partly completed "Vulcan" with riderwheels. Offers, Wolfson, 71, Chalkhill Road, Wembley, Middlesex.

New American engines. "Arden 099 and 199," "Bantam" 199, "De Long" 30, offers. A. Collinson, 4, Bolton Crescent, Eccleshill, Bradford, Yorks.

Large number of American "Model Airplane News," engines, models, etc. S.A.E. for list. Laurent, 28, Rosemount, Consett, Co. Durham.

"Ohlsson" 60, unused, £6. "Hallam" "K.6" unused, £5 10s. or part exchange for 5 c.c. diesel in similar condition. Forbes, 44, Kerrington Crescent, Dundee.

"Mills", "Comp. E.D." "Kemp,". Offers for lot or separate. Magazines Jan–Aug. '48 "Model Airplane News", "Model Cars", "Popular Mechanics." Hobbs, 57, Boundfield Road, Catford, S.E.6.

Offers invited for the following new and unused American engines:—McCoy 'Sportsman" Senior K. & B, "Torpedo "29, Gold Crown "Drone" 29. Ball Bearing "Arden" 199, "Buzz" 19, "Atom" 099, also second-hand "Ohlsson" 19 (good condition). Box 165.

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"Wildcat II" 5 c.c. diesel for sale, unused, £4 10s. with prop. E. V. Waddington, Tenby Lodge, Soham, Ely, Cambs.

Little run "E.D." Mark II diesel, first offer over £2 10s. secures. 2 "A.P.S." electric motors 6,000 revs, transformer and duralumin pylon, offers to Allan, Osmore House, Earith, Huntingdonshire.

"Frog" 1·75 complete, as new, 50/–. 2 pairs black leather boxing gloves, bargain 45/–. Stamp collection valued £8 10s., offers. J. Wade, Mill Road, Ashley, Newmarket, Suffolk.

1941, 1942, 1943, AEROMODELLERS. Work undertaken for model aircraft construction, full information:—Bray, 44, Chester Avenue, Luton.

American "Attwood Champion" 10 c.c. petrol engine, as new, £11. Box No. 167.

3·3 c.c. French "Ouragon," run twice, £4 10s. or near offer. 'Phone STA. 7781.

"Ohlsson 23" engine, less electrics, bench run only. Offers. N. Murphy, Heinault Road, Foxrock, Dublin, Eire.

Two new 6 c.c. streamline petrol engines. Complete with coils, condensers, £6 each. W. A. Bird, "Birdby," Cliburn, Penrith, Cumberland.

"A.F.P." volumes 2 and 5, brand new, never been used, £2 for both. Wood, 3, Victoria Avenue, Eccleshill, Bradford, Yorkshire.

"K.K. Junior 60" with "Owat" diesel and pneumatic tyres, £15 or near offer. "Veron Speedee" with "Clan" ·9 diesel engine and M.S. airwheels, £5 10s. or near offer. Also large number of kits, dope and Balsa wood, all at cost. Write to, B. J. Bower, 83, Mount Road, Hastings, Sussex.

American "Drone" 5 c.c. diesel, perfect running condition, £5. D. Banson, 62, Ivy Road, Northampton.

"Scorpion" Mills powered, £10. "Slicker Mite" powered "Amco" fitted "Snip" timer, £5 10s. Both well built, hardly used. "Owatt" 5 c.c. with flywheel, £4. Parks, "Welcombe," Burghclere, Newbury, Berks.

TRADE.

AEROMODELLER back issues can be obtained from W. H. Forway, Elizabeth Villa, Coventry Corner, Hockley, Essex. Early copies bought.

America's Aeronautical Magazines. 1 year's post free supply. "Flying" 20/–; "Air Trails" 16/6; Model "Airplane News" 17/6; S.A.E. for list from Willen Ltd., 120(i), St. Georges Road, London, E.10.

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American Model magazines available direct by post from the U.S.A. "Air Trials" 19/– per year, post free. "Model Airplane News" 17/6. "Flying Models" 20/–. "Model Race Cars" 17/6. Send P.O. to:—Burnley Model Supplies, Park Lane, Burnley.

Staffordshire's 100% Model Shop is well worth a visit. Est. 1936. J. W. Bagnall, South Walls Road, Stafford. 'Phone 420.

"Wildcat" 5 c.c. diesel part machined engine kits, specially produced for modellers who do not possess lathes, 62s. 6d. Send S.A.E. for full information. Davies-Charlton & Co., 13, Rainhall Road, Barnoldswick, via Colne, Lancs. (*Continued on page 615*)

CLASSIFIED ADVERTISEMENTS.

Continued from page 605.

Hire Purchase—Initial Payments : "E.D. Mark II," "E.D. Bee," "Milford," £1. "E.D. Comp.," 22/6. "E.D. Mark III," 30/-. "Amco," 29/-. "Mills Mark II," £2. Weekly Payments, 3/-. Model Stadium, 5, Village Way East, Rayners Lane, Harrow, Middlesex. Pinner 6459.

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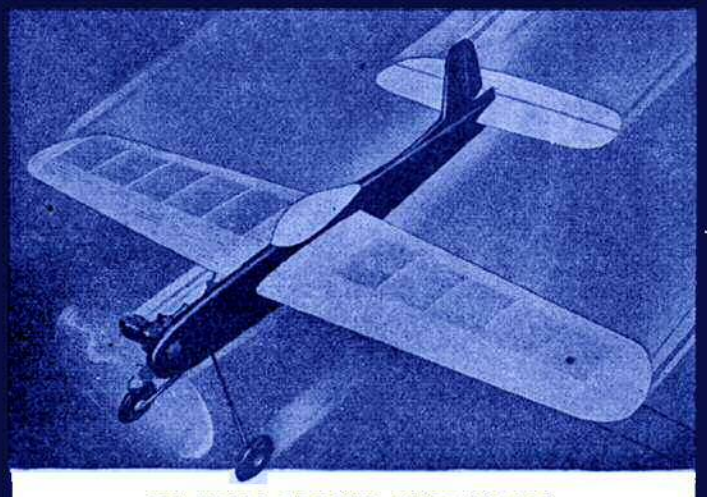

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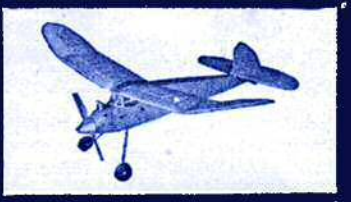

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