AEROMODELLER

CONTENTS

- G. Dunmore's Bowden Contest winner the "Wyvern"
- A top performance lightweight rubber model "Trump Card" from the Hatfield Club
- Charlie Taylor's realistic Stunt C.L. Model of the Warken Boomerang
- "Bunker IV" an unusual contest power model from Northern Ireland
- F. C. Judd the radio expert writes on "Practical Aerials"
- Full illustrated reports on the season's first contests

JUNE 1951 1/6

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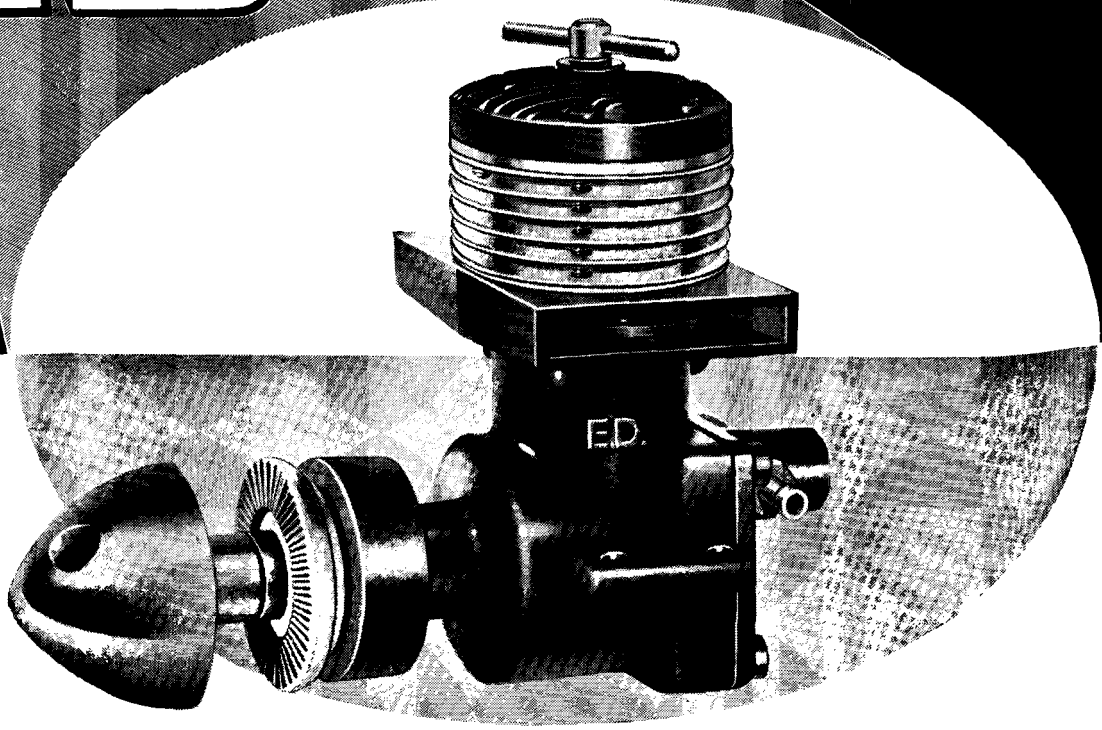

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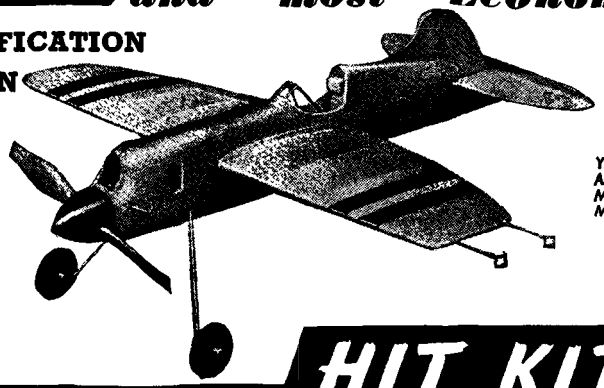
17/6 *Inc. P.T.*



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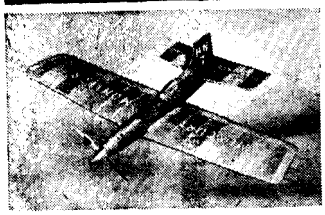

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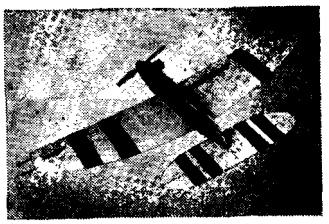

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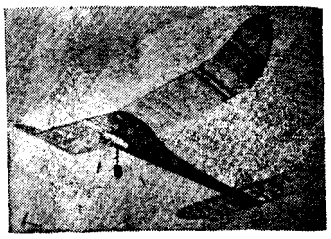

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To Aeromodellers at home and overseas,

We are sorry that the trade can no longer carry the increased costs in importation, production and distribution which have been steadily mounting and that the retail prices of "SOLARBO" Balsa wood must be increased. We would point out, however, that this is the first increase since the war.

We know, of course, that our specialised plant for cutting Balsa wood is unique in this country, but we are also assured by overseas visitors that they know of no comparable organisation abroad.

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Any visitors from overseas to the Festival of Britain will be exceptionally welcome should they care to visit our Mill.

Yours faithfully,
PLANTATION WOOD (LANCING) LTD.

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STRIP 36" Lengths	PRICE each
1/16" × 1/16"	1½d.
1/16" × 1/8"	1½d.
1/16" × 3/16"	1½d.
1/16" × 1/4"	2d.
1/16" × 3/8"	2½d.
1/16" × 1/2"	3d.
3/32" × 3/32"	1½d.
3/32" × 1/8"	1½d.
3/32" × 3/16"	2d.
3/32" × 1/4"	2½d.
3/32" × 3/8"	2½d.
3/32" × 1/2"	3d.
1/8" × 1/8"	2d.
1/8" × 3/16"	2½d.
1/8" × 1/4"	2½d.
1/8" × 3/8"	3d.
1/8" × 1/2"	3½d.
3/16" × 3/16"	3d.
3/16" × 1/4"	3d.
3/16" × 3/8"	3d.
3/16" × 1/2"	3½d.
1/4" × 1/4"	3d.
1/4" × 3/8"	3½d.
1/4" × 1/2"	4d.

3/8" × 3/8"	5d.
3/8" × 1/2"	6d.
1/2" × 1/2"	7½d.
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LEADING EDGE.

1/4"	5d.
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1/2"	9d.

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1/32" × 4"	1/2
1/16" × 2"	7½d.
1/16" × 3"	10½d.
1/16" × 4"	1/2
3/32" × 2"	8d.
3/32" × 3"	1/-
3/32" × 4"	1/5
1/8" × 2"	9d.
1/8" × 3"	1/1½
1/8" × 4"	1/7½
3/16" × 2"	10½d.
3/16" × 3"	1/3
3/16" × 4"	1/10

1/2" × 2"	11d.
1/2" × 3"	1/5
1/2" × 4"	2/-
3/8" × 2"	1/2
3/8" × 3"	1/9
3/8" × 4"	2/6
1/2" × 2"	1/5
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TRAILING EDGE.

1/4" × 3/8"	4½d.
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BLOCK	PRICE Per foot run
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1" × 1½"	11d.
1" × 2"	1/2
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1½" × 2"	1/5
1½" × 2½"	1/8
2" × 2"	1/9

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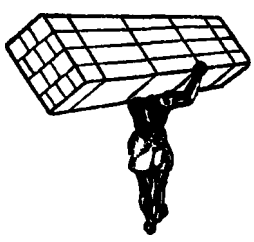

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ESTABLISHED 1935

AEROMODELLER

INCORPORATING "THE MODEL AEROPLANE CONSTRUCTOR"

VOLUME XVI
NUMBER 185
JUNE 1951

"Covers the World of Aeromodelling"

Managing Editor:
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Published monthly on the 15th of the previous month by the Proprietors:
THE MODEL AERONAUTICAL PRESS LTD.
Allen House, Newarke Street, Leicester.
Subscription rate 21/- per annum prepaid (including Christmas Double Number).

Contents

Advertisement Office:
THE AERODROME, BILLINGTON ROAD, STANBRIDGE, NR. LEIGHTON BUZZARD, BEDFORDSHIRE. Tel.: EATON BRAY 246

Editorial Office:
ALLEN HOUSE, NEWARKE STREET, LEICESTER. Tel.: LEICESTER 65322

An Open Letter to Mr. Gaitskell

DEAR MR. GAITSKELL,

Whether or not the rolling tide of political change will have left you upon that firm rock of financial achievement that you deserve for your Budget proposals by the time this letter appears we do not venture to prophesy nevertheless, we do feel that your consideration for the "little man" is a matter for our Editorial approval.

For we and our readers are all "little men" who the length and breadth of the country take their pleasures in a small way making "little things" that the uninitiated have in their ignorance been wont to speak lightly of as toys. But these little things that give us our amusement are pregnant with possibilities for they are aircraft in miniature—the realistic models that have for so long been the introduction to flying of many of our leading full-size aircraft designers and countless numbers of R.A.F. personnel.

Your Budget speech gave us new hope that an enlightened Chancellor might be disposed to look kindly upon our activities, particularly as defence plans play so large a part in the future programme you have outlined. We welcome your views on purchase tax as means of "checking inflationary tendencies", and reducing the consumption of articles "likely to conflict most seriously with the needs of export and defence".

We are sure that in seeking the magical formula for increased productivity you will be the first to admit that all work and no play is not the solution. It is obvious that recreational activities must and will be indulged in by every worker whether on overtime or not. These may take the form of additional and unnecessary consumption of goods in short supply, or even undesirable and unhealthy indulgence that can do little to fit the worker for even more strenuous efforts on returning to his bench or conveyor belt. Or, they may be the pursuit of an interesting, useful hobby that adds to the manual dexterity of the devotee, costs little in materials, and combines equally a large degree of healthy outdoor exercise on open spaces.

If we can add that this hobby is also inculcating countless numbers with a knowledge of the problems of flight and building up a vast potential of eager volunteers for an enlarged air force, would you not agree we too are offering our country substantial contribution towards its future security?

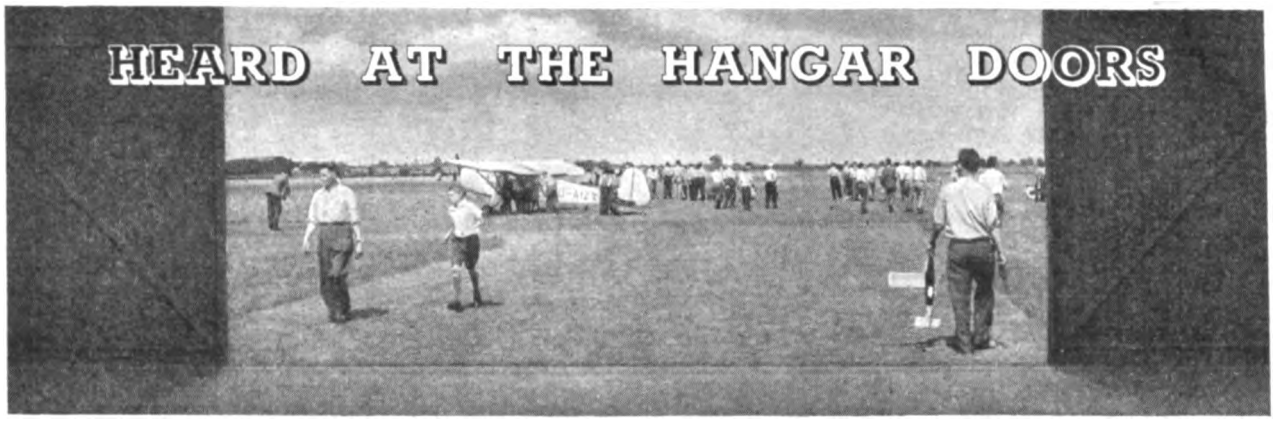
But do your staff—those permanent Civil Servants who claim, no matter what government is in power, to do the real work of running the country! —realise these important facts? Since 1948 they have been levying an iniquitous purchase tax on model aircraft supplies, on model engines, on model constructional kits of parts, in fact on nearly every accessory connected with the construction and flying of model aeroplanes. Our Trade Federation has supported a test case brought by H.M. Customs & Excise, where the learned Judge found it necessary to decide in favour of the plaintiffs solely on the wording of the regulation making the charge.

We do most strongly urge you, sir, to reconsider this question from that eminence you so competently occupy, and make the necessary amendments to this unjust order so that the many youngsters—who may, alas, only too soon be fighting new Battles of Britain in our skies to protect us from another enemy—may acquire those skills so essential to their swift progress, and the tired worker may indulge his recuperative hobby unfettered by a levy that can never have been intended so to restrict them!

Believe us, Mr. Gaitskell, that in addressing this open letter to you we are speaking for nearly a quarter of a million aeromodellers—including over a hundred R.A.F. model clubs—who ask only the right to enjoy unhampered a hobby that is good for them and the Nation. THE EDITOR.

Cover Photograph . . . .

Ron Young of High Wycombe, hair streaming in the gale force wind, is assisted with his power model by McPhee of Reading. Occasion was the Astral Trophy contest in the South Midland Area at Cranfield.



That's Telling 'Em

THE following extract from the North Western Area news-sheet for March, 1951, is right to the point, and should be read and carefully considered by every aeromodeller in the country.

"BLAME YOUR CLUB SECRETARY—and not the Committee, if you are given a chilly reception at a flying meeting by your officers after asking them about the rules and regs. of the day. It's a dangerous fallacy to assume that the officers have any more than the normal quota of patience. It is your Secretary's duty to inform you fully of the contents of these news-sheets, particularly when they include competition details. We try hard to do our jobs well, so it's up to you to see that your Secretary does his; if he doesn't, boot him out and find another.

"We'd like you to bear this in mind too:—most of the Committee are, or were, active competition fliers—they would much prefer to down pencil and record cards and join in the fray. There is a satisfaction in doing a job of organisation well, but there's nothing to touch the dizzy delights of model flying itself".

The big snag is that far too few are prepared to help the other fellow, and it is invariably the grouser and clueless type who would be utterly hopeless at the very necessary job of organising and running a meeting. (We have in mind the bright type met last year who, bang in the middle of the lunch break, came forward to make his first official flight. When reminded of the restart time, he blithely stated that he'd finished his lunch some time ago, and took a dim view of timekeepers, etc. who wanted to eat! This bod duly turned up again (late!), asked the timekeeper for a winder; then for someone to hold his model whilst he wound; and then wanted someone to light the D.T. fuse!! So helpful—and was he surprised when the bods told him what they thought of his helpful activities!

Proxy Flying

As it is apparent that some clubs are not clear on the regulations, the Council of the S.M.A.E. have made a statement to the effect that proxy flying of models can only be allowed in cases where the entrant suffers from some physical disability which prevents or handicaps him from normal competition. Such proxy flying can only be sanctioned following direct application to the Competition Secretary of the S.M.A.E.

A temporary relaxation of the regulation is afforded those modellers who wish to compete in qualifying contests for the Wakefield or A/2 Trials, and who are prevented from so doing by reason of call-up for Class Z or Class G Military Training. Here again, sanction can only be given following application.

Wakefield and A/2 Trials

A sub-committee appointed for the consideration of the proper conduct of the Wakefield Trials have submitted their findings to the S.M.A.E. Council, and the following extracts from their Report will interest all readers.

The Committee, consisting of E. W. Evans (Northampton), F. Holland (Swansea), J. B. Knight (Kentish Nomads) and R. H. Warring (Zombies)—all past Team members, and three with actual experience of Finnish conditions—agreed that:—

"Flying should take place in as near non-thermal conditions as possible, and that evening and early morning were more likely to provide these conditions than any other part of the day".

During their deliberations the Committee kept in mind the following factors:—

(*a*) Sunset on Saturday, June 9th, is 10.15 p.m., and sunrise on Sunday, June 10th, is 5.45 a.m., both B.S.T.

(*b*) The time competitors could reasonably be expected to arrive at Cranwell.

(*c*) That the evening of the 10th June would not be available as the contest must close early to enable competitors to get home.

Two schemes were considered, and the system finally agreed is as follows:—

1st Round: 8 p.m. to 9.30 p.m., Saturday, June 9th.

2nd Round: 6 a.m. to 7.30 a.m., Sunday, June 10th.

3rd Round: 7.30 a.m. to 9 a.m., Sunday, June 10th.

The Committee also decided that the order of flying shall be decided by means of a draw. (Those who remember the 1949 Trials, where a similar system was adopted, will appreciate the smooth order of flying, also the fact that by such methods the weather conditions encountered are spread over the full entry through each round, thus ensuring as near as possible equal conditions for all).

The A/2 Trials will follow on the completion of the Wakefield flying, and it is anticipated that the glider boys will act as timekeepers, etc., for the Wakefield section and vice versa.

Trade Bereavement

We regret to report the death on April 2nd of Wilfred Morgan, B.Sc., owner of " Powakits ". A schoolmaster by profession, born at Cirencester and educated at Bristol University, Mr. Morgan, age 53, had for fifteen years a keen interest in model aircraft, particularly scale models. It was in fact, the first class range of flying scale kits produced by Mr. Morgan and designed by Howard Boys, that made the name of " Powakits " synonymous with this particular type of model. They were a credit to the man who manufactured them, and amply demonstrated a regard for accuracy and detail not always found in commercial products.

We offer our deepest sympathies to Mrs. Morgan, in her great loss, and know that modellers everywhere will echo these sentiments.

An Interesting Experiment

F. C. Judd, well known to readers for his articles on Aerials (see page 344) has sent us details of an interesting liaison due to take place between members of the West Essex Club and members of the Radio Society of Great Britain, East London District.

At the West Essex Gala, no less than nine " Hams " will provide a very complete recovery service, using mobile transmitters on the 10 meter band, and fixed-portable transmitters on the 160 meter waveband. A complete scheme has been worked out, employing a master transmitter and receiver in conjunction with the various mobile transmitter/receivers, and models will be tracked from the moment a flyaway commences.

Special equipment has been constructed by these radio enthusiasts, and if the experiment is a success, then the S.M.A.E. might do well to employ similar liaison with the Radio Society of Great Britain for some of the National centralised contests this season. Already the R.S.G.B. is co-operating at the AEROMODELLER International Radio Control Contest at Whitsun, by checking radio equipment, etc., but this new sphere of their activities in connection with model recovery would appear to have great possibilities for the future.

They're Off!

The first National Contests of the 1951 Season met with rather better weather generally than is usually expected, and the entry for both the " Pilcher Cup " and the " Gamage Cup " well beat previous years' figures.

No less than 93 clubs forwarded entries for the Glider event, and a total of 272 competitors battled for top honours, including 29 juniors. It is obvious that conditions in the Southern portion of the country were better than those farther North, the results well indicating this factor. We learn of blinding snowstorms that seriously handicapped the more Northerly clubs, and it says much for their enthusiasm that they flew at all. The top six men in the " Pilcher " were as follows :—

1.	G. Gates	Southern Cross	13 : 03
2.	T. Noel	Wayfarers	12 : 28
3.	D. Kemp	Chelmsford	12 : 23
4.	B. Gardner	Surbiton	12 : 17
5.	M. Simpson	P.M.A.L.	11 : 20
6.	N. French	Central Essex	11 : 15

The rubber-driven class did not attract quite so much attention, and it becomes increasingly obvious that many modellers find the average contest glider easier to fly than its rubber powered contemporary. However, 74 clubs put in an entry, comprising 156 individuals, and again the times—albeit below that of the gliders—were very good in spite of somewhat rough conditions. Two Ipswich stalwarts scored top marks in this season opener, known all too well as the " Damage ".

1.	E. Harwood	Ipswich	11 : 37
2.	J. A. Gorham	Ipswich	10 : 50
3.	M. Gilbert	Flying Saddlers	10 : 37
4.	E. Smith	Icarians	9 : 35
5.	W. Smith	Upton	9 : 27
	W. Rockell	Gainsborough	

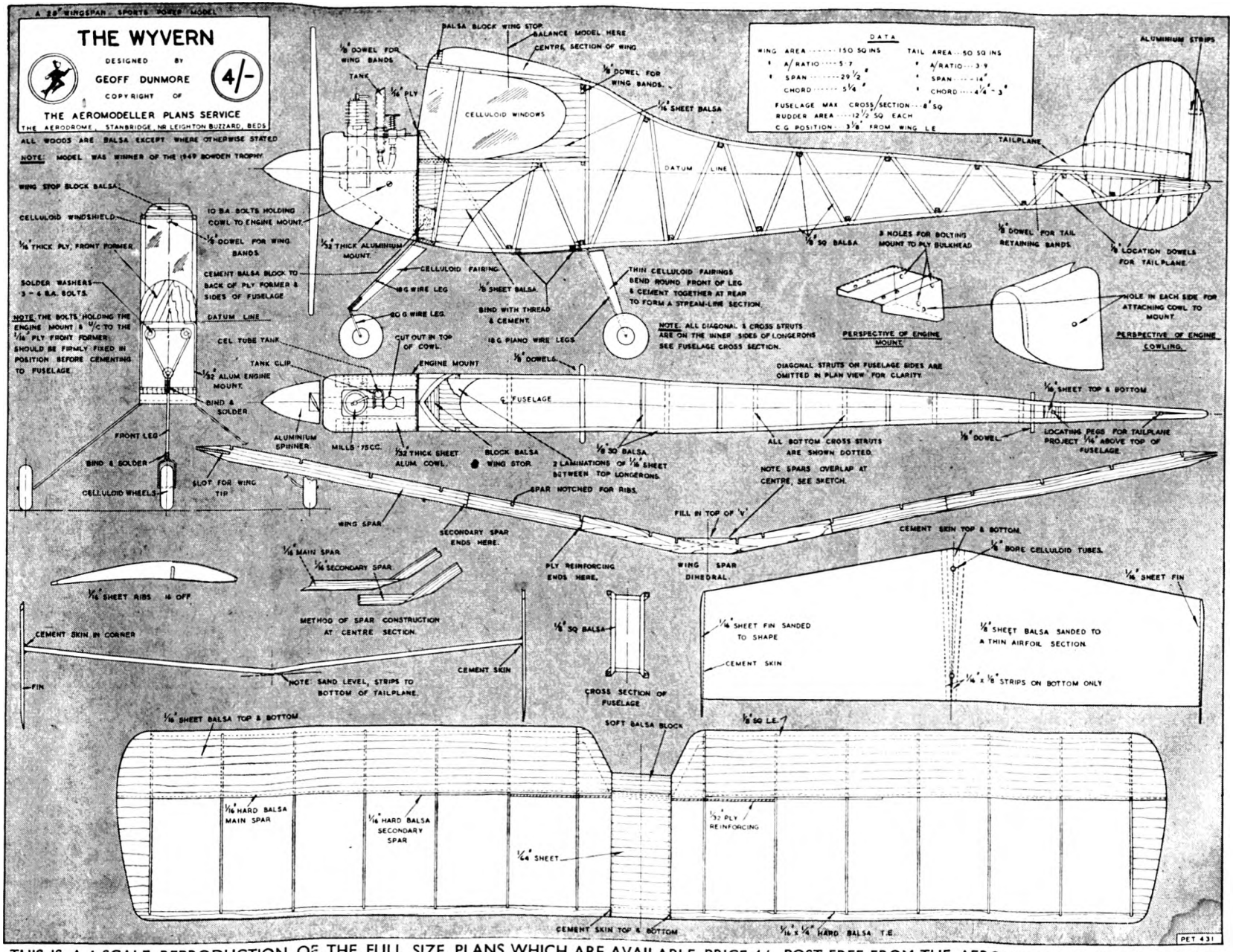
Gorham (1950 Individual Champion) and Eric Smith (member of the 1949 Wakefield Team) are well known, but it is good to see many new names coming into the top register.

1951 sees the introduction of special Junior awards in all National contests, and the comparative good times put up by the youngsters in these initial contests should be encouraging to the many others who may have held back thinking they stand no chance against their senior members. Junior results are as follows :—

GAMAGE :	1.	D. Berriman	Wolverhampton	7 : 00
	2.	C. Marsh	Ilford	6 : 44
	3.	H. O'Donnell	Whitefield	5 : 24
PILCHER	1.	A. Hinks	Luton	7 : 36
	2.	J. Mace	Upton	7 : 09
	3.	G. Evans	Cheadle	6 : 28

Skyranger Weds ! ! !

This happy heading, lifted unashamedly from the Essex local press, announced the marriage of one of West Essex Club's better dressed young gentlemen, to wit, our own Ron Moulton. We extend our congratulations to the bridegroom, and express our fears to his charming bride that she may not have realised all the dreadful implications of wedding an aeromodeller. It was rumoured that the superstructure of the cake was balsa, we still await practical confirmation that it was all edible. No prizes given for identifying the aircraft reputed to have been the gift of the bridegroom to the bride!

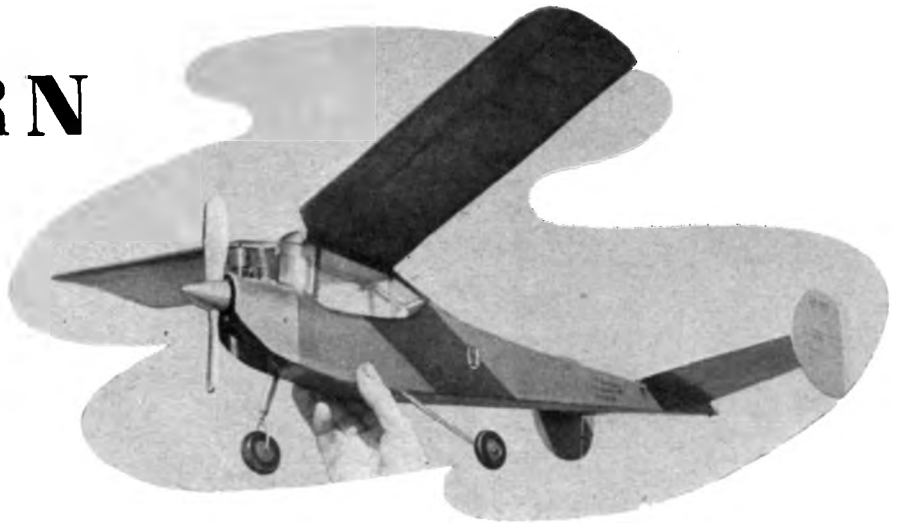


THIS IS A ¼ SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 4/– POST FREE FROM THE AEROMODELLER PLANS SERVICE

The WYVERN

Build this Bowden Contest winner—a precision "baby" of proven performance for motors up to 1 c.c.

BY GEOFF. DUNMORE



THE Wyvern was designed in 1948, and has since flown with great success, winning the Bowden Trophy at Cranfield Aerodrome in 1949, despite the strong winds and rain prevailing during the course of the contest.

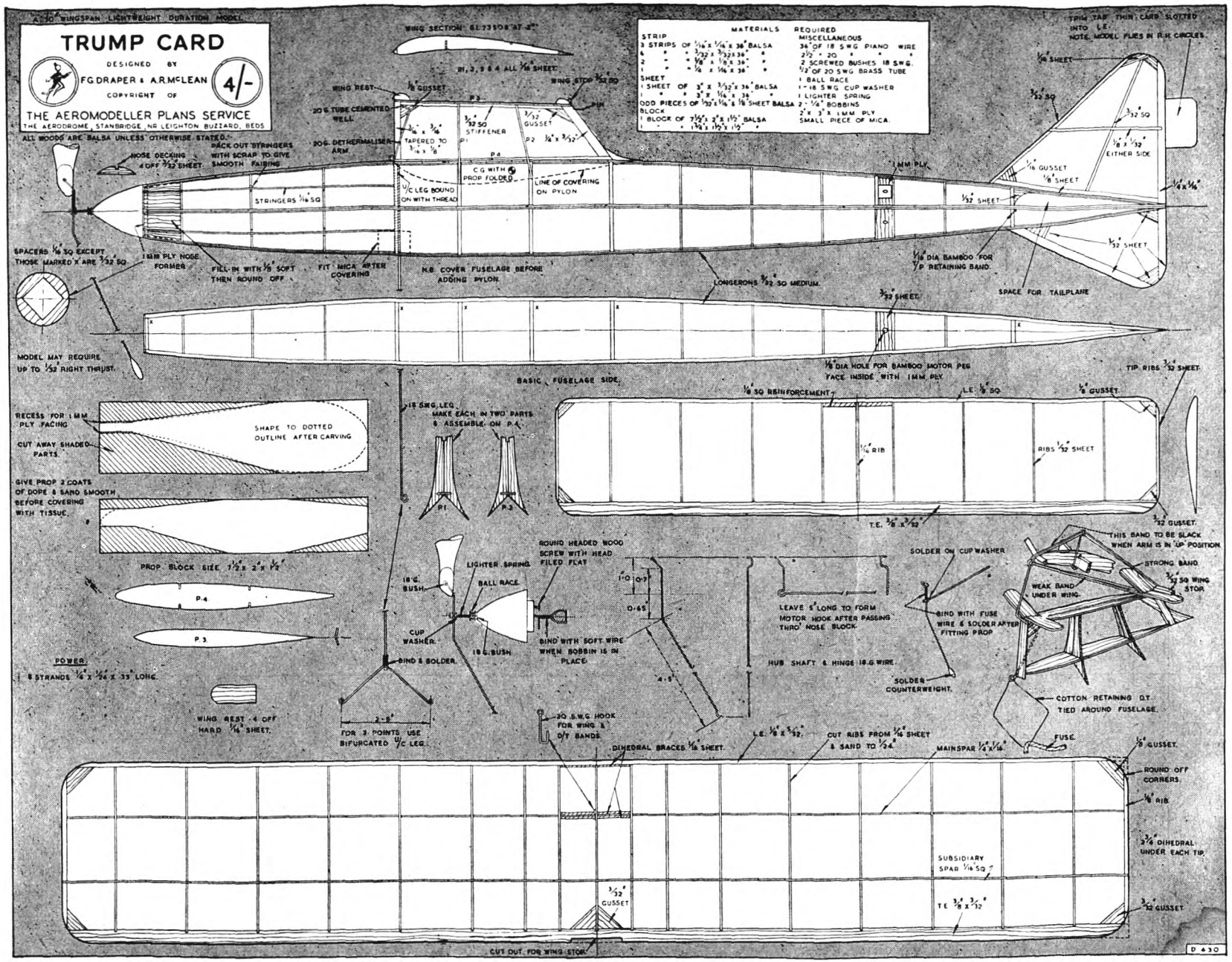
The main features of the design are its tricycle undercarriage, twin fins and dihedral tailplane. The pylon effect, *i.e.* mounted fairly high and set well forward, the centre section of the wing being cut back to suit the contours of the fuselage, is further elaborated by the use of the N.A.C.A. 6409 airfoil, which I have used on my pylon designs with great success. The model is powered by a ·75 c.c. Mills diesel, although suitable engines ranging from ·5 c.c. to 1 c.c. could be used.

Trimming and Flying: On the original model it was not found necessary to make any alteration to the trim, but where a different engine has been fitted this will probably alter the balance. Gliding tests should be carried out, and if any appreciable alteration has to be made, it is best to add a little plasticine to the nose or tail, and only make minor adjustments to the tailplane setting. Having obtained a flat and straight glide, start the engine and run as slowly as possible. Wait until there is only a very small quantity of fuel in the tank, place the model on a flat surface, and let it take off. After one or two short flights, during which the model should have been finally trimmed and the engine gradually speeded up, long flights can be undertaken. It should be noted, however, during these short test flights, that the engine run should be at least five or six seconds duration, the danger of a shorter engine run being that if the engine cuts just after the model has left the ground and attained a steepish climb, there is a likelihood of it not having sufficient height to recover and take up its natural gliding angle before the ground rushes up and hits it hard! I've crashed more models that way!!!

THE DESIGNER

Age 30 . . . recently married . . . member of Leicester M.A.C. . . . Engineering Draughtsman . . . other hobbies include, cine photography, sailing and model cars . . . started modelling in 1934, and has built most types, but now works on gliders, power duration and radio control only . . . won Astral Trophy and the Bowden in 1949, not forgetting a silver medal in the 1950 "Model Engineer" Exhibition.

Left, the designer caught in action at the 1949 Bowden by our camera man.



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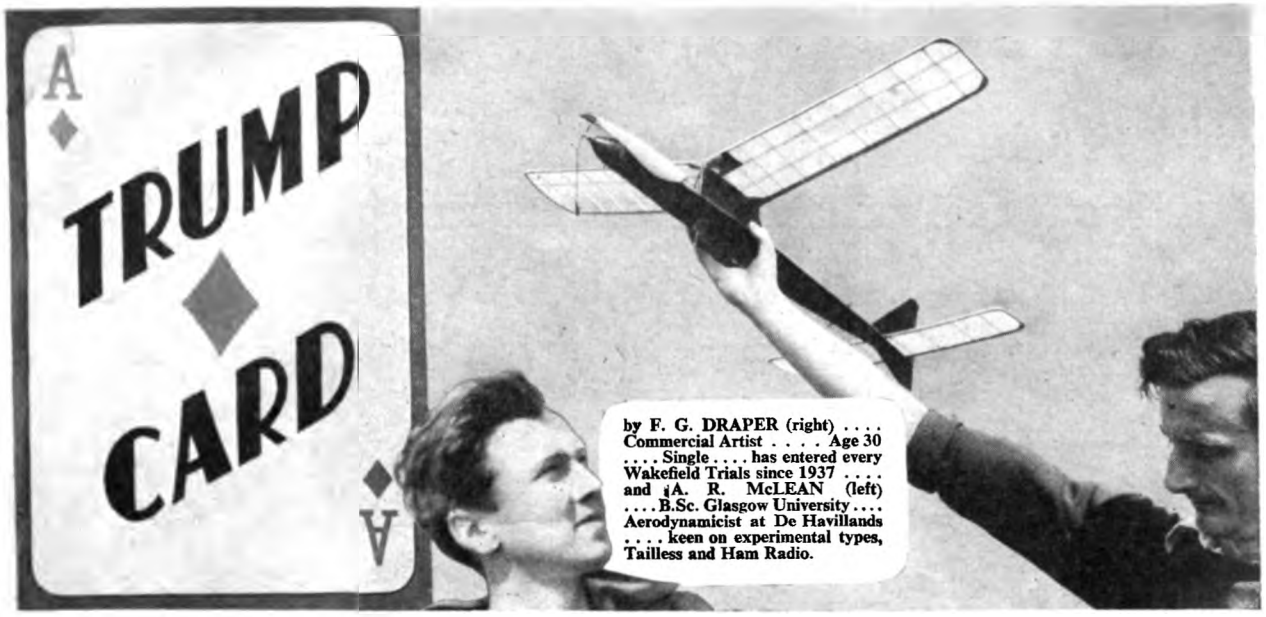


by F. G. DRAPER (right) .... Commercial Artist .... Age 30 .... Single .... has entered every Wakefield Trials since 1937 .... and A. R. McLEAN (left) .... B.Sc. Glasgow University .... Aerodynamicist at De Havillands .... keen on experimental types, Tailless and Ham Radio.

A 30 INCH LIGHTWEIGHT RUBBER CONTEST DURATION MODEL

TWO seasons' work on a series of fifteen models—excluding numerous variants built by Hatfield Club members—has brought the Trump Card to a degree of development where it is felt that further modification will have little effect on consistent performance.

Fuselage : On the first two models a " slab sided " layout was used but subsequently a diamond was chosen, as when considered in conjunction with the pylon it offered both aerodynamic and structural advantages. In particular it minimised interference drag and permitted a stronger junction.

Further aerodynamic improvements included streamlining the nose and slimming the pylon.

Both 1/16 and 3/32 square stock was used for the fuselage construction, but an effective compromise was struck by using the larger section for longerons and the more highly stressed spacers, the rest remaining 1/16 square. This gave a light yet " thumb-proof " structure.

Wing : Of the sections used the turbulent flow types and in particular Sigurd Isacson 73508 seemed to give the best glide. Sparless construction was recently discarded in favour of the present structure as shown on the plan. This is appreciably lighter and calculations indicate that the strength in bending of the uncovered wing is up some 30 per cent.

Laminated semi-circular tips were abandoned in favour of square tips in the interests of lightness and ease of construction.

Moderate straight dihedral gave adequate lateral stability and eliminated the slight rocking tendency experienced with polyhedral and once again simplified construction, and—an important point—rigging.

Tailplane : At an early stage a lifting tailplane was found to be definitely superior. The only other change in design was a slight reduction in area.

Fin : In common with most models the size and distribution of fin area was found to be quite critical where spiral-stability was concerned.

Airscrew : Matching the airscrew to the power available had a large effect on the flight characteristics. Although two versions were fitted with free-wheelers, the remainder featured single bladed folders, which gave a considerably better glide.

The relatively small free-wheelers needed to produce a respectable glide, resulted in a fast but inefficiently steep climb with little apparent increase in ceiling and a shorter motor run.

Dethermaliser : As it was desired to keep the fuse under the C.G., and no space was available for parachute stowage, two systems presented themselves—the " spinning " wing and " tip-up " wing. For a while agreement could not be reached upon the best method. Eventually the changed wing construction was the deciding factor and the " tip-up " wing is now used exclusively.

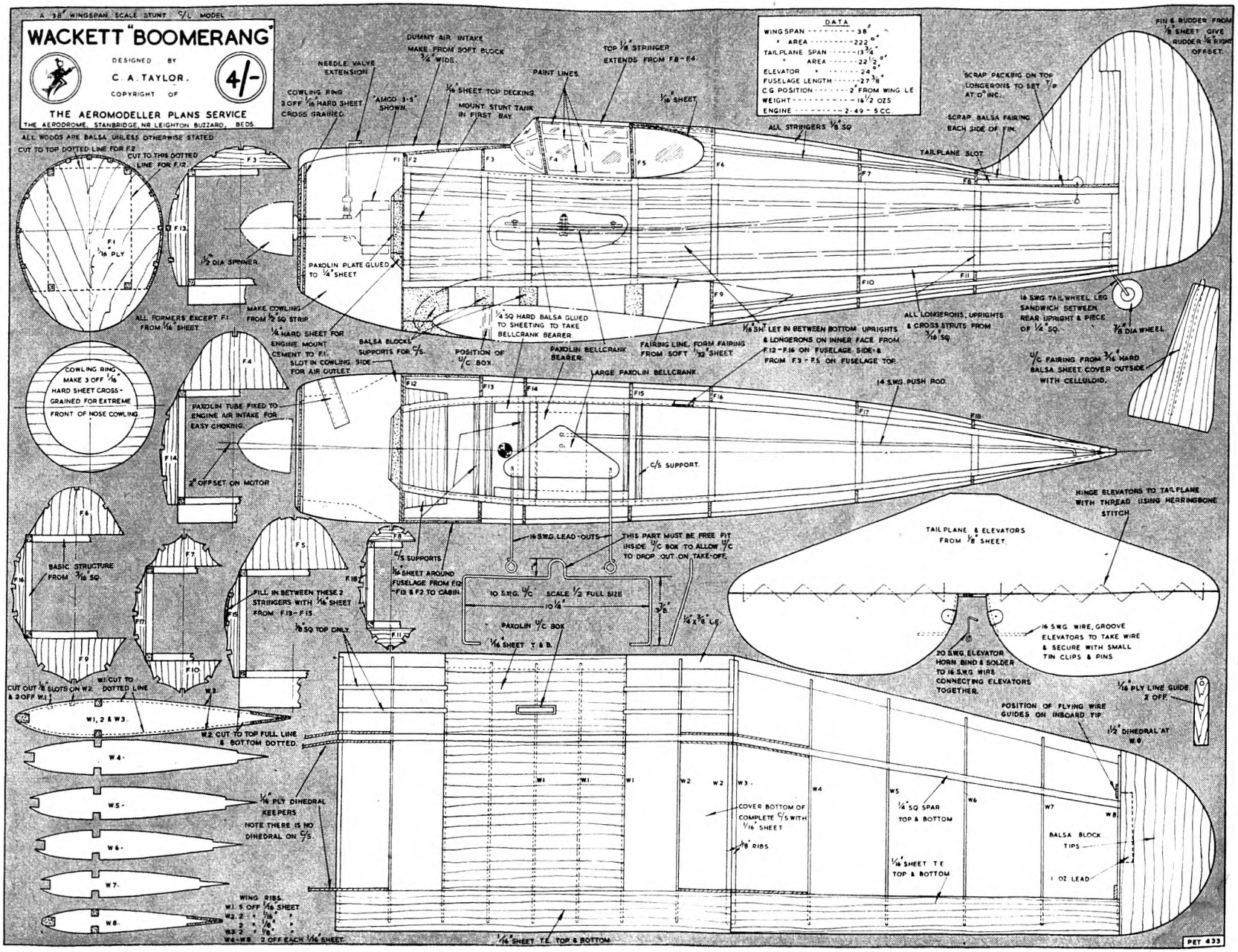
Performance : During 1948 the average still air duration was poor compared with its present day standard, but even so its flat circling glide produced many flyaways. The most noteworthy being its first competition flight at the All Herts Rally. Although the timer lost sight of it in a flock of birds after 6 : 18 it was in the air for over 90 minutes, travelling 10½ miles.

The next job raised the club record to 15 : 15, and a small 20 inch version won two local competitions on the same day.

In 1949, flyaways were less frequent, as most flights were D.T.'d, but the still air duration was boosted to over 3 minutes on 800 turns.

However, one flight by a club member was particularly pleasing ; the model circling over the field for 29 mins. 56·5 secs. On this occasion the timers only left the recumbent position to watch the owner pick the model out of the air.

Of the four entered at Langley in 1949, three were lost —a 1948 version just missing a place at 11 : 40, and the others soaring away even faster—one of them dead overhead in 7 minutes odd.



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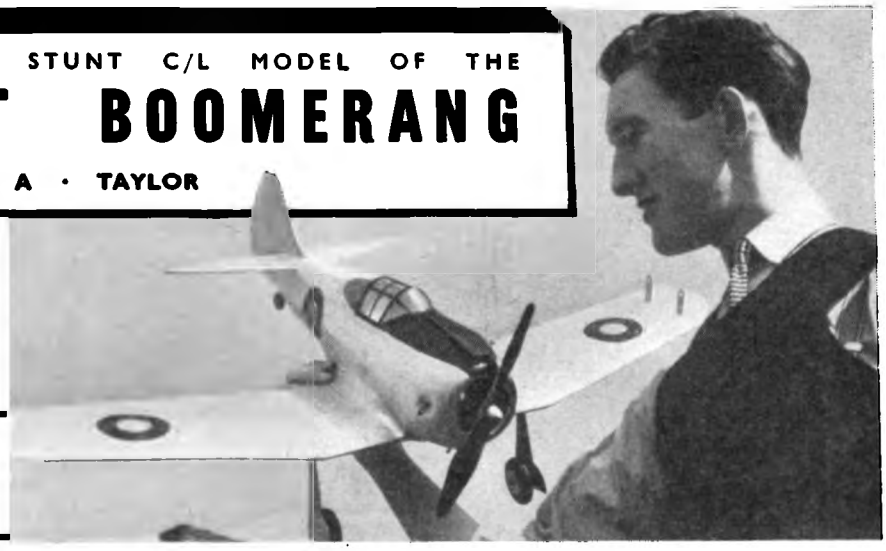
A FLYING SCALE STUNT C/L MODEL OF THE

WACKETT BOOMERANG

DESIGNED BY C · A · TAYLOR



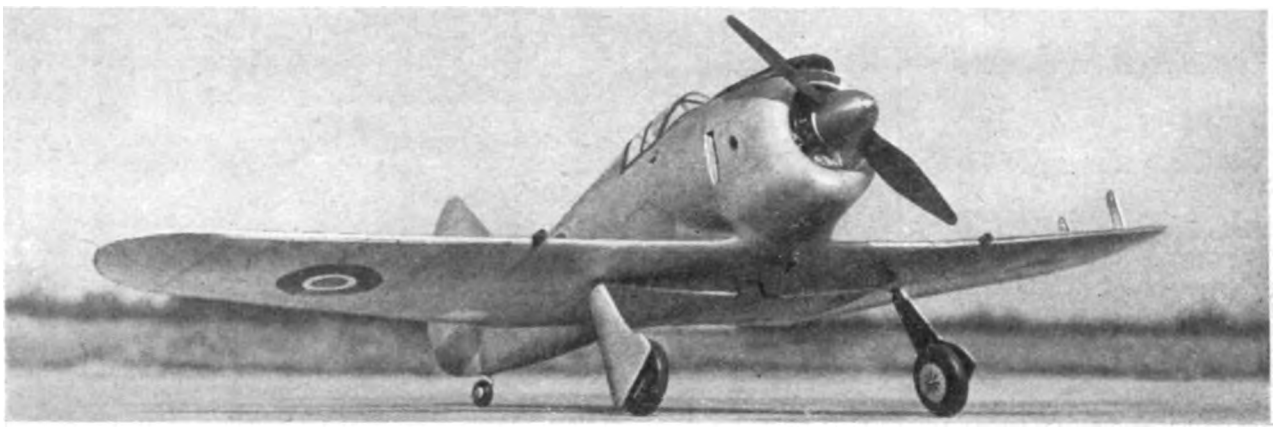
Age 22 . . . . Shipping Clerk . . . . . Member West Essex Aeromodellers . . . . . a keen team-race enthusiast . . . . . also interested in photography, and known for his one-pint gulp.

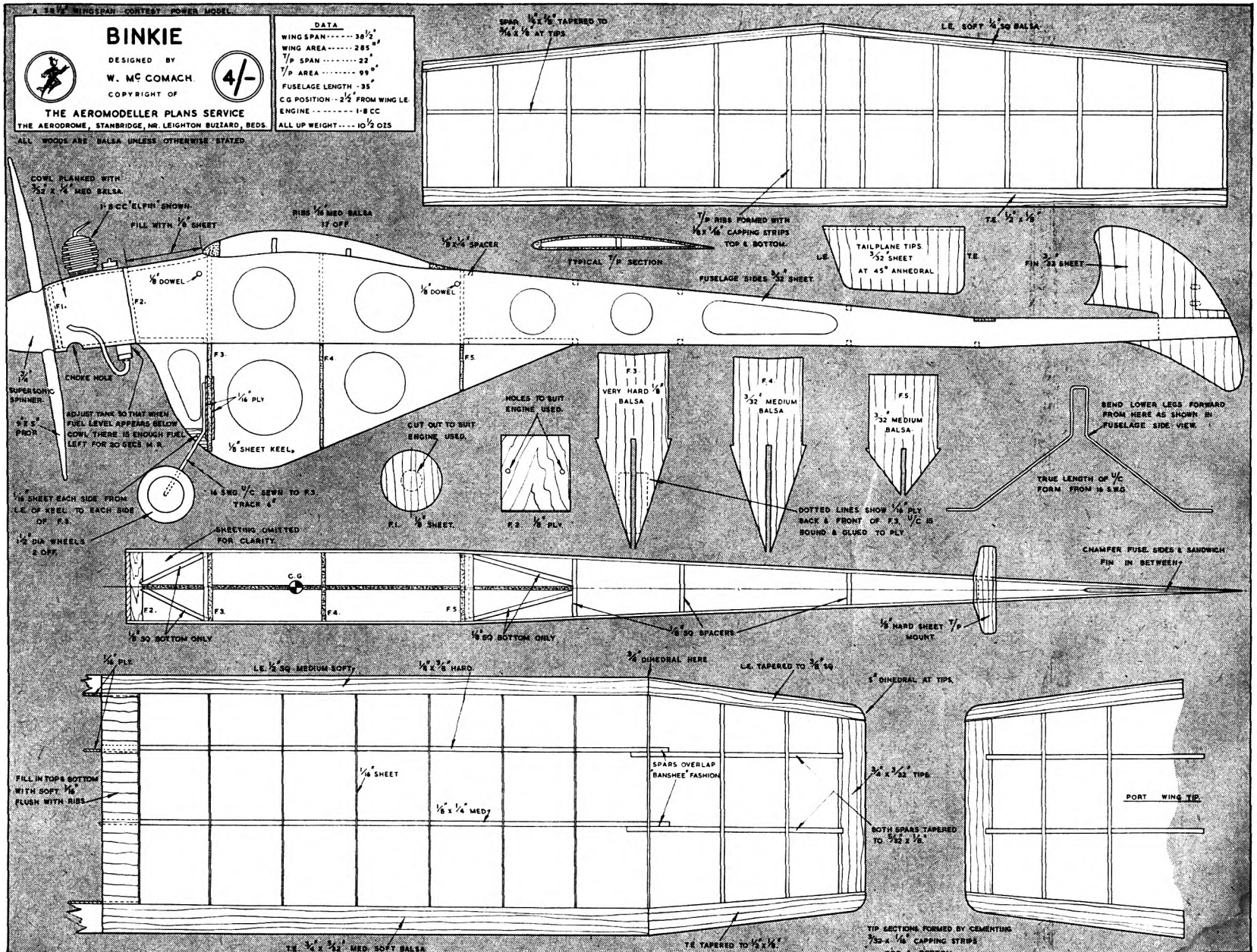
Charley Taylor and his Boomerang were regular attenders at the 1950 rallies. This, and the view below, clearly indicate why high marks were always gained for accuracy and construction.

ONE evening my brother and I were glancing casually through a pile of old A.T.C. silhouettes, when we came across one of the " Boomerang ". Our eyes lit up, and a start was made there and then on the plans for a stunt model. The only drawback, at the time, seemed to be the rather fat fuselage, but subsequent experience has proved this no handicap whatsoever. The model was more or less built round the Elfin 2·49, (which was the only motor we had which wasn't doing a useful job of work at the time), but is equally suitable for the Amco 3·5, E.D. III and IV, or Mills 2·49, with suitable modifications for mounting. I set about making the design as simple as possible—this was of great importance to me, as I had built only two flying models before in my life! For the past ten years or so, I had been messing about with solids, as well as lending a hand to my brother when it was needed, so you can well imagine that I felt a little nervous of having a go at a scale stunt job, of all things.

However, I set about it as confidently as possible in the circumstances, and, in the end, was more than recompensed by the results. The " Boomerang " is more suitable for a scale stunt model than any other aircraft I have come across, except perhaps the " Tipsy Jr.", and provides an escape from the old rut of slabsiders and semi-scale models. You have to make do with a set design, instead of gathering together your own ideas of a stunt job and making them look attractive.

Flying. A 10 in. × 8 in. Truflex, cut down to 9 in. × 8 in., is used when flying the model for fun, but a 10 in. × 6 in. wooden prop. has been found to be the ideal for comp. flights or windy days. A fairly smooth surface is needed to take off, as the model, with the rather weighty u/c, takes about a quarter of a lap to get off smoothly, though it can be yanked off the deck in a few feet. Being a low winged model, it requires just a little more " up " elevator during inside manœuvres than a high wing, but will do very small bunts with just a suggestion of " down ". Inverted flight is about the easiest manœuvre of all—in fact you're just not trying if you fly inverted any higher than about 3 feet. It is advisable, however, on the first few flights, to fly inverted rather high until the motor run has been sorted out, so that in the event of the motor cutting, you can immediately give full up and land on the belly instead of risking damage to the cockpit on an inverted landing. On its first flight, with the Elfin absolutely new, and not run in at all, the " Boomerang " in the hands of my brother, did everything except a square loop, the motor cutting before this was attempted.





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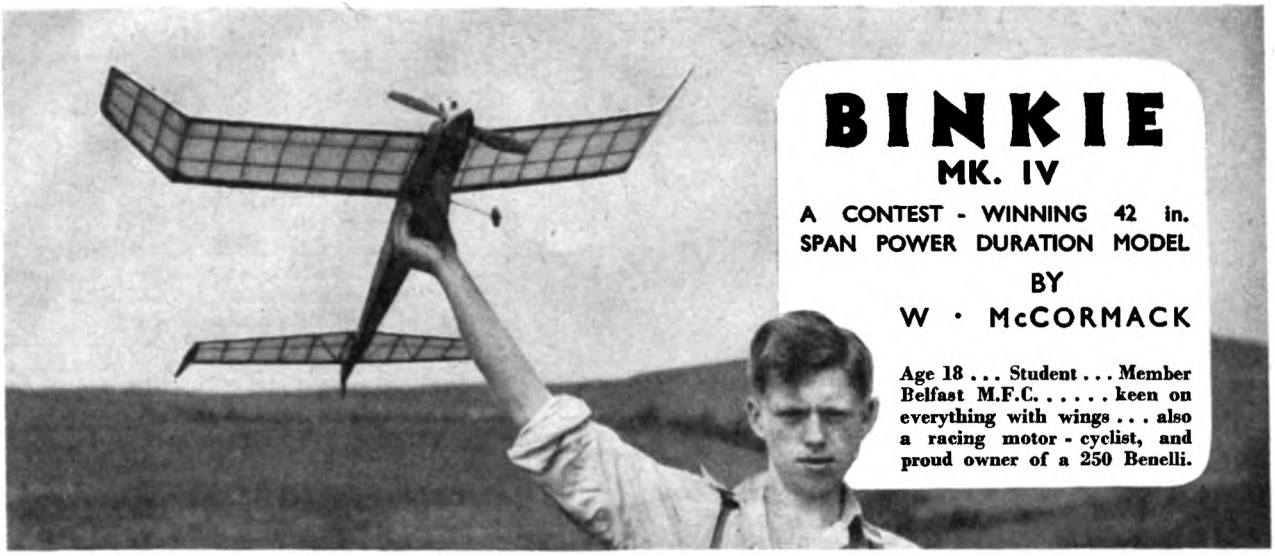


BINKIE
MK. IV

A CONTEST - WINNING 42 in. SPAN POWER DURATION MODEL

BY

W · McCORMACK

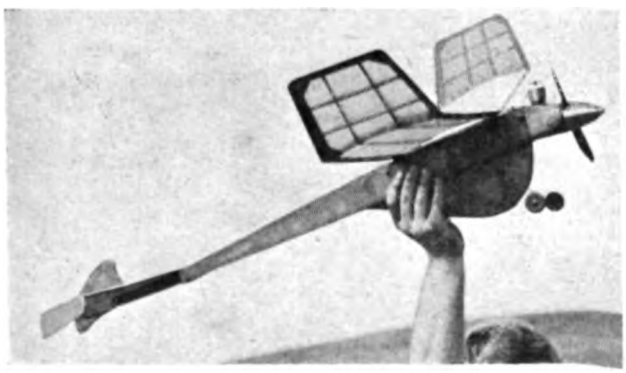
Age 18 . . . Student . . . Member Belfast M.F.C. . . . . keen on everything with wings . . . also a racing motor - cyclist, and proud owner of a 250 Benelli.

BINKIE Mk. 1 was built in 1948 for the Belfast M.F.C.'s first power ratio competition and with a Mk. 1 Mills in front it finished 2nd, averaging 6·2 : 1. A larger Elfin powered version was built for the same comp. in 1949 and without any trimming flights whatsoever it won, averaging 7 : 1 in a half gale. "Gipsy" Drew, captain of the Irish Wakefield team, flew an identical model into 4th place in the International power ratio event at Cranfield. Binkie III, which was the same as Mk. IV except for the u/c and cowling and a few structural points, was flown at the B.M.F.C. annual Rally and finished first with 229 secs. on 17 secs. engine run.

Mk. IV was flown with the dope hardly dry and in a half gale on Sunday, June 4th, 1949, and with two o.o.s. flights clocked 15·76 : 1 to finish 4th in the M.A.C.I. Northern Area Rally.

Trimmed to the maximum in really good weather conditions Binkie was proved to be capable of 4½ mins., and on 18–20 sec. motor runs.

Construction : Cut out fuse sides and F's 2–5. Lay one side flat on plan and fix formers in positions shown. When dry fix other fuselage side and after chamfering off the insides at the tail end sandwich fin in position. Cement in ⅛ sq. spacers and tailplane support. Securely bind and cement u/c to F3 and slot in underbelly keel. Bolt engine to F2 and fit F1 to mainbearing housing. Form cowl with planks of 3/32 × ¼ balsa. Fit dowels etc., and cover with rag tissue or Modelspan.



Assemble both wing spars to conform with dihedral as shown and assemble wings in usual manner, one panel at a time. The ⅜ × 5/32 T.E. should be cut from 3/16 in. sheet and sanded down. The completed wing is covered in Modelspan.

Pin down L.E. and T.E. of tailplane and fit lower c/strips in a similar manner to the spacers on a fuselage side. Cement main spar on top and add upper capstrips, holding them in place with pins until dry.

Trimming : Adjust C.G. position with plasticine mixed with lead shot until model balances ½ in. behind main spar.

Adjust prop to stop horizontal on compression and hand launch into wind. The model should have a slow hovering glide with a strong tendency to soar.

Offset trim tab to give fairly wide left hand circle on the glide. Try first power flights with the engine running as slowly as possible and gradually increase power on successive flights. Any looping tendencies should be corrected by using more downthrust. Do NOT move C.G. back or add positive to tailplane, otherwise all the advantages of this layout will be lost. 10° is the *absolute minimum* amount of downthrust with an Elfin and with hot fuels it is as well to increase this to some 15°.

If the model spins under power, check for warps as the spiral stability is exceptionally good when accurately built.

Once flying on full power, tighten up the left hand circle until the model corkscrews vertically upwards; it will then roll off the top when the engine cuts instead of going into a series of stalls.

One of the most successful low C.L.A designs of recent years, Binkie presents a functional appearance with its 'drop-snoot' and keel under-belly. The performance should convert many a Pylon fan to shoulder wings and low slung area.

EASTER PARADE

Including the Croydon & District Gala, Gamage Cup winners, start of the London Area Team-race League, and unorthodox models on test.

FAIRLOP MARCH 23—26

IN the unusual "all-in" contest, very well organised by the Croydon club on Easter Monday at Fairlop, 115 entries braved unfavourable conditions. 61 Glider entries, 28 Rubber and 27 Power, competed against one another on a common basis. Superiority of the Glider in such a contest is proven by the first five places in the results list. They could, by virtue of the higher initial start, and their slower flying characteristics, remain in sight far longer than the other types. Practically all of the best Rubber and Power jobs disappeared o.o.s. into dull haze, whilst Gliders landed within view.

Following their success of the previous day, when Ernie Harwood won the Gamage Cup, with John Gorham second, Ipswich clubmen turned up in force and made their two-hour journey worthwhile by collecting 1st, 7th and 11th places and three of the fifteen useful prizes.

RESULTS

			mins.	secs.
1st	C. Bennett	Ipswich (Glider)	12	44
2nd	G. Lefevre	W. Essex (Glider)	11	46·3
3rd	M. Wood	Blackheath (Glider)	11	42·4
4th	G. Fuller	St. Albans (Glider)	10	34·0
5th	J. Rumley	K. Nomads (Glider)	10	13·5
6th	Buskell	Surbiton (Power)	10	11·9
7th	J. Gorham	Ipswich (Rubber)	9	59·7
8th	Sallabank	P.M.A.L. (Glider)	9	49·8
9th	K. Grasmeder	W. Essex (Glider)	9	25·1
10th	Penny	P.M.A.L. (Glider)	8	38·6
11th	J. Gorham	Ipswich (Power)	8	28·4
12th	Dennis	W. Middlesex (Rubber)	8	16·0

JUNIOR

Mitton	Sutton-By-Pass Modellers (Glider)		5	43·0

Top left: Winner of the "All-in" Croydon Gala, C. Bennett of Ipswich, and his A/2 which was completed on the contest eve. Model made two maximums, has Isaacson section. Centre left: Semi-scale FREE-FLIGHTERS by M. Shepherd of Epsom & D.M.F.C. Foremost has a Mills 1·3, the semi-Ambassador, a D.C. 350, B.O.A.C. white-top finish and red trim. Bottom left: The victorious pair, Ernie Harwood, winner of the 1951 Gamage Cup, and John Gorham who placed 2nd with his "Ghost" design. Harwood favours the two-bladed folder and Gorham the feathering prop. Below: All we could get of G. Lefevre (W.E.A.) was this retreating view of him and packed glider which placed 2nd, Croydon Gala.

TOP LEFT: Olive Hathway (St. Albans club) was a lone woman entrant in the Croydon Gala. Utilising a novel form of hand-launch, Olive managed a creditable performance with her lightweight rubber job. CENTRE, TOP: With very neat twin cowling blisters, C. C. Outhwaite's 84 sq. in. class A racer (Browning's M.E.C.) was an out-of-the-rut design at London's Team Race League meeting. Engine is an Elfin 2.49. TOP RIGHT: Handicapped in Croydon's all-in "contest, by fast o.o.s. flights, Bob Amor (Ilford M.F.C.) had three otherwise very good flights with his 48 in. span Amco pylon job. LEFT: Sid Allen (Battersea) is usually known for his success in radio-controlled flight. This candid view reveals his other interest—diesel powered Wakefields ! ! A standard Keil-Kraft Gipsy accommodates an Allbon Dart, the weight is comparable to rubber power, and the performance, with the tiny prop, equivalent to Bowden Contest standards. Was Sid influenced by Bill Winter's recent suggestions ?

RIGHT: Sid Sutherland aired his 1951 streamlined version of his now old but faithful '49 radio design (see photo page 342, overleaf). BELOW, LEFT: During the class A event, West Essex versus Brownings in the London Area League, Bill Taylor lost a considerable amount of tissue from the upper surface of his port wing. Despite the loss of several m.p.h. flying speed; the model finished a good second to fellow clubmates winner. BELOW, RIGHT: Flying an unusual tailless pusher was Croydon member, A. R. Burge. Consistent 45-60 secs. flights were made by this 30 in. rubber powered job in spite of Easter Monday's inclement weather.

Top left: Jim Rough launches an interesting tailless sailplane built by Tom Hindell of Battersea, at Fairlop. The original idea came from a German record holder and best time to date of Tom's 71 inch span job is over four minutes. Above: Pete Gilbert launches Laurie Barr's model for its first flight and, centre: the glider queue at Fairlop featuring a variety of fin positions.

ASTRAL—RIPMAX &

Wind of practically gale force marred the first of this pen and camera from D. R. Hughes, N. Western South Midland Area, and Ed. Stoffel, London

Above, left: Bennett of Chorley Wood who placed top in the South Midland Area with his Elfin powered Mallard; right: the Stott brothers of Luton from the same Area struggle in the wind with their own design, again Elfin powered. This picture features Sid Sutherland left, aided by Sid Allen, in the London Area Ripmax. Below: Quads! the Accrington lads flew these identical power jobs in the Astral at Tilstock.

N.W. Area, Tilstock

The icy gale which kept up the whole day produced a fantastic mortality rate. A continued stream of wreckage could be seen flowing down the runways! The threat of rain, too, was ever present, from the leaden skies, but the wind kept this at bay.

The Astral Trophy had a large entry, though it was estimated that some 60 per cent. were completely written off. The Accrington Club had a big turn-out, and finally the top place went to member Bickerstaff who produced a creditable aggregate of 7 min. 42 sec. For spectacular climb, none could beat Fred Clarke's (Bolton) Javelin-powered Wakefield model which consistently screamed up straight into wind, though weighing only 9 ozs.—with ballast in the tail!

For once there seemed to be as many sailplane casualties as there were power, many wings folding up through the "tower" not being able to run fast enough down-wind, and full advantage was taken of reserve models. At least two astounded fliers were seen haring after their *winches* suspended from gaily kiting runaways. With models mostly going o.o.s. around the 2 min. mark (strong wind and bad light), R. A. Faulkner of Whitefield put up a remarkable show with his "Goofus"—which looked frail, though weighing 17 ozs.

As with every R/C contest in this area so far, the wind was such that the models could make no headway against it. Roly Scott, having anticipated this, was armed with a very heavily loaded machine with a 60 per cent. Clark Y Wing section. This was hastily hand launched and looked like doing the trick, but dive-turned into the tarmac some 20 yards away. J. Clements of Bolton amassed 50 points—getting as far as making the first turn—which put him in top place. This model—"Sir Kitt"—used a Comet R/C unit.

Ted Martin, of Amco's, was told—at his second check-in—that he'd lost half a megacycle . . . he spent several minutes asking people if they'd found one, as he needed it to fly with.

Midland Area, Pershore

Pershore Aerodrome, near Evesham, proved an ideal site for the Midland Area Contest on April 15th, the ground falling away from the take-off area giving an uninterrupted view for miles. In view of the strong wind, this feature was a great assistance to timekeepers, who were able to maintain models in sight for longer than would be possible on a level field.

With a larger entry than ever before, 93 modellers competed for the S.M.A.E. Cup, and 44 in the Astral Power contest. As was to be expected, many would-be competitors kept their models in the boxes in view of the almost gale-force wind, otherwise the entry would have been doubled.

Many were the models smashed up on take-off, and quite a number of gliders lost one or more components when high upon the line! In spite of these happenings, the general standard of flying was extremely good, this being most marked in the power event. Top man in this contest was W. Trow of Dudley & D.M.A.C., his flying being the most consistent seen for some time, and all the more remarkable in view of the conditions. Flights of 3 : 16, 3 : 26 and 3 : 31 were recorded, engine runs being 19, 18 and 20 seconds respectively.

Consistency was again the keynote of the top glider man, C. Aitkenhead of Loughborough College, his times being progressively better with 3 : 16, 27 and 4 : 49. D. C. Smith, also of Loughborough, looked like pipping his clubmate with

S.M.A.E. TROPHIES

season's Area events. We give you here reports by Area, " Rushy " Midland Area, Harry Hundleby, Area.

Above : R. A. Faulkner of Whitefield, top man in the N.W. A/2 with his " Goofus ". Right : Jefferies of Reading launches for clubmate Beeson. Right, centre : Harry Hundleby using E.C.C. equipment checks before launching at Cranfield in the Ripmax. Horizon indicates position of the upwind pylon !

times of 3 : 00 and 5 : 00 maximum, but fell away with a third time of 1 : 30. (The College boys did remarkably well in this event, taking four of the top ten placings.)

Six enthusiasts decided to " have a bash " in the Radio event, but conditions were impossible. C. Boddington of Wellingborough scored points for take-offs on the first round, and found plenty of repairs required when retrieving. This eventually worked to his advantage, for in his second flight he struck the one and only (comparative) lull in the late afternoon, and was able to again r.o.g. and get round the two turns before his model swept off downwind and disappeared in the distance.

So ended a windy outing, with the promised rain fortunately holding off, the general concensus of opinion being— " Thank goodness it wasn't a Wakefield Eliminator day! "

South Midland Area, Cranfield

Cranfield Aerodrome can always produce a first-class gale (witness the 1949 Wakefield), but if anything, conditions were slightly worse than on that occasion. A fair quota of models stayed in their boxes and a lot of those that didn't wished they had ! Most models were out of sight in under two minutes with the exception of the writer's radio job, which took the best part of ten minutes to make the up-wind pylon and just about ten seconds to come back again ! On its second flight the wind had risen even more and the model drifted gently past the down-wind pylon flying backwards.

In the Astral Trophy the F.A.I. R.O.G. rule made take-offs most precarious, and the shining light was Barret of Chorley Wood who placed top of the area. In general, tow-launching in the A/2 Eliminator left a deal to be desired and few models were cast off overhead. Broken tow-lines and snapping wing spars were the order of the day and those models that did get away well took a lot of finding in view of the distance they travelled down-wind. Cooke of Henley beat Clements of Luton by a mere 3 secs. with Beeson of Reading following close behind, but like the power event, the top time was only a bare 5¼ minutes for a three-flight aggregate ; not enough for a place in a National Comp.

London Area, Fairlop

With a large concentration of radio fliers in this area, interest centred on the Ripmax event which proved to be something of an anti-climax. Only Sid Sutherland of West Essex succeeded in scoring points by reaching the up-wind pylon. He unfortunately blew down-wind after this to score no further points. Large entries predominated the A/2 event and many new models received their first competition outing under somewhat undesirable conditions.

The day was marred by an accident to one of the spectators who was hit by a radio control model from the Battersea Club which spun in. The gale gave the model, which we gather was only a " baby " in size, abnormal velocity, with the result that it fractured his ankle.

Bill Taylor. also of West Essex, probably put up the second best flight. He had nearly reached the first marker when his engine cut (later found to be due to a loose cylinder head). In spite of hasty retrieving and a second attempt in the time allotted, he was, however, unable to repeat his first performance.

RESULTS

THE S.M.A.E. CUP

(1st Round A/2 Glider Eliminator)

			Mins.	Secs.
1.	C. Aitkenhead	Loughborough College	11	32
2.	T. Geesing	Croydon	9	44
3.	P. Gilbert	Pharos	9	39
4.	D. C. Smith	Loughborough College	9	30
5.	M. Wood	Blackheath	9	0
6.	C. D. Whitworth	Kettering	8	59

ASTRAL TROPHY

1.	W. Trow	Dudley	10	13
2.	J. Hudman	Birmingham	8	51
3.	N. G. Marcus	Croydon	8	6
4.	B. Venville	Solihull	7	47
5.	Bickerstaff	Accrington	7	43
6.	R. Lewis	Eastbourne	7	42

RIPMAX TROPHY

No results forthcoming at time of going to press. A further announcement will be made.

JUNIOR RESULTS

Cannot be announced as yet owing to the failure of a large number of Areas to indicate whether entries were senior or junior. (Competition Secretaries please note for future occasions !)

Left : Norman Butcher and George Fuller processing an A/2 at Fairlop. Norman we should say is about to inscribe a beautiful hole in the covering ! Bottom left : Ted Martin makes a dash for the control button in the N.W. Ripmax as his model strains at the leash. Bottom right : Pete Sullivan of Luton gets nicely away in the Astral with his E.D. Comp. Special powered model.

PRACTICAL AERIALS

by

F. C. JUDD G2BCX

THE THEORY OF THE MARCONI QUARTER-WAVE AERIAL, AND A PRACTICAL SERIES TUNED LAYOUT TO GIVE UP TO 40% EXTRA POWER IN YOUR TRANSMITTER.

THE invention of the quarter-wave earthed aerial is considered to be the most important of Marconi's early contributions to radio engineering. From the short Hertzian radiator he produced lofty and efficient aerials, and with the ground ray working on low radio frequencies, achieved communication over long distances. Chief among the advantages of this aerial is the fact that it can be easily adapted to cover a wide range of frequencies. Hertz and Lodge, both early experimenters, used Dipoles and it is interesting to observe that with the increasing use of high frequencies the half wave Dipole is again being much used and is perhaps the most popular of the H.F. aerials. Thus there are two fundamental types of aerial:

The Hertz or Half-wave aerial (Dipole).

The Marconi or Quarter-wave aerial

Theory of Operation

In order to understand its function the reader is referred to the Dipole or half-wave aerial and its associated current and voltage distribution, and it will be seen from Fig. 1 that maximum voltage is at the ends of the wire and maximum current at the centre. Now, supposing we cut the aerial in half, then the current and voltage distribution would look like Fig. 2 with the current still at maximum at what would have been the centre, but is now one end of the wire. In practice of course, we could not simply cut a Dipole in half because it is a balanced aerial and halving it would upset the proper current and voltage distribution which is so important if maximum efficiency is to be obtained. It is therefore necessary to maintain this balance, and it is possible to produce artificially, the missing half by the addition of (a) some new form of feeding and matching the aerial, and (b) reflecting medium, usually the earth. This idea led Marconi to the use of the quarter-wave aerial which with the help of a coupling coil, can be excited at the earthed end, and will have a fundamental resonance when the frequency corresponds to a wavelength roughly four times the length of the aerial. As a matter of interest this may be regarded as being similar to a closed organ pipe which when blown, produces a note of wavelength approximately four times the length of the pipe. Since the point of current maximum is normally 'earthy' it is convenient to feed the aerial with current here, and a very simple method of doing this is to couple the aerial to the transmitter as shown in Fig. 3.

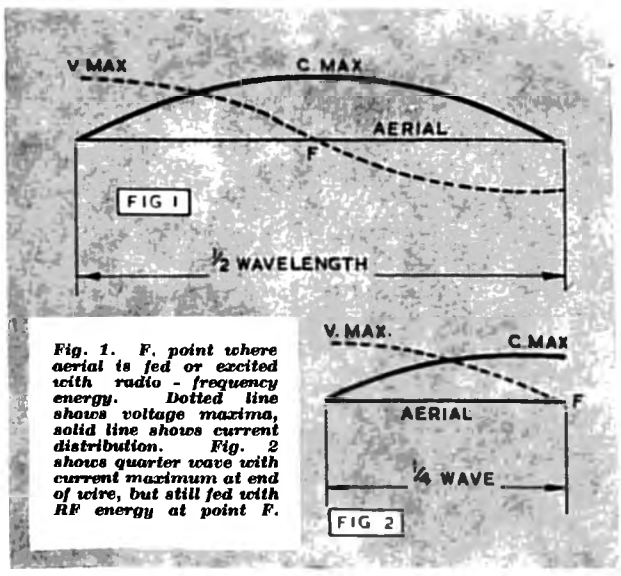


Fig. 1. F, point where aerial is fed or excited with radio - frequency energy. Dotted line shows voltage maxima, solid line shows current distribution. Fig. 2 shows quarter wave with current maximum at end of wire, but still fed with RF energy at point F.

This method of coupling is however, not very efficient because of the difficulty of matching the impedance of the aerial to that of the transmitter 'tank' circuit; an important factor, if maximum power is to be transferred to the aerial. Returning to the Dipole where the impedance at the centre is approximately 70 ohms. and also the point of maximum current, all that is necessary is to use a feeder line of the same impedance, namely 70 ohms. in order to secure a correct match between aerial and feeder and therefore maximum transference of R.F. power from one to the other. This is not so with the quarter-wave except in special circumstances, so it is necessary to use a tuned circuit to obtain correct matching and maximum radiation efficiency. The arrangement is shown in Fig. 4.

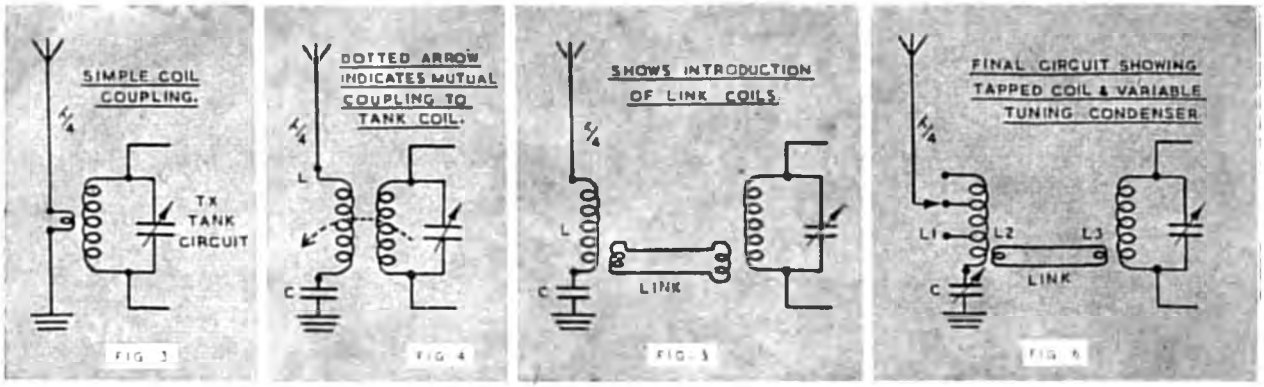
In this circuit the coil L plus the aerial is tuned by the condenser C until the whole system is resonant, *i.e.* tuned to the wavelength in use. Coupling to the transmitter may be obtained between the coil L and the transmitter tank coil, but the usual and most convenient method is to 'link' couple the two tank coils as in Fig. 5.

Normally the aerial length is fixed for any particular narrow band of frequencies round the fundamental chosen for operation, *e.g.* an aerial cut for 27·5 Mc./s would operate quite efficiently from say 25 to about 30 Mc./s without adjustment to its length, and at these frequencies without adjustment to the tuned circuit either. Only one other thing is essential, a fairly good connection to Earth. From this we are able to design an aerial system which can be adjusted for maximum operating efficiency on a fairly wide band of frequencies and a circuit is shown in Fig. 6.

Here the coil L1 is tapped, the condenser C variable, and the link coils L2, L3, couple the aerial and its tuned circuit to the transmitter tank coil.

A Practical Design and Layout

Fig. 7 gives details of component values, etc., and a practical layout which can be used with most existing types of R/C transmitters. The coils should be wound with 18 s.w.g. enamelled wire with the turns close spaced and the taps brought out as shown in the diagram Fig. 8a. The two taps are made by twisting small loops in the wire as it is wound on to the coil former, diagram Fig. 8b. One end of the coil may be left long enough for use as the connecting wire to the variable condenser, and the tip must be carefully cleaned and tinned for soldering. Likewise the tapping loops, clean off the enamel with fine emery or sandpaper and thoroughly tin. (Use resin cored solder). The whole coil with the exception of the taps and lead may be given a coat of shellac, dope, or soft wax to prevent the turns from slipping and protect the coil from damp, etc. Over the

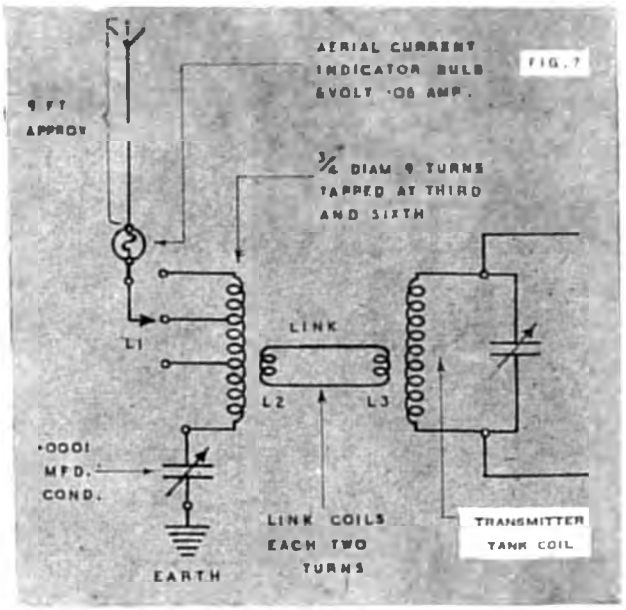


top of this is wound the " link " coil which consists of two turns of covered wire (plastic or rubber) or tinned copper wire covered with sleeving. (See diagram Fig. 8c). Leave the two ends of the " link " coil long enough (about 1 in.) to connect into an electricians 2-way 5 amp. china or bakelite connector.

The coil can be fixed by giving it a coat of shellac or may be bound on with adhesive tape. It is wound in the centre of the tuning coil between the two tap loops. The direction of the winding should be the same as the coil underneath. The whole assembly may be mounted on a small paxolin panel which will also take the tuning condenser and current indicator lamp. A suitable coil mounting can be made by inserting a piece of dowel rod into one end of the coil former (wedge fit) which will take a wood screw through the paxolin panel. The condenser (·0001 mfd.) may be any small air spaced variable to which a control knob can be attached. The smaller the better, and there are many to be obtained from the surplus radio stores (cost around two or three shillings). Most of these small condensers are single hole fixing, needing only one hole for attachment to the panel. Also required is an M.E.S. (Miniature Edison Screw) batten type bulb holder which is fitted to the panel close to the coil. This carries the aerial current indicator lamp to be explained later in the tuning instructions.

The complete unit

Fig. 9 shows a suggested layout for the coil, condenser and tuning bulb holder, and also the connections between the aerial and earth. Use a covered flexible wire for the leads attached to the crocodile clips, and make sure that all soldered connections are well made. One dry joint will ruin the operation of any aerial system. The fixing of the panel will be left to the ingenuity of the reader, but could be fitted by means of two small right angle brackets or long bolts with suitable distance pieces. It may be affixed to the transmitter case, but take care that none of the components touch the case. If the aerial is composed of short lengths of copper tube which plug into each other, or is telescopic, it is recommended that each joint is tight fitting and polished bright in order to ensure good contact, because oxidization at joints in aerial systems will greatly impair their conductivity. A good plan is to have a flexible braided copper wire running through the rods and soldered at the base end. The wire can be left projecting from the top and long enough to allow the rods to be pulled apart for folding.



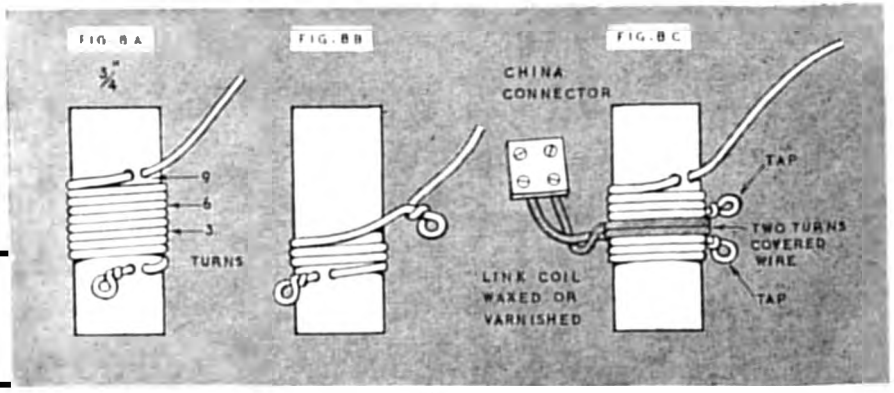


Fig. 8. (A) The former can be 2 ins. long, card or Paxolin tubing. Wind on nine turns, tapped at third and sixth turns, close spaced. (B) Shows how taps are made. (C) Twist link coil ends together, bare ends, and screw into connector.

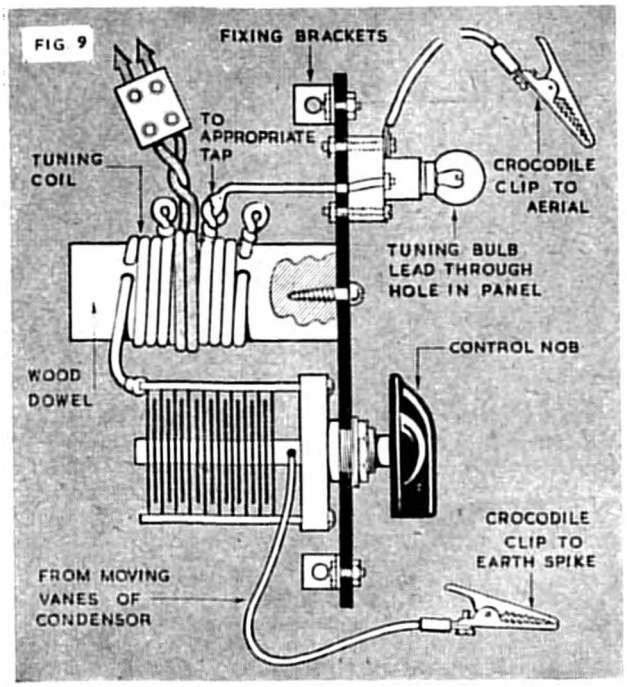
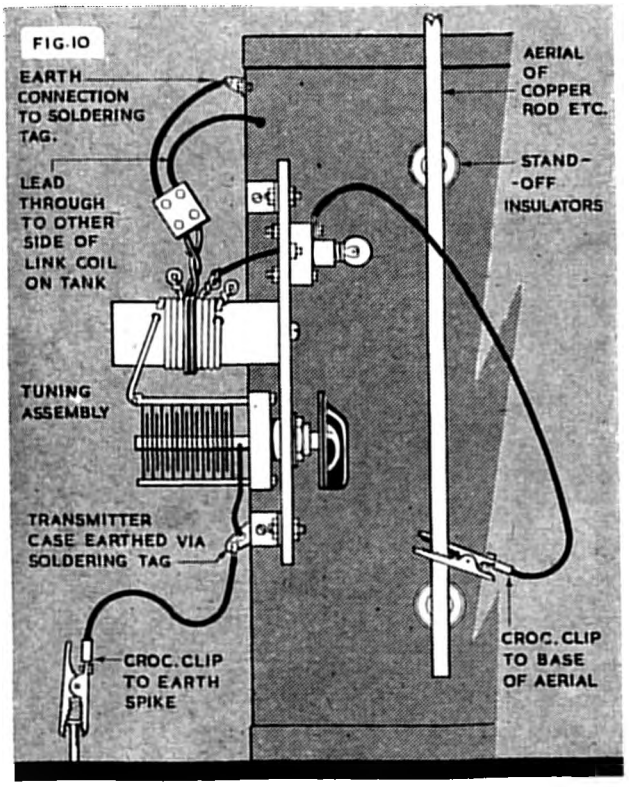


Fig. 9, above, shows suggested layout for complete panel. All parts mounted on Paxolin panel approximately 2×4 ins.

Fig. 10, below, shows connection for commercial type transmitter where one side of link is earthed.



Connecting to the Transmitter & Tuning

Connection to the transmitter is simple and involves only two leads from the link coil in the transmitter tank to the link on the tuner. If the reader's transmitter is home constructed then simply connect from one link coil to the other with a short piece of plastic or rubber covered twin flex. This can actually be any length up to several feet so that the aerial could be remote from the transmitter. The link coil on the transmitter should be pushed down between the centre turns of the tank coil. For those with commercially made transmitters which use only simple aerial coupling, disconnect the aerial from the coupling coil, the other end of which will be connected to earth, probably the transmitter chassis and case. The earthed side may be left connected and the free side taken through a short length of flex to one connection on the tuner link coil with the other side of this to the earthed side of the transmitter link coil (see Fig. 10).

The operation of the link coil is not affected by being earthed and this is often done by amateur transmitters to reduce harmonic radiation. The flexible to the aerial is now connected to the base of the rod with its other end connected to either of the two tapping loops. The flexible earth lead to which can also be joined an earth lead from the transmitter case, particularly if it is metal, is connected by means of the crocodile clip to a copper earth spike stuck firmly into the ground. The earth spike need only be about 12 ins. long and made from a piece of ¼ in. dia. copper tube flattened and sharp at one end. For a transmitter input of 4 to 5 watts a 60 m/a bulb (6 volt ·06 amp.) will light quite brightly when the system is correctly tuned. Start off with the condenser open (vanes unmeshed, minimum capacity) and increase capacity (vanes becoming meshed) until the bulb starts to light. A point should be found where the lamp lights brightest, indicating maximum current in the aerial and this should be with the condenser vanes almost fully meshed. If this condition cannot be found, then change the tapping lead over to either the other tap, or the free end of the coil and tune again. If the lamp reaches a brilliance that is too high to be comfortable, then change the bulb for a 6 volt ·3 amp one. Once the tuning point has been found, the lamp can be shorted out. Don't operate with a lamp glowing at full brilliance ; it may blow just when you want to pull your plane out of a spiral dive. A blown bulb means no R.F. up the " spout " (hamese for aerial).

Series tuning, as this method is called, is the most efficient way of loading a transmitter with a quarter-wave aerial and will result in an increase of power in the aerial of some 30 to 40 per cent. more than the simple single coil coupling. Power in the aerial may be calculated by the formula I_2R where I is the current at the base and R the base resistance. The Marconi or quarter-wave has a base resistance of approx. 40 ohms. Instead of a bulb the current may be measured with an R.F. (thermo-couple) meter of suitable rating. The length of the aerial should be approx. 9 feet, or may be calculated as follows :—(wavelength divided by 4) multiplied by 1·094 V = Length in yards. As already mentioned the length is not critical because the tuned circuit will take up any small difference in aerial length.

The writer recently designed and constructed a transmitter complete with this aerial system. It is at the moment of writing being used by Bill "Funf" Taylor with very good results and includes an L.F. note oscillator that can be switched in or out, and will modulate the Tx approx. 100%.

Descending safely, with tail up in dethermalised position, is the test Firefly. Six-sided fuselage makes it a semi-streamliner.

Value. At 12/9, including P.T., the "Witch" is very good value, and a sound investment for any modeller wanting a medium-sized contest rubber model to F.A.I. specifications.

Flying. The AEROMODELLER test "Witch" was unique in that it was the first rubber model to be assembled in the "Trade Review" series which did *not* require further alterations to the design before a satisfactory flight could be obtained. With flying surfaces set at the angles shown on the plan and the nose block inclined at the designed downthrust, the test "Witch" was a success from its very first flight. Using 8 strands ¼ in. × 1/30 rubber, the model had a natural right turn which developed into a tight spiral climb, with gentle right-hand and very flat glide. The test model was fitted with a spring tensioned motor, which was longer than the 25 ins. specified. On one or two flights this resulted in a rubber bunch at the tail, and subsequent stalls, which proves that the manufacturer's instruction on the length of the motor are truly given in the light of experience.

Whilst it might be possible to build the "Witch" down to its specified 4½ ozs. weight for contest performance, the general flier will enjoy high grade rubber flying with the "Witch" even though he exceeds this weight (as we did) by 1¾ ozs.

Veron "Panther." 25/- plus 5/6 P.T.

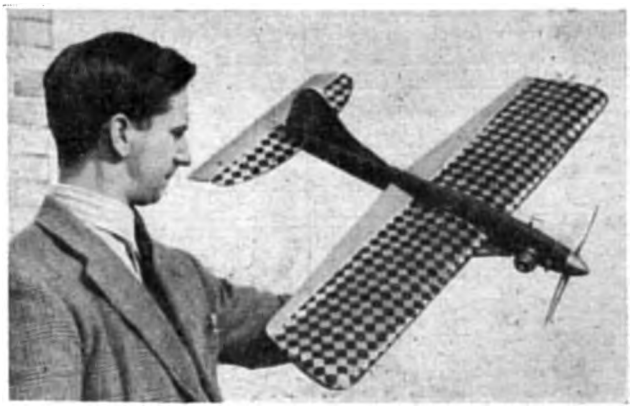
41 ins. span, 28½ ins. length, 310 sq. ins. wing area. Our weight (with 8·8 ozs. Super Tigre G.19), 26 ozs.

Packaging. The strong card box is attractively decorated and amply protects its well packed contents. The packaging should withstand the roughest of postal handling.

Quality of Contents. Excellent grade balsa and hardwood parts, plus spinner and wire. The Board of Trade supply restrictions on brass had effect on this kit, with the exclusion of tank parts, which are normally a feature of Veron kits. Balsa parts are prefabricated to shape, and the workmanship is such that the "Panther" may be built with the minimum of carving and sandpapering.

Completeness. Apart from cement and the tank, the "Panther" is absolutely complete, even down to the last nut and bolt, and tape with which to make the hinges.

Maurice Brett, skilled scale modeller and draughtsman on the staff of MODEL MAKER, critically views the decoration of our test Panther. Flaps and elevators show well in this photo.



Frog "Witch." 12/9 (including P.T.).

36 ins. wing span, 25½ ins. length, 155 sq. ins. wing area. Our weight, 6 ozs. (could be built to 4½ ozs.).

Packaging. The attractive printed carton box opens from the top and is decorated with accurate colour views of the finished model, plus a three-view outline plan to give a quick reference on general proportions. The contents are light, and the card box ample to protect them from normal handling.

Quality of Contents. Good grade balsa, with Frog accurately die-cut ribs and outline parts, plus a very well made pre-shaped laminated airscrew, make it a kit of usual Frog A.1 quality.

Completeness. International Model Aircraft have wisely decided to leave purchase of the rubber motor to the builder. Kit rubber never retains its prime condition, and is always an item of doubtful quality. Cement is not included in this kit, but an explanatory note is inserted to excuse the fact. Plastic wheels, brass bushes, and airscrew shaft and spring tensioner help to make a complete kit.

Ease of Assembly. The test model was built in fifteen hours' building time on a flat board measuring only 30 × 6 ins. This alone should reflect on the ease with which the "Witch" can be assembled by any person, even without normal home model-making facilities. Stage by stage perspective sketches are shown on the plan, and greatly speed up the assembly.

Instructions. Apart from the omission of a reference as to when exactly the fuselage cross struts are fitted (though any modeller with common-sense would automatically fit them in normal sequence), the instructions are faultless, and interspersed with the drawn details on the plan. Details of rubber motor tensioning by the spring or "White" method are given, plus a complete description of the very neat tip-up tail dethermaliser, and good trimming instructions.

We would have preferred to see a more substantial bell-crank than the plywood blank supplied, but no doubt this is yet another effect of metal supply restrictions.

Ease of Assembly. Prefabrication enables the modeller to build the "Panther" in less than 8 hours building time. Parts go together with a click, and the detailed plan with seven-stage isometric views make assembly into child's play. Whilst it is possible to utilise the cut parts as supplied, the AEROMODELLER test model was subjected to the carving knife in an effort to further streamline the unusual nacelle/boom fuselage. The plan gives details for mounting six different English motors, and the AEROMODELLER test "Panther" was fitted with the Italian Supre Tigre G.19B. glowplug motor recently reviewed in "Engine Analysis." Thus it may be realised that the "Panther" will take any motor from 3·5 to 8 c.c. with a minimum of difficulty.

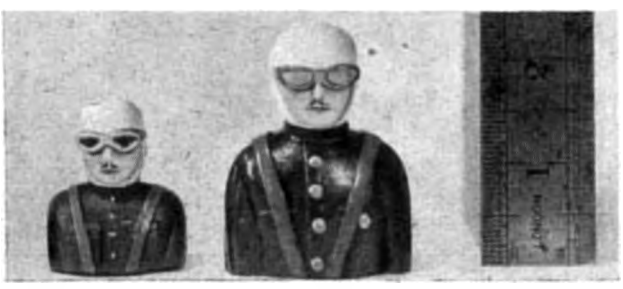
Instructions. Are interspersed with well drawn exploded views on the plan. No faults could be found, and the test model was built practically off the building board without the slightest hesitance over the sequence of assembly.

Value. Introduction of purchase tax has put this kit into the 30/– class. To any aeromodeller this is a considerable price to pay for a kit, but the prefabrication and high quality of the "Panther" contents make every penny well spent.

Flying. The Veron claim that this is a "smash-hit super stunter and advanced stunt machine" may be taken as fact. The test model was flown first on 65 ft. lines, and using a 9½ × 6 ins. airscrew, flew at 65–70 m.p.h., but was over light on the lines. Shortening to 55 ft. gave a much better performance, and fullest confidence in putting the "Panther" through the well known stunt schedule. The looping radius of our test model may be taken as approximately 7 ft. 6 ins. (i.e., 15 ft. diameter loop) and whilst this same diameter is possible with other flapless designs, the "Panther" has a great advantage in its ability to proceed through unlimited consecutive manœuvres without a tendency to slow up or mush. The "Panther" is not provided with an undercarriage, and therefore it is essential to make the underneath tank vent flexible to withstand belly landings. Though the glide is as flat as any control-liner could desire, the tank vent can easily be broken, if rigid, on the softest of landings. A good model, easily built, easy to fly, and capable of everything.

M.S. Team Racer Pilots

To induce a trend to realism in team racer designs, the S.M.A.E. regulations require model pilots of specified sizes for class A and B racers. Conforming to the S.M.A.E. regulations, and very neatly moulded in brown plastic, the newly introduced pilots by The Model Shop, Newcastle-upon-Tyne, will save many an hour with the carving tool, and provide a head and shoulders pilot fit to grace the best of models. Scale enthusiasts will find the pilots particularly useful, if they are building to either one-eighth or one-twelfth scale.



A few touches with flesh colouring, a whitened helmet, red lips and a dab of black or a few hairs from an old brush for a moustache, plus silvering on the goggles, will make the M.S. Pilot into "Dandy Dan," the circulating man.

It seems a pity that the clothing should be in the old "dog-collar" style, but this will be in keeping with scale '14-18 types.

The Class A pilot weighs ·25 oz., is 1⅛ ins. high, with ¾ in. head and 1 5/16 ins. shoulder width. Price, including P.T., is 2/5. The Class B pilot weighs ·55 oz., is 2⅜ ins. high, with 1 in. head and 1¾ ins. shoulder width. Price, including P.T., is 3/0½.

Cellon Dopes and Finishes

Since March 7th, 1911, the name Cellon has been associated with the best of dopes and finishes. Recently, this large company undertook research into special dopes for model work, and now a full range covering every type of finish has been marketed by Model Fuels and Finishes of 41a, Parsons Mead, Croydon, Surrey.

Attractively bottled in two or four-ounce jars, or canned in half-pint tins, Cellon dopes have a standardised label with the Cellon motif in cerise printed over a grey toned background. The manufacturer's name and the exact type of dope are immediately identified at the very first glance at each jar or can—an important point, both for the customer and the salesman.

The quality of the contents match the attractive packaging. Each of the colour dopes have been fully tested and found to have an exceptional high gloss rock hard finish. The consistency is perfect for brushing and

makes decoration an enjoyable task on any type of model. Drying time for the colours is reasonably fast, there is no tendency for the colour dope to slacken covering, and the twelve different colours have a characteristic richness which marks them as Cellon at a glance.

For those who want a grain-free finish on sheet balsa, Cellon supply a Sanding Sealer, which is a long-established lightweight filler in the full-size industry. Clear and glider dopes, banana oil, and the two different types of thinners, all passed AEROMODELLER tests with full marks.

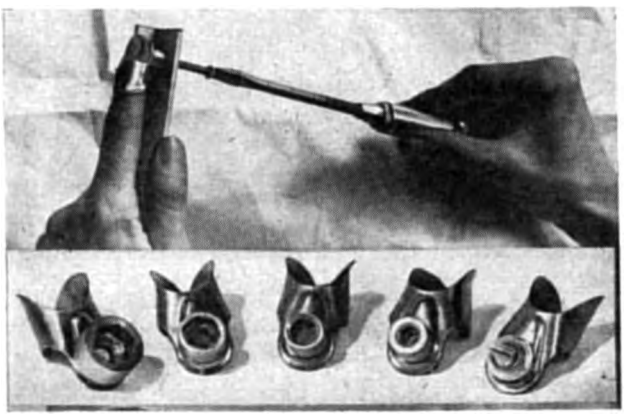
No fault could be found with any of the Cellon products—even with the fuel proofer, which is a hardener-free (and, therefore, all the easier to use). We did apply the proofer in very cold conditions, and had to wait for 24 hours drying time; but the final effect was a beautiful mirror-like finish.

After learning the knack of heating the fuel-proofer before application, we were able to handle proofed parts within three hours, and, after six hours, the glass-like finish was as tough and hard as any modeller would desire.

Cellon's introduction to the model market will be recognised as yet one more answer to the aeromodelling pleas for the best, and at the right kind of price.

The Acru Finger Tools

A most unusual, and extremely useful set of tools has recently been introduced to the electrical trade by Messrs. Acru Tool Mfg. Co. Ltd. of 123, Hyde Road, Ardwick, Manchester, 12. They will also be found to have



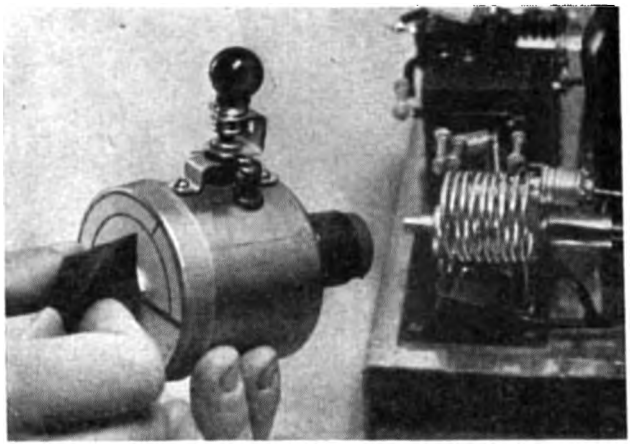
many applications in aeromodelling.

The set consists of four shortened box spanners, each attached to a simple finger clip. The unit may be slipped onto the index finger tip, a nut inserted, and then held in the desired position for the screw to engage. By this means it is a simple matter to reach parts which ordinarily are inaccessible, and to eliminate the frustration which always accompanies nut fitting in awkward places.

Four tools are supplied in the set for 7/6. The spanners are for 0, 2, 4, 6, B.A. nuts, the latter being the size with greatest use for aeromodelling, and which might well be introduced as a separate speciality for the model trade. A separate screwdriver of similar principle is also manufactured by the Acru Company and makes a handy pair with the 6 B.A. spanner. Every power modeller will find the Finger Tools an essential item in his field tool-box.

Absorption Wave-Meter

One of the most useful pieces of equipment for the radio enthusiast that we have seen to date is the Absorption type Wave-meter manufactured by Messrs. Flight Control of 783, Romford Road, Manor Park, E.12. R/C enthusiasts are constantly reminded by those in authority of the far-reaching effects of operating transmitters outside the allocated wavebands, and this instrument which is set to a frequency within a narrow band, yet still inside the outer limits of the band, enables



existing transmitters built by home enthusiasts to be calibrated exactly in the centre of the 27 megacycle wavelength. It is emphasised that it cannot be used for the second model control band of 465 megacycles.

Technical Description. An absorption type wave-meter for checking wavelength or frequency within a narrow waveband or to locate a particular band of frequencies where the approximate edges or the centre of the band may be found. Power from an oscillator or radio frequency amplifier tank circuit (main tuning coil) will be absorbed by the wave-meter when it is resonant, i.e., tuned to the same frequency or wavelength as the transmitter or oscillator. This instrument is not sufficiently accurate to check any one particular frequency to a *very narrow limit* but will provide a means of ascertaining whether an oscillator or transmitter already set to a frequency within a narrow band is still inside the outer limits of that band, or alternatively, it may be used to tune an oscillator to a frequency within the calibrated range of the instrument.

General Remarks. A most comprehensive leaflet is supplied with the meter, giving detailed instructions as to its use and we encountered no difficulties ourselves when making practical tests. With both our E.D. Transmitters, i.e., the Mk. 1 and the Mk. III, the indicator bulb lit when the meter was held near the transmitter aerial coil and both, incidentally, were dead on 27·1 according to the meter, i.e., in the centre of the band. With our E.C.C. Pilot transmitter the aerial coil was not readily accessible so according to the instruction leaflet the wavemeter was connected inductively to the aerial itself and the bulb glowed brilliantly with the meter set dead on 27·1 m/c's.

Various receivers were also checked by the method described in the leaflet, although a pair of high resistance headphones is necessary in this case.

It is also possible to check the comparative output (R.F.) from a transmitter by noting the brilliance of the indicator bulb with meter held at a measured distance from the aerial coil when the batteries, etc., are new, as compared with the brilliance at the same distance at a later date when power, etc., has dropped off. The mere fact, of course, that the meter bulb lights is a valuable indication that the transmitter is working.

Altogether a most versatile instrument for the radio man, and at 18/6 useful indeed to Area Comp. Secretaries for checking frequencies at Area R/C meetings.

WORLD NEWS

by

ARIEL

FIRSTLY, we have two items of interest concerning this year's International events. The A/2 Glider finals organised by the Aeronautical Union of Yugoslavia will take place at Lesce-Bled, which is 52 kms. from Ljubljana. This event is being held in conjunction with an International aeromodelling week, and in addition to the A/2 event there will be a contest for F.A.I. Power models (maximum engine 2·5 c.c., 7·06 ozs. per cu. cm.). The Aeronautical Union of Yugoslavia is presenting a magnificent silver cup for this latter event to the winning aero club, and a small replica for the individual winner.

One of our Swedish correspondents, Karl Pettersson, reports that this year's Swedish Wakefield team consists of four men, Arne Blomgren, Sune Stark, Borje Borjesson and Helge Eliasson, all of whom have represented Sweden on previous occasions. Ragnar Odenman who placed second in the A/2 Contest at Trollhattan in 1950 will represent Sweden in the A/2 event, and we understand that Kurt Sandberg and Rune Andersson will also be attending at their own expense.

New Zealand The New Zealand Nationals were held at Christchurch in the New Year, and the full report has just come to hand, thanks to G. M. Perkins, of Invercargill. He apologises for the delay, due the fact that he was searching for suitable photographs, and those which accompanied the Report are certainly A1.

" The 1951 New Zealand Nationals will be especially remembered by the 105 competitors for two things. Firstly, for the atrocious flying weather provided by their host, the Canterbury Model Aero Club (' most unseasonable ' we were assured by the locals and those of us who knew Christchurch's weather reputation were inclined to agree.) And secondly, for the close finish for the premier honour, the Champion of Champions. Winner, Doug. Kennedy, of Oamaru kept a nose ahead of Noel Hewitson of Auckland to reach 70 points against Noel's 69. Doug. by the way, amongst other things, won an E.D. R.C. unit and a Rudder Bug plan, so it only needs one guess to know what he is building now.

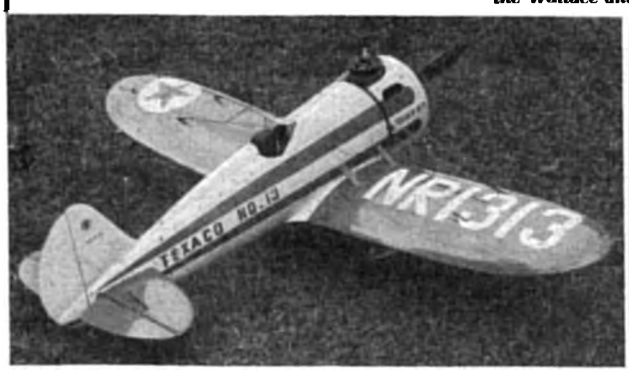
" The flying programme was arranged to cover five days over the New Year holidays. Friday, 29th December, was scheduled for free flight, Saturday for control line, Sunday for indoor, Monday and Tuesday for the remainder of the free flight events. There were eighteen different classes for competition and even if some were not supported as much as they deserved, others made up for them. All duration type events were decided on the aggregate of flights. The best contested event was the Prototype direct control event in which 22 beautifully designed and built models took the air.

" The Prototype event, like the Gas Aggregate, is a New Zealand derived contest, to satisfy a local demand.

" There is no doubt that the opportunity is there for the builder to really ' show off ' in all the various aspects of model building, and the work that went into some of these models must have been prodigious. The judge's task was an unenviable one but eventually Noel Hewitson was announced the winner, his entry being a superbly finished ' Little Stinker '.

" Certainly the event is a worthy addition to the Nationals programme and the pressure is on now for a similar type of event for gas free flight. No doubt, something along the line of your Bowden Trophy Contest is

Left: Scale Controliner " Travelair Mystery Ship ", by R. Johnson of Palmerston North, which placed in the Prototype Event of the 1951 N.Z. Nationals. Right: Another Palmerston North control line model, this autogyro was flown successfully by the Wallace and Hanson Team.



Heading photos are, left to right, Doug. Kennedy, of Oamaru, Champion of Champions, holding his second place prototype winner. Woodley of Auckland, Junior Champion and Noel Hewitson, Champion of Champions runner-up, with his first place prototype "Little Stinker".
Right, monster flying wing sailplane at a German contest held in the French sector of Berlin. Fifty entrants, from East and West Berlin and the Soviet Zone took part in this preliminary for the German "Nationals". Photo, Planet News.

indicated. The only difficulty, for the officials, is to keep a limit on the number of classes scheduled for the five days available. Even to run off the eighteen classes on the programme this year, produced its problems. Those officials (and especially the Recording Officer) who carried the burden at last year's Nationals, will remember the headaches that arose through the Champion of Champions, Champion Club and Junior Champion being decided from points allotted for every event. This year, only certain 'Star' classes carried points for the championships. These 'Star' classes were selected with the idea of seeking out a competitor who was an all-rounder. The events selected were, Sailplane Prototype, Indoor, R.T.P., Gas Payload and Wakefield, and, apart from the R.T.P. which returned the very poor entry list of 9 competitors and was hardly popular with the majority of modellers, the system worked equitably and well.

The first day of the competitions, held at Yaldhurst, some miles from Christchurch, was to have been honoured by the appearance of Lady Wigram to declare the Championships open, but, in view of the weather, this pleasant ceremony was performed on the second day at the meeting for direct control classes. Lady Wigram, by cutting a ribbon, released a Prototype model flown by Arthur Kotoul of the Canterbury Club and, in this way, the Nationals were officially and appropriately opened.

"In the Wakefield event, flown on the last day together with the 20 seconds motor run event and the gas aggregate, in a gusty wind of 40 m.p.h., veteran Brian Marsh found his experience sufficient for the conditions and turned in the best aggregate of 2 minutes 15·4 seconds. Only five competitors managed to get off the deck.

"The 1950–51 Nationals will not be remembered for outstanding performances. Two models only were lost out of sight, one of which was the writer's fuselage 'R.O.G.' model (famous last words—'I really am going to fit a dethermaliser next time'). One National record was broken, but decisively. Wallace and Hansen from Palmerston North, with their team entry, 'skyed' the Class I speed record by 30 m.p.h. to 90·2 m.p.h. The model was powered with a 0·15 c.c. glow plug New Zealand-built Pepperell motor. In passing, it may be worthwhile to note that of 27 placings in the gas events, 14 of them were gained with New Zealand-made motors, and I understand they were by no means in the majority at the meeting. Beware, you English manufacturers!

"Other points of interest:—One lady competitor gains a first place in Class II speed; Auckland M.A.C. wins H.M.V. Trophy for Champion Club with 136 points; Doug. Kennedy, sole points-getter for his club, enables Oamaru to come second with 70 points; only five entrants were juniors (*i.e.*, under 18 years) thus indicating that model building is well on the way to ousting bowls as old man's sports. In spite of the railway strike causing travel difficulties, only 14 competitors failed to arrive.

"And so New Zealand's third National Championships are over. In spite of travel and weather difficulties (even perhaps because of them and the cameraderie that was engendered) the 1951 Nationals held at Christchurch in Canterbury's Centennial Year, will be remembered with affection by all who attended".

Germany We reported, in March, *vide* our correspondent in Bad Pyrmont, Hans Pfeil, that negotiations were in progress between the lately re-formed German Aero Club and the aeromodellers of that country, to decide what type of governing body the latter were to have.

Latest news from Herr Pfeil on this subject is that, at the Aero Clubs' Annual General Meeting, in January, a Model Aviation Committee was elected, within the Aero Club, but functioning independently. This Committee comprises its Chairman, Herr Hans Justus Meir and nine other officers, all active aeromodellers. The hobby was represented at the Meeting by 21 aeromodellers, plus 8 proxy votes, a further 14 having been unable to attend. In addition to the Committee, are 10 elected delegates for Western Germany, whose Chairman is Herr Karl-Heinz Stadler. At the first working meeting of the new Committee (MFK, for short), competition rules for all flying meetings were formulated and agreed.

August 17th–19th will see the first joint Competition of The Aero Club and the MFK, for the whole of Western Germany, which will be held on the competition site at Borkenberge, in Westphalia. Older modellers may remember this spot as the scene of pre-war contests. The "Deutsche Modellflugmeisterschaft 1951", as this Competition will be called, is to run for three days and cover all types of contests, except control line. The latter will have its own show to include all classes. It is announced that F.A.I. specifications are to apply in all relevant cases at this important event. Eliminators will be flown in all 10 areas before July 22nd, the winners of which will go to Borkenberge.

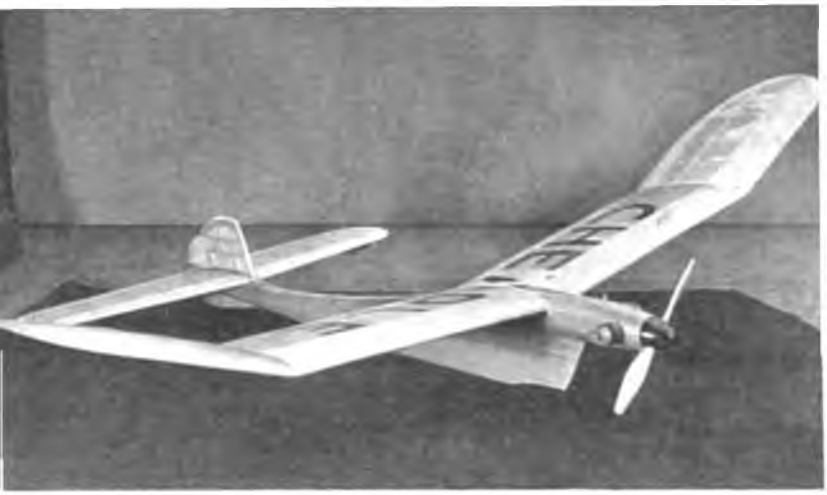
It is understood that the Aero Club has approached the F.A.I. to obtain international recognition for German aeromodelling, in 1951, but the result is not yet known.

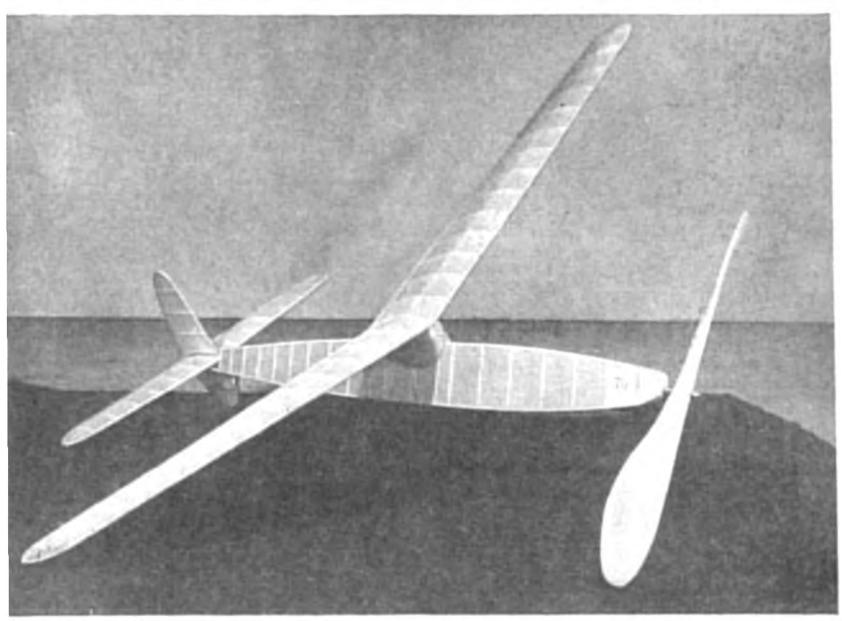
An invitation is being extended to Austrian modellers to participate in the "Deutsche Modellflugmeisterschaft, 1951", and also to all B.A.F.O., B.A.O.R., U.S. Army and U.S. Navy personnel, and it is anticipated that this first major post-war German meeting will be well attended. It is unofficially announced that one prize at these German "Nats", will be a brand new motor cycle, and there are likely to be others up to this standard.

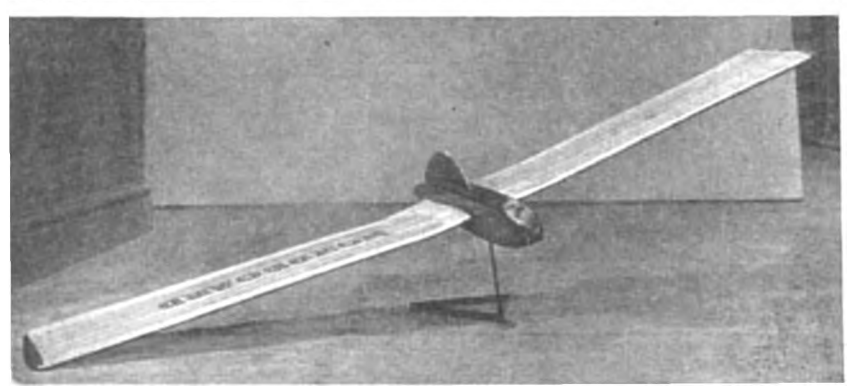
The aeromodellers of Western Germany hope that they are, at last, on the way to linking up with the rest of the modelling world, and look forward to playing their part in International Contests in the future.

THIRD NORTHERN MODELS EXHIBITION

MANCHESTER MARCH 1951







RIGHT: C. D. Fitzpatrick collected first in the Sailplane class, and the "Aeromodeller" Championship Trophy with his magnificent semi-scale sailplane. TOP LEFT: A. S. Bailey of the Cheadle Club won first place in Class 23, power models, with this Arden powered low C.L.A. own design. NEXT LEFT: A solid scale Brabazon by H. Parrish of Ashton was the only entry in the Static Scale class. THIRD LEFT: First in the Rubber class was C. B. Jackson's (Ashton M.A.C.) 1951 Wakefield. BOTTOM LEFT: R. A. Faulkner's tailless Nordic Glider was first in the Junior Sailplane class and displayed excellent workmanship.

AS indicated in our last issue, the Third Northern Models Exhibition was a great success, and much of this can be attributed to the extremely good show put on by the Model Aircraft Section, ably organised by the North Western Area Committee of the S.M.A.E.

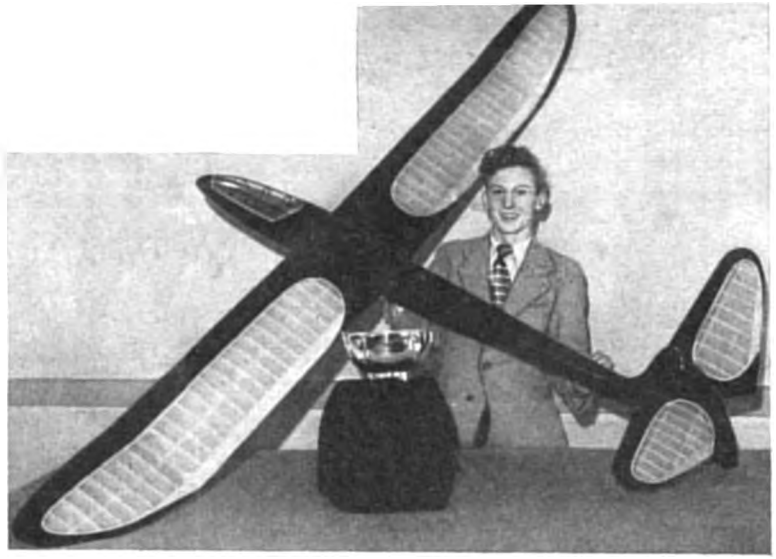
More model aircraft were on show than in previous years, and the overall standard of workmanship and finish was extremely high. Particular credit is due to the Junior Section, for many of the models here were of a higher standard than in the senior sections in some other exhibitions, and the North Western Area Committee are to be congratulated on the fine selection of models collected for the purpose.

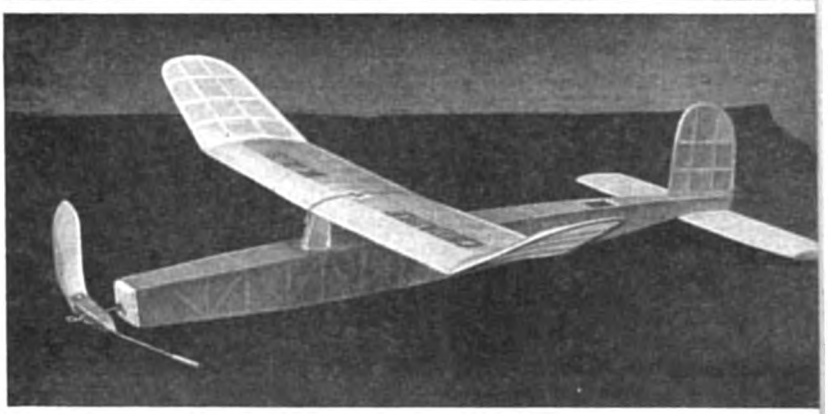
Eleven classifications catered for machines of all categories, and there was a total of no less than 68 models entered in the competition classes alone, in addition to which there were a number of loan models.

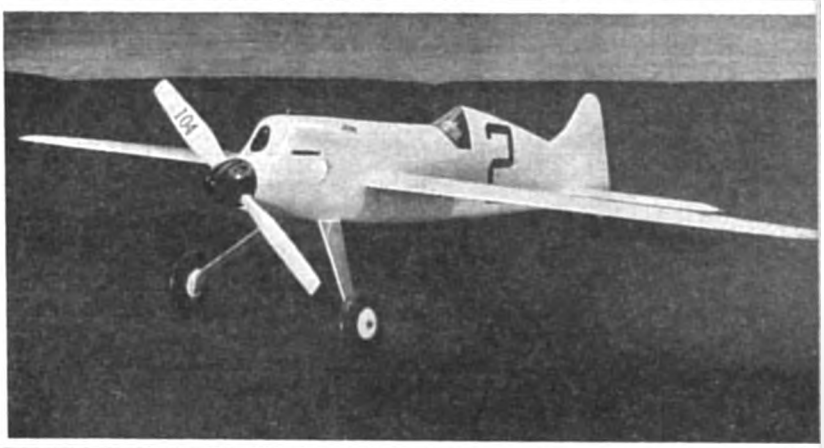
The judges, consisting of the Editors of the AEROMODELLER and "Model Aircraft" and Mr. D. Salloway of Rochdale, had a hard task in deciding the winners, but it is of interest to note that whilst the adjudicators judged individually, their compared results tallied remarkably closely.

Mr. Bailey's power duration model scored heavily on the grounds of originality of design, the fuselage in the main consisting of a skid above which was mounted a streamlined power egg carrying the motor. A close runner-up was "Rumble Tummy" by Ray Musgrove, here again the design being based mainly around a keel type of fuselage.

The rubber driven class, whilst not numerous, was nevertheless noted for some excellent examples of workmanship, and the photograph amply displays the excellence of craftsmanship that is normally expected from C. B. Jackson of Ashton. Junior Class winners G. Evans (Cheadle) and R. A. Faulkner (Whitefield) displayed excellent workmanship in their "Bazooka" and flying wing designs, but there is little doubt that







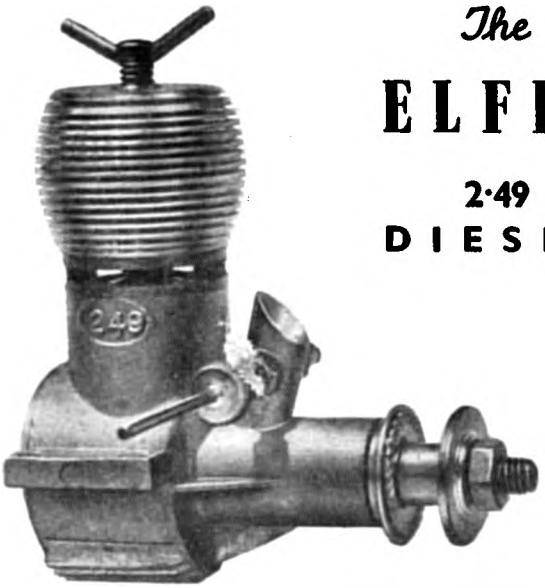
the *piece de resistance* was the huge semi-scale sailplane constructed by C. D. Fitzpatrick of Southport, this model winning its class and the AEROMODELLER Championship Trophy for the best aircraft model in the exhibition. The excellence of construction was unique and the accompanying photograph will give some idea of the elegance of design and finish.

The best supported class was that for flying scale models, and it is of interest to note that the whole section was engine driven. W. B. Heginbotham (Ashton) displayed a beautifully constructed and finished "B.A.C. Drone", and it is hoped to present this design in the AEROMODELLER at a later date.

A description of this exhibition would not be complete without reference to the very excellent one/seventy-second scale model of the "Bristol Brabazon" presented by H. Parrish, and the very ambitious control-line "B–29 Superfortress" entered by H. Clegg of Huddersfield. This model (powered by four "K" diesel engines) was actually flown on 12 ft. lines in the enclosed arena, the model finally remaining airborne on one engine.

All in all an excellent exhibition, and one on which the organisers, and particularly the North Western Area, can be sincerely congratulated.

***TOP RIGHT:** Harry Clegg's Flying B 29 (four K. Kestrels). **NEXT RIGHT:** Junior rubber power winner was G. Evans of Cheadle with his modified "Bazooka" design. **THIRD RIGHT:** W. Gregory's beautiful L-7A Monocoupe won the R/C section. **FOURTH RIGHT:** C. R. Sinclair's Class B team racer. **BELOW:** W. B. Heginbotham won Flying Scale with his 2 in. to 1 ft. B.A.C. Drone.*



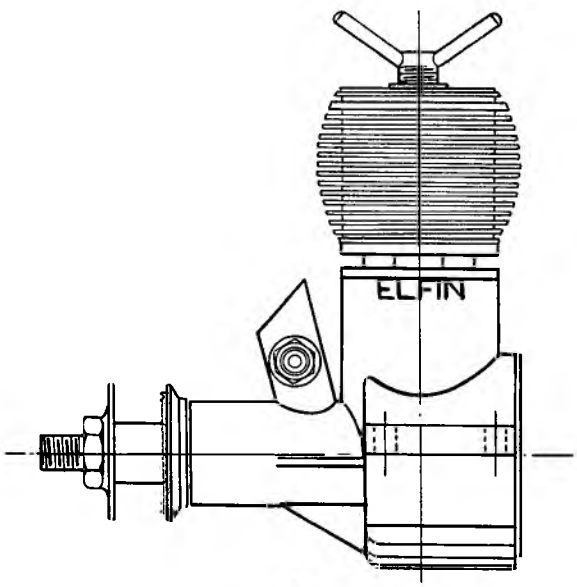
The ELFIN 2·49 DIESEL ENGINE

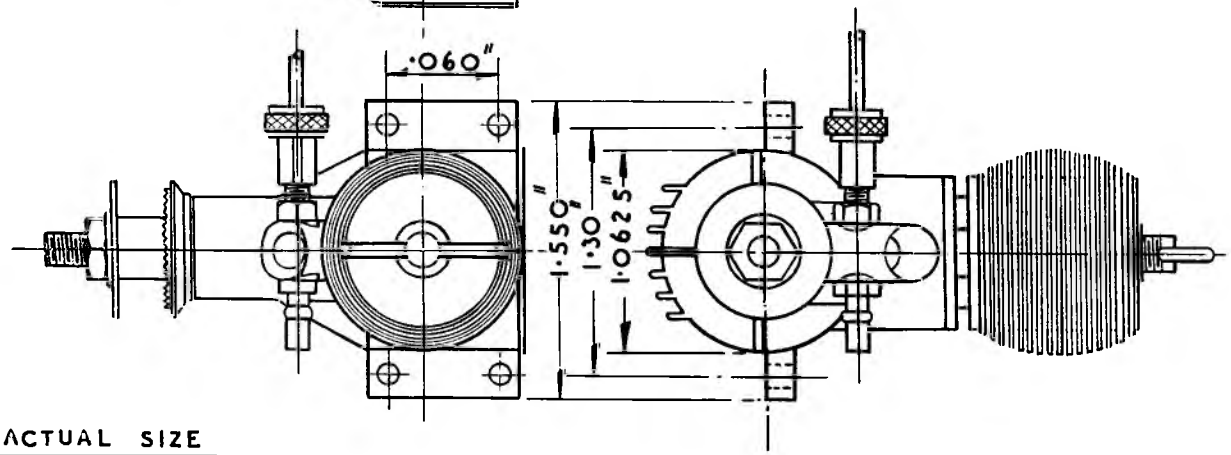
WHEN testing a modern high-efficiency diesel engine of about 2·5 c.c. capacity, one has come to expect an output of around ·25 b.h.p., and in this respect the new Elfin is quite up to expectations. The results obtained from the Elfin engine are particularly interesting when compared with the test figures given last month for the Australian "Sabre" diesel, in view of the fact that the Australian designer must have followed the Elfin layout to a large extent. The bore of the Sabre engine is ·555-in. with a stroke of ·620-in., while the bore of the Elfin is given as ·554-in. with a stroke of ·625-in. There is, therefore, only a few thousandths of an inch difference between them, while the radial porting arrangements and the rotary crankshaft inlet valve may be said to be identical. It is interesting to compare this month's results with those of last month, because little difference between the output of the two engines will be noted.

As with the Sabre engine, a very flat curve has again been obtained, which seems to indicate that the particular combination of characters which these engines have in common makes for this particular type of performance—especially as the engines originate from such widely separated sources.

The benefit of a flat output curve to the aeromodeller is obvious, because it means that a considerable latitude may be allowed in the running speed of the engine, without any great loss of power. Thus, we see from the Elfin graph that a drop of only ·031 b.h.p. from maximum is to be expected between about 9,000 and 13,200 r.p.m. It is doubtful if a loss of this amount would be readily noticeable under flying conditions.

An interesting feature of the Elfin engine is the finning on the underside of the crankcase, such as may often be found on American engines. The object of cooling





NUMBER 36

BY

L. H. SPAREY

the crankcase of a two-stroke engine is to lessen the expansion of the incoming gas charge, so that a dense charge may be delivered to the cylinder, and not one rarified by expansion. Whether this is effective with the small, shallow fins usually cast on model engine crankcases is a moot point, but doubtless some benefit may arise.

TEST

Engine : Elfin 2·49 c.c. diesel.

Fuel : Castor Oil, Paraffin, Ether (equal parts), plus 2 per cent. Amyl Nitrate.

Starting : Excellent under all conditions.

Running : This engine runs extremely well at all speeds from 4,000 to 13,000 r.p.m., and the needle control is flexible. As with most engines using the rotary crankshaft inlet valve, the needle is uncomfortably near to the revolving propellor.

B.H.P. : At the lowest speed, about 4,000 r.p.m., the output was ·060 b.h.p., and this rose gradually to a maximum of ·231 b.h.p. at 12,300 r.p.m. As with all engines showing an extremely flat curve, the exact point of maximum output is difficult to determine within 50 r.p.m. or so. Output continues high up to around the 12,600 r.p.m. mark, but a rapid decrease is evident beyond this figure.

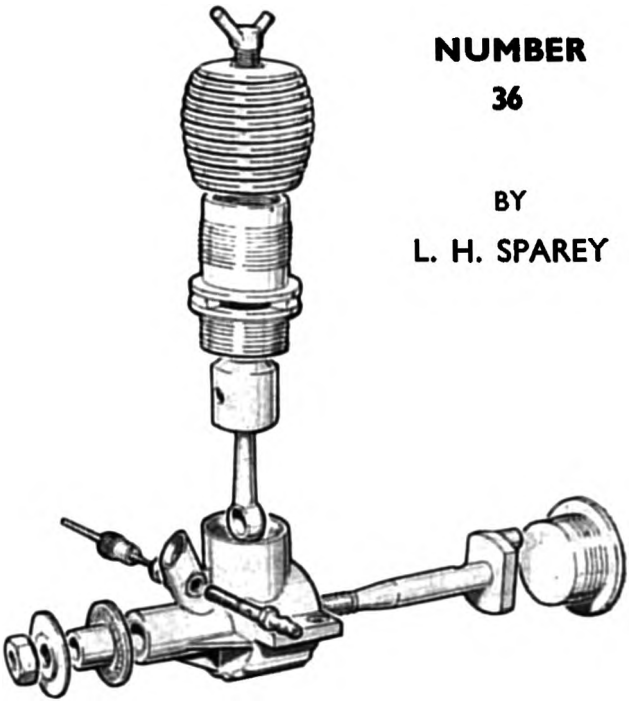
Checked Weight : 3·4 ozs. (less tank).

Power/Weight Ratio : 1·09 b.h.p./lb.

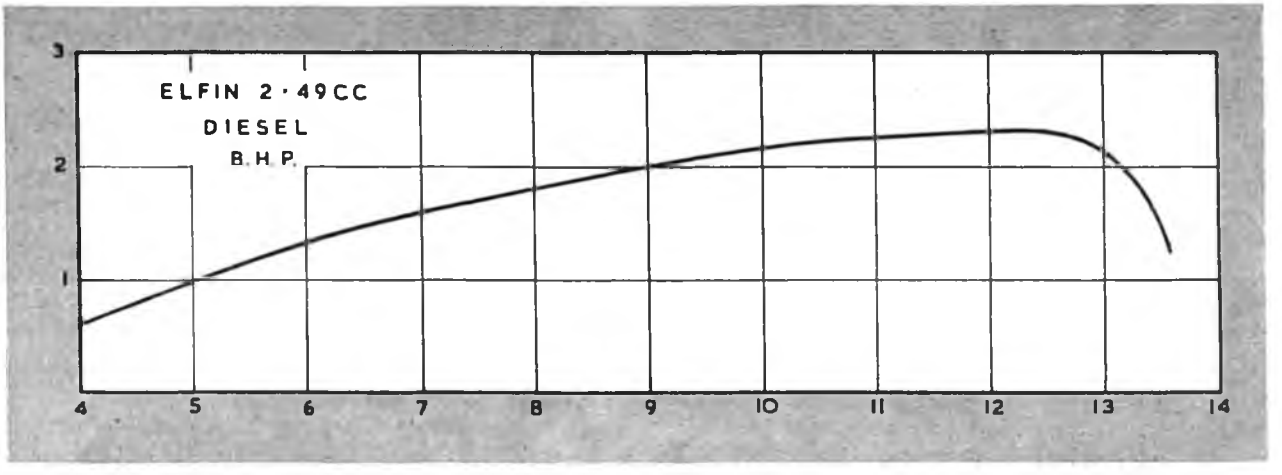
Remarks : This engine is noteworthy for its compact design, light weight, and high power/weight ratio.

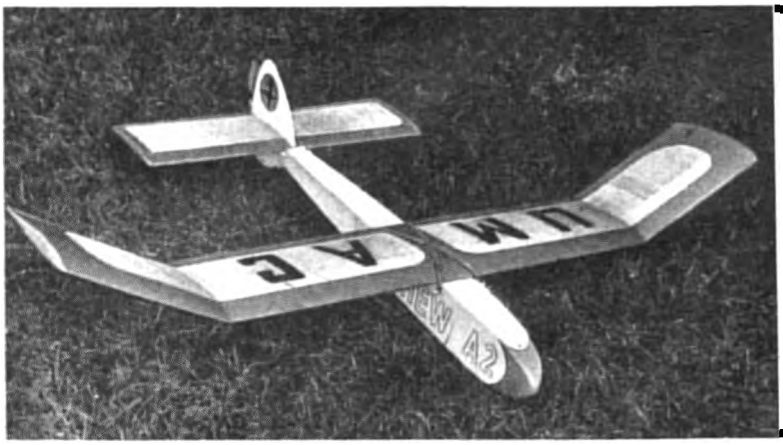
GENERAL CONSTRUCTIONAL DATA

Name : Elfin 2·49. **Retail Price :** £3. 10s. 0d.
Manufacturers : Aerol Eng. Co., Henry St., Liverpool 3.
Delivery : 7 days. **Spares :** 14 days.
Type : Compression ignition.



Specified Fuel : 1/3 each Paraffin, Castor Oil and Ether, plus 2 per cent. Amyl Nitrate.
Capacity : 2·437 c.c. ·125 cu. ins. **Weight :** 3·125 ozs.
Compression Ratio : 15–20 to 1, adjustable.
Mounting : Beam.
Bore : ·554 ins. **Stroke :** ·625 ins.
Cylinder : Comprises liner and head. Liner nickel chrome steel, case hardened.
Cylinder Head : Screwed to cylinder.
Crankcase : Pressure die cast.
Piston : Deflector head, no rings.
Connecting Rod : Duralumin, turned, rolled bearings.
Crankshaft : Nickel chrome steel, case hardened.
Main Bearing : Cast iron. **Crankpin Bearing :** Plain.
Little End : Plain. **Induction :** Shaft rotary valve.
Special Features : 360 degree porting. Full sub-piston induction.





ESPECIALLY FOR THE BEGINNER

Part XVII

FINISHING YOUR MODEL

by

Rev. F. Callon

This trim WALTHEW A/2 can be equalled by YOU, if you follow this article!

"FINISHING" a model does not necessarily mean colouring it. One of the most beautifully finished models I have ever seen was not coloured in any way; large areas of uncovered sheet balsa, carefully chosen for grain, had been sanded and doped until they had a mirror-like surface, and the white tissue had been treated with high gloss proofer. Over at the other extreme comes the model that looks like an advertisement hoarding, plastered all over with transfers to such an extent that there are hardly any spaces left for the highly coloured dope to show through from underneath! Not that colour, even bright colour, is to be condemned altogether; for one thing, it helps to keep the model clearly visible for a much longer period when a flight is bordering on an o.o.s. And it must be admitted that when applied neatly, simply, and *sparingly*, colourful decorations can greatly improve the appearance of a model. But please don't imagine that coloured dope will cover over and hide any faults in construction; quite the contrary. Paint over a badly fitting joint or some wrinkled tissue with high gloss coloured dope, and the break in the smooth, shiny surface becomes painfully obvious from almost any angle.

Tidying up the Model

The first thing to do, therefore, before starting to add those pleasing finishing touches to your model, is to inspect it carefully with a view to removing as far as possible any flaws in its external appearance due to poor construction or the wear and tear of previous flying. Holes, even small ones, in the tissue will have to be patched, while if there are any wrinkles in the covering which doping has not shrunk out, the best thing to do is to cut out the entire panel and re-cover it.

Holes or crevices in balsa, whether sheeting or block, should be filled in with plastic wood. This substance can be bought at any model shop, or you can make it yourself from a mixture of balsa sawdust and cement; store it in a small tin and only remove the lid for the briefest possible intervals during use, for it dries or cakes quite quickly when exposed to the air. I have found it a good idea to squirt a little cement into the space where the plastic wood has to go in order to ensure a firm hold. As it dries out it will contract slightly, continuing to grow less in volume for several hours, so unless the aperture being filled in is very small, it is best to be rather generous with the amount of plastic wood applied; if it still stands out from the surrounding surface, even when dry, you can always correct this with sandpaper. Vic Smeed passes on an excellent tip for obtaining a smooth finish when applying plastic wood: dip the knife blade (or finger) into water before use and there will then be no danger of particles of the substance peeling away as the surface is smoothed over.

Having sanded carefully all of the structure first with medium grade sandpaper and then with fine, now is the time, if you require a really super finish, to brush in a coat of Sanding Sealer. This is a wonderful compound which dries very quickly. Once it is dry, sand again with the finest grade paper which will give a surface that will surprise you. And for very little effort at that!

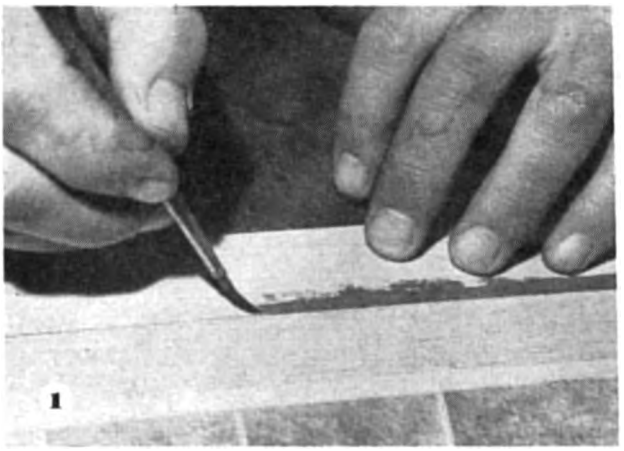
And now for a few words about the choice of materials available for finishing models.

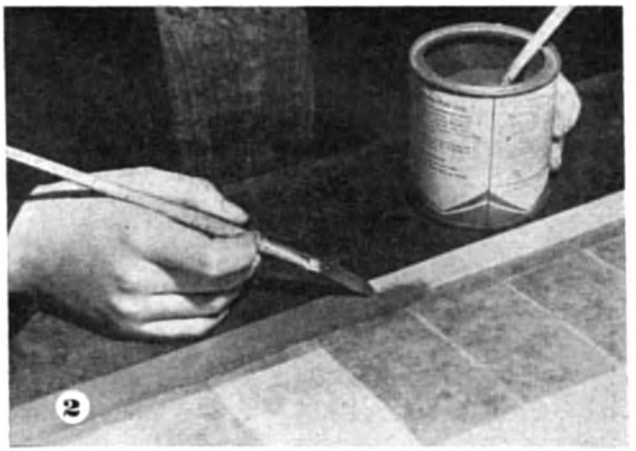
Dopes

As a foundation at least one coat of clear dope should be applied. This will ensure that the tissue is properly tightened, as well as providing an excellent base either for coloured dope or transfers. The shrinking qualities of clear dope are much better than those of coloured dopes; in fact some brands of the latter leave the tissue slightly *slacker* than before they were applied, owing to the residue of coloured pigment which does not evaporate. For the same reason coloured dopes add much more weight to the model, and so for rubber models, which already have to carry a payload in the form of the rubber motor, and lightweight gliders coloured dope should only be used for small areas—wing tips, nose blocks, leading edge trimmings, and so on.

With the "heavier" colours—blue, green, red or black—one coat is generally sufficient to obtain a smooth, glossy finish; but it is very difficult to avoid a blotchy appearance with a single coat of white dope. I have found the best practice is to thin down white dope (by adding thinners—¼ dope, ¼ thinners) and put on two coats. Always work with a full brush, covering a small area—say, one panel—very quickly with the strokes all running in the same direction. Then at once go slowly over the same area with the brush strokes going at right angles to the original direction—from left to right when applying the dope, and from top to bottom when smoothing it out, without reloading the brush with more dope. Then leave that area strictly alone; once the dope has begun to get tacky, further brush work will only roughen the surface.

Apart from the straightforward coloured dopes there is a wide range of "polychromatic" dopes in which the



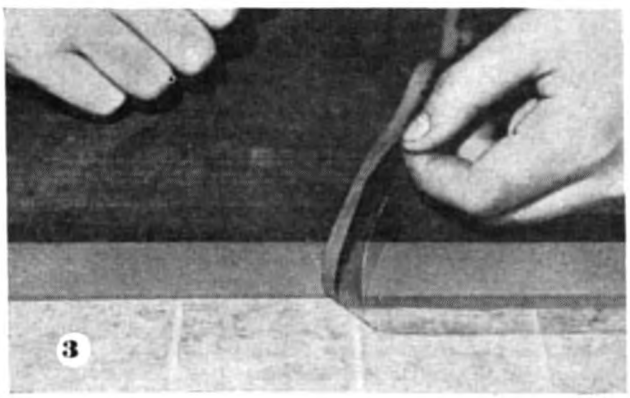


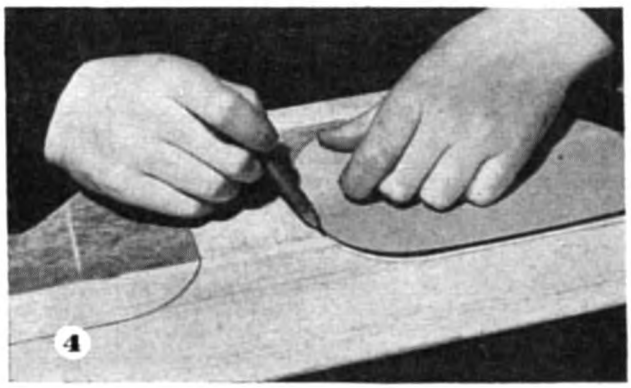
coloured pigment is combined with aluminium to give a silvery, almost metallic finish. When this type of dope is applied thickly, the metallic particles tend to sink below the surface, so the best way to bring up the tinsel-like sheen is to stroke over the surface with an almost dry brush about fifteen seconds after the dope has been applied. This does roughen the surface temporarily, but it will settle down smoothly as it dries and the brightening effect caused by lifting the aluminium pigment to the top is very pleasing.

How to get Straight Lines

Nothing looks worse on a model than ragged edges to what are intended to be straight lines. The secret here is never to work freehand without some sort of a guiding line to follow. In some cases this will be provided by a balsa spar showing up from the framework through the covering tissue, but when no such guide is available you must always mark one on the covering material before starting to paint. A very soft lead pencil will leave a mark even on high gloss dope, but if you are working over unsupported tissue, be very careful not to press too hard or the pencil point may cause a tear or puncture. When the surface is not dead flat you will find that a strip of thin card with a carefully cut straight edge will be a better guide for your pencil than a wooden ruler.

Having marked in the guide lines to your satisfaction you will need a good quality and fairly fine brush for the first stage in the process of colouring. The size of brush usually found in a child's box of water colours is just about right. Work your way inch by inch very slowly and carefully just up to but not over the guide line, and only covering a strip quarter of an inch or so wide away from the line. The rest can be filled in later with a thicker





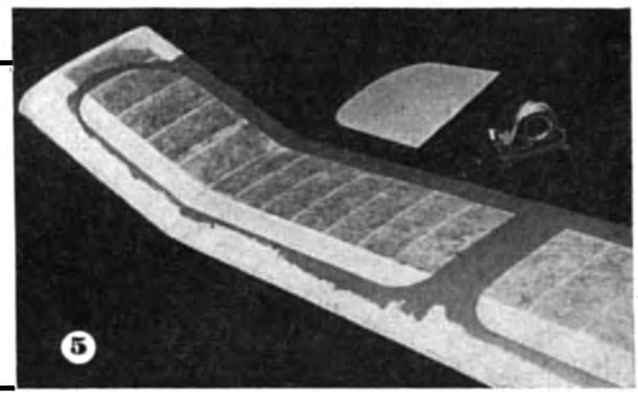


Fig. 1. To obtain a clean edge to a coloured area, pencil in a guide line and work your way along it with a thin brush. The strip so coloured need only be about ¼" wide, and you only have to bother about one edge. The rest can be filled in later with a thicker brush. The overlap of the two coats will not show badly as long as the non-straight edge of the initial strip is spread out and not left to dry in a ridge.

Fig. 2. Alternative method. Sellotape pressed down along the guide line and painted over.

Fig. 3. The strip of Sellotape is drawn off while the dope is still wet, leaving a clean, straight border.

Fig. 4. Curved borders. A template of thin card is cut and sanded to the correct shape, and the outline marked onto the model with a very soft pencil.

Fig. 5. Part of a wing with the coloured outline painted all round and the borders ready to be filled in with a thick brush. Card template for the curves and Sellotape also shown.

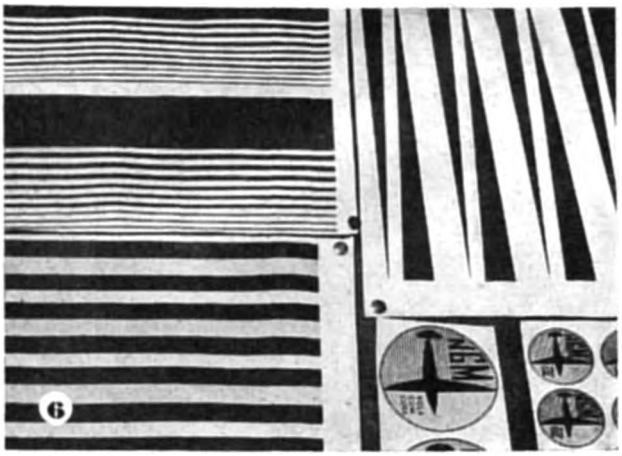


Fig. 6. Commercial Transfers can be obtained for every type of model decoration. Strips and pennants are shown here, with N.G.M. insurance transfers which are not only decorative, but indicate wise modelling.

brush, for all we are doing here is making sure of the actual edge of the coloured area. Fig. 1 shows this stage in the process, the job being a sheeted-in leading edge.

A more expensive method of ensuring really clean edges to coloured areas is by using Sellotape. A strip of Sellotape is laid along the guide line and its edge pressed firmly into contact with the covering tissue. A thick brush can then be used to paint in the area in question, and no care need be taken in this apart from seeing that the dope does not go over the *further* side of the strip of Sellotape. This means that you have a safety margin of about half an inch. Fig. 2 shows a trailing edge being doped by this method ; the Sellotape, transparent, and therefore invisible on the picture, is laid against the T.E. along the entire length of the wing. As soon as the area has been doped and before it has dried, the Sellotape is drawn away (see Fig. 3) leaving a beautifully clean edge. The strips of tape can be used several times in this way, and they are extremely easy to hang up while drying—you merely press them against the edge of the table or mantelpiece, and the sticky surface does the rest ! The coloured dope on the upper surface of the tape dries out in a very few minutes, so that the strips can be re-used without much delay.

Curved Edges

For curved edges, a guide line is even more necessary than for straight ones, and the simplest plan here is to cut out a template from thin card to the correct shape and size of curve. Pencil the curve onto the card, and cut round it with scissors or a razor blade, after which any small inaccuracies in the edge can be smoothed away with a fine sandpaper block. Test the template for size by laying it in position over the unit which has to be coloured, and then hold it firmly down in place while the curved guide line is drawn round the template with a soft pencil (see Fig. 4). Since Sellotape is not suited for a curved edge, this part of the job must be done free-hand with a thin brush, colouring a border of about ¼ inch all round up to the edge as described above. Fig. 5 shows the top of the WALTHEW A2 wing with the coloured edge marked out in this way. The areas outside the edge can then be filled in quite easily and quickly with a thicker brush. If the colouring has to extend right round the edges of the wing up to a similar border on the under surface, then the underneath edge will have to be marked out in just the same way before the two borders can be linked up.

Transfers

As a form of decoration, transfers have two special advantages ; they are neat and colourful in appearance, and they add little to the weight of the model. There is an extremely wide choice here, including various sizes of letters and numerals, badges, R.A.F. targets, chequers, flags, and pennants and trim strips up to 12 inches long and in assorted widths. Fig. 6 shows a very small selection of these ; the apparently wavy lines of the trimstrips are due to the sheet not having been pinned down tightly enough when the photograph was taken. The circular transfers in the corner are of course only available to those who have insured their models with the National Guild of Modellers—a very wise precaution and almost ridiculously cheap too.

No difficulty will be experienced in applying these transfers as long as the instructions (usually printed out on the back) are followed. The method, briefly, is to soak the mounted transfer in water for about half a minute, leave it to drain for a further half minute, and then slide one end of the actual transfer half an inch

Fig. 7. Below, left, ready for assembly. Borders and nose finished in bright red, letters and pennant in dark blue.
Fig. 8. Below, right, the other side of the fuselage, showing 2" transfer letters and 4" cut out tissue letters applied to the wing with clear dope.

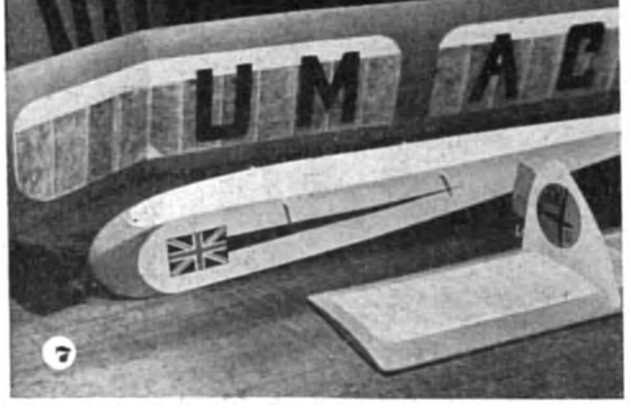
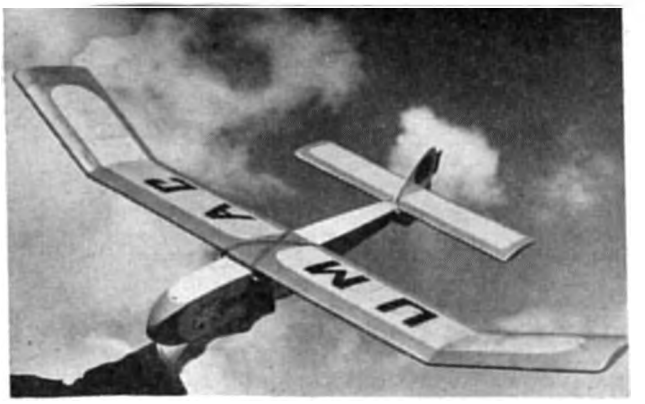


Photo right, shows the completely finished Walthew A/2 of the Upholland M.A.C. Angular lines are broken up by curved trimming which puts pleasing finishing touches to this simple A P S design.



clear of the mount. This half inch of overlap is then pressed down into the correct position on the covering tissue, and the supporting mount is then drawn away, leaving the transfer in place. One of the big advantages of these " slide-off " transfers is that for several minutes after being put on the model they can be moved about and " jockeyed " into position by a little pressure from the finger tips. In order to remove blobs of water from beneath the transfers they can be carefully mopped with a clean linen handkerchief, or as the printed instructions suggest, the paper support may be laid over them, sticky side up, and a flat piece of card used to squeeze out the moisture by means of a stroking movement. When finally settled into position, the transfers should be left for four or five hours to dry thoroughly. They are then quite permanent, and an overcoat of non-cellulose transfer varnish is not absolutely necessary. Dope should *not* be applied.

Fig. 7 is worth a little consideration as showing a reasonable scheme for decorating a model. The fuselage has been given two coats of thinned white dope ; the nose block has been finished in bright red, and the flag and pennant, the latter in royal blue, are transfers. The wing, too, is finished (very patriotically) in red, white and blue, the red border having been edged with a thin brush along a previously pencilled guide line, and the rest filled in with a thicker brush. The larger letters of the club initials which are home-made—instructions will follow—are in dark blue and the white motif is supplied by the uncoloured white tissue and part of the sheeted leading edge showing through. For a really first class finish this middle part of the wing should also have been given two coats of thin white dope, but as three ounces had already been added to the weight of the model, this was omitted. Fig. 8 shows the other side of the fuselage on which 2-inch transfer letters were used.

Home Made Letters

Small letters look out of place on the wide open spaces of the wing, and sufficiently large transfers are not available. However, letters are quite easy to make for yourself as long as the style of lettering chosen is not too elaborate. A square sort of letter is the simplest, for then there are plenty of straight lines which can be cut out neatly with a straight edge and a razor blade. Angular letters such as L, M, N, T, E, F, etc., are perfectly straightforward, and the best plan with the rounded letters like B, P, C, O, is to draw out the rounded members as squares or rectangles and then just round off the corners slightly to give the impression of curves. Just as with painting a straight edge, the secret of success here is to pencil in the outline before cutting out the letter. As long as a dark colour of tissue is chosen for the job, the pencil lines will not show even where they cross the actual area of the letter itself.

Fig. 9 shows how the 4-inch dark blue letters were cut out for the WALTHEW A2. The tissue was heavyweight Modelspan.

When cut out, tissue letters like these should be placed on the wing and shuffled about (still dry, of course) until the best position is found. Wherever possible they should be arranged symmetrically, the same number of letters on each half of the wing ; and the spacing between them should be carefully gauged. Owing to the method of application and the materials used it is not as easy as with transfers to move the letters about, once they have been stuck down, so the exact position of each letter in relation to the the ribs and framework of the model should be noted beforehand.

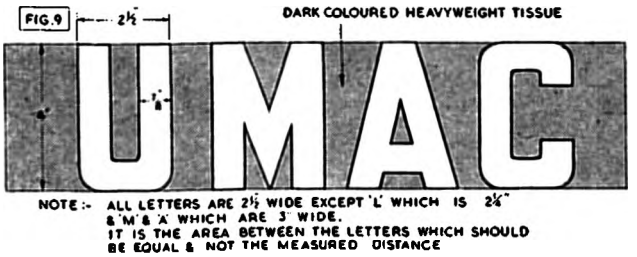
In order to apply tissue letters, first paint over the area of the model they are to cover, with clear dope; then carefully lower the letter into place over the doped surface, and gently pat it down into contact with the tips of the fingers. It should then be left for ten minutes or so to set, when a further coat of clear dope is added to ensure a good grip and a waterproof finish.

Some General Hints on Finishing

Most coloured dopes give a really high gloss finish without any further treatment. Clear dope requires more than one coat for a good gloss. With thin, smooth tissue one coat of clear dope and one of banana oil produces fine results; lightweight modelspan will need two coats of clear dope and one of banana oil, while heavyweight Modelspan would require up to four coats of clear dope alone, or three of dope and one of banana oil, for a really satisfactory gloss. But remember that a high gloss is not essential for a good performance, and after all the main thing is how the model flies, not what it looks like. And remember too that every additional coat of cellulose dope is adding to the weight of the model.

If you are using two colours in your scheme, the larger area should be in the lighter colour and the trimmings in the darker colour. And don't choose two colours which are both light or both dark. The following pair off well : white with blue trimmings ; white with red trimmings ; silver with blue trimmings ; cream with green or orange trimmings. But after all, it is largely a matter of taste.

The extra weight of coloured dope can sometimes be used to advantage in trimming (for balance) a rubber model. If it is nose heavy, the fin can be coloured ; if it is tail heavy, colour the propeller and noseblock.



EATON BRAY NEWS

Fresh with a new coat of paint, Eaton Bray Sportsdrome continues to be the regular venue for modellers who like to fly for fun and without disturbance. Forecasts of a hot summer and plenty of good flying weather promise a very active season for the aeromodeller's Mecca.

" Stoo " Steward holds the vital micro-switch for George Honnest-Redlich as he starts his E.D. IV powered Electron V for a demonstration radio controlled flight at Eaton Bray. Retaining the model is another West Essex clubster, Gordon Oates, whilst in the background, Mr. and Mrs. D. A. Russell prepare to record the flight for the AEROMODELLER ciné film of the 1950 season.

EATON Bray's 1951 flying season opened most successfully during the Easter holidays as the venue for local and Northampton clubs who competed in the decentralised contest for the Gamage Cup.

Cup holder, Eric Smith (Icarians) started well by massing 9 mins. 35 secs. on his first two flights, and but for a broken free-wheel mechanism, he might well have made a repeat of last year's achievement. Even with but a two flight total, Eric placed fourth in this traditionally hard-fought national contest.

1949 Wakefield Team member and 1950 Gamage Cup winner, Eric Smith (Icarians) about to launch his " Themis " 1951 Wakefield design, at Eaton Bray. " Themis " is an anagram of the designer's name, and also a Greek Goddess of Law and Right !

Northampton club arrived in force ; but were without luck (and Ted Evans) in the final results.

Since Easter, the 'drome has been the scene of regular sports flying of all types of models, proving the popularity of the recent happy reduction of admission charges to a "bob-a-nob". With the many facilities available at the 'Bray, and the pleasant atmosphere of flying with complete freedom and without interference by intruding bystanders, this first season should be a most popular—and important one. For the first time, the Sportsdrome is completely free of all obstruction (no posts, fences or barbed wire) and all of the 75 acres are cleared. " Overnight " stay for Saturday/Sunday visitors can be arranged at short notice, a postcard sent a few days beforehand will do, and already the bookings for summer holidays in the Sportsdrome dormitories are pouring in.

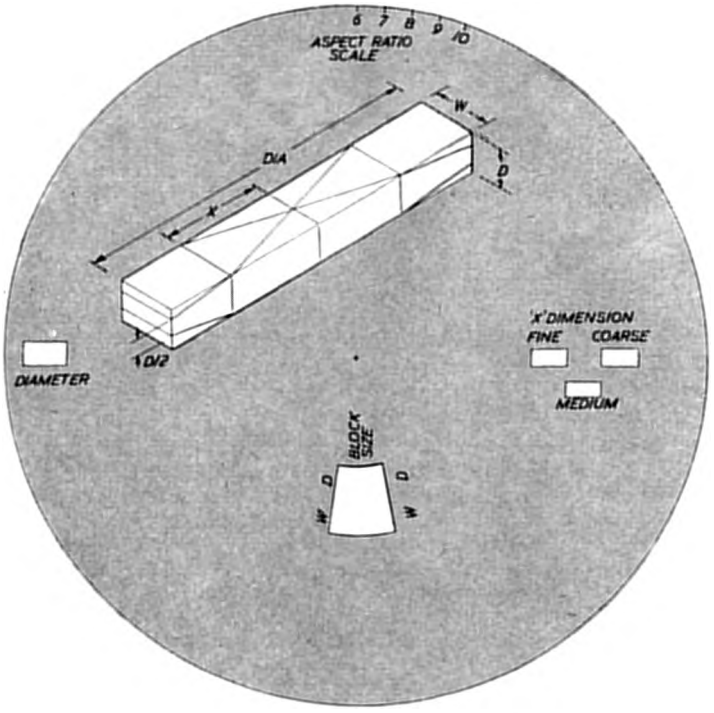
This season is our " fly for fun " season. There are no fixed arrangements for contests : nor, unfortunately, will there be an International week, due to the dispersed Wakefield, A/2 and Power comps. on the Continent, which will place a great financial burden on the foreign national bodies.

Regular attenders will already be aware of the matey and enjoyable impromptu events which are always arranged according to request.

Special 'FFF' Days

Many a modeller within easy reach of Eaton Bray is anxious to know what his fellow enthusiasts are up to, and what kind of flying they are doing. To avoid the confusion of a general rally, and to ensure that specialists know which day is best for them to meet others with like interests, the following dates are planned as special " Fly for Fun" days, with emphasis on the type of model indicated.

June 3rd	Wakefield and F.A.I. Rubber.
July 8th	Radio Control.
July 22nd	Power, Precision and Duration.
August 26th	Experimental.



for that next Rubber Job . . . . . .
try RON WARRING'S

PROPELLER . . . DESIGN COMPUTOR

THIS chart is laid out on the same principle as the Wakefield design chart. The two discs are pasted onto thin card or ply, cut out and then pivoted at their centres. Preferably the pivot should be a drawing pin so that the two scales are aligned accurately and the required figures appear in the centre of their respective ' windows '.

The chart is intended to give all the data required for laying out a propeller for a rubber duration model, the design criteria being the wingspan of the model and the aspect ratio of the wing. If the designer does not want, or cannot be bothered to work out the wing aspect ratio the average figure of aspect ratio 8 can be taken.

Setting the aspect ratio figure against the span of the model gives the required diameter in the appropriate ' window ', and also the size of the block required in a further window. The propeller blank is intended to be laid out as per the drawing on the upper disc, when the ' X ' dimension determines the *pitch* of the propeller. By keeping the same blank *size* for the different pitches, the three alternative pitches—fine, medium and coarse— represent a true ' family ' of suitable propellers.

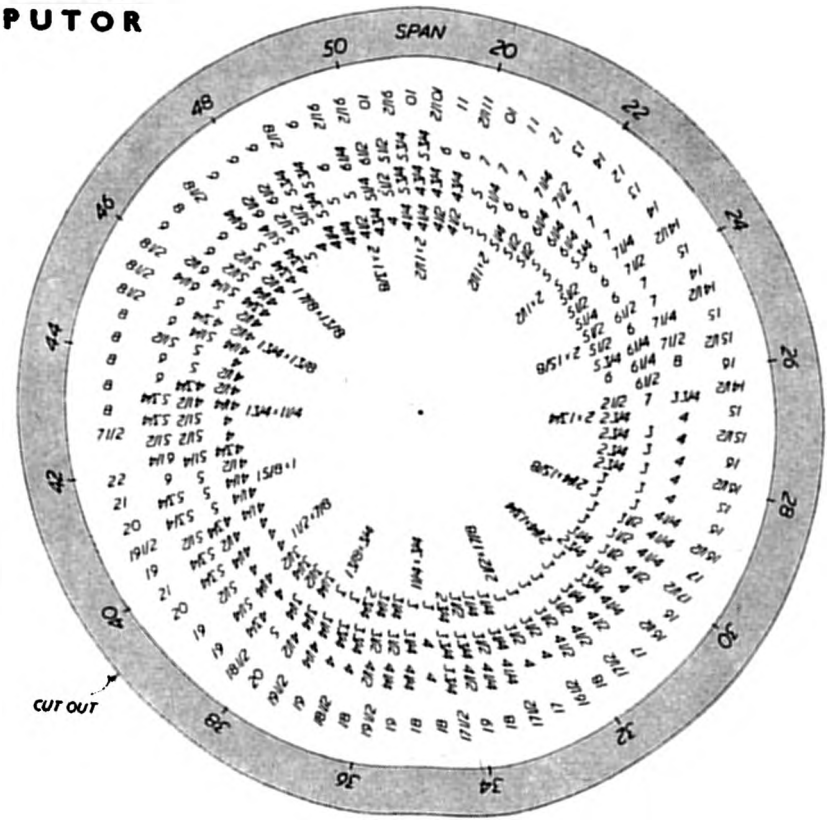
The greater the ' X ' dimension the greater the pitch. Tapering off the outer ends of the blank to half the block depth at the extreme tip and leaving the centre portion untapered then gives a very close approximation to a constant geometric pitch propeller. The undersides of the blades are carved from this blank, the tapering cuts then determining the pitch angle of the propeller from hub to tip. After this, the required blade *shape* can be marked out and cut and the upper surfaces of the blades then carved. A suitable hub portion will also have to be allowed for. Once the undersides of the blades have been carved, forming to any blade shape will not affect the *pitch graduation* of the propeller.

The ' X ' dimensions have been rounded off to convenient figures and corresponding pitch figures are :—

' Fine '—approximately 1·3 × diameter
' Medium '—approximately 1·5 × diameter
' Coarse '—approximately 1·75 × diameter

For normal duration work ' medium ' pitch will probably give best results. ' Coarse ' pitch should, as a general rule, only be used on two-bladed propellers. ' Fine ' pitch is best suited to single blade folding propellers. The same diameter figures can be used for two and single-bladed propellers, although some designers may prefer to increase diameter by 10 to 15 per cent in the latter case. The same block width and depth should be retained.

Typical Example: 42" Span, with aspect ratio of 7, gives a block size 18" × 2" × 1½", with ' X ' dimensions 4½", 5½" or 6½" for 24", 27" or 32" pitch.



RADIO CONTROL NOTES

by HOWARD BOYS

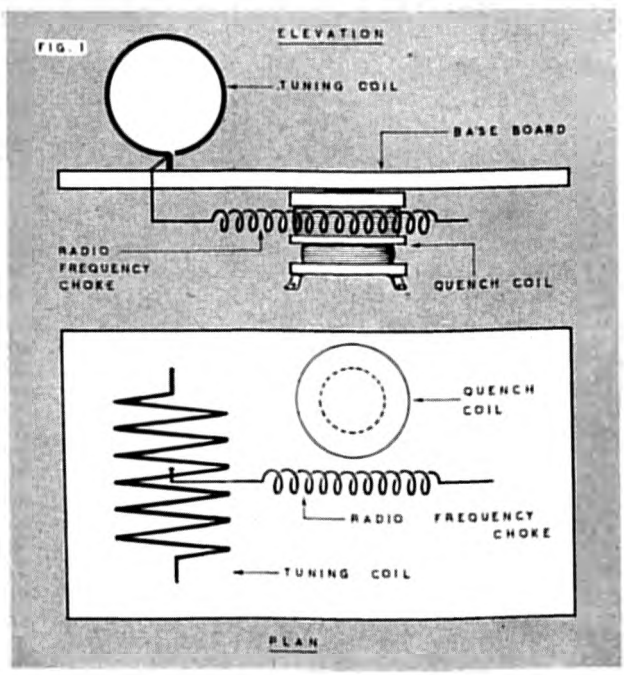
A CIRCUIT was given recently in these notes, May AEROMODELLER, for a single valve receiver, the details having been sent by Mr. Bolton of Nottingham, and at that time the writer had not tried it out. The circuit was also sent to an enquirer, Mr. Ronald Lewis of Bristol. He was not very happy with the results obtained, and so asked for help. As he was a beginner trying this circuit before publication, the writer offered to try the receiver. Here is the letter, or at least most of it, that Mr. Lewis sent with the receiver :—

"While awaiting your reply, I made a few experiments and have obtained most gratifying results. For a beginner it was rather like groping in the dark, but I changed the 30 pf tuning condenser and used a 30 pf disc type trimmer, also a smaller tuning coil.

I visited the local flying ground, and with the usual flash-lamp in the relay circuit obtained the following results.

With 90 volts on the transmitter, flashing ceased at a little over 100 yards, and using 180 volts a little over 200 yards. After about 20 minutes flashing ceased, but this may have been due to the L.T. battery running down.

One thing I like about this receiver is the apparent steadiness of the anode current, which is 1·1 ma. The receiver may seem a bit clumsy to you but I think you will find everything well spaced and soldered, and you can try it any way you like."



The receiver was quite well laid out, but did draw attention to a few points the writer has not emphasised sufficiently, so let us take those first.

One very important point is that all coils should be kept at right angles to each other and spaced as much as possible, though the spacing is less important. In this receiver we are concerned with three coils which may interact with each other if in line. Fig. 1 shows two views of how these coils can be arranged. The quench coil consists of two separate coils wound close together and in line so that they will interact for a definite purpose. With the ordinary radio control receiver, or transmitter, there are not usually more than three coils that may interact. With more than three the problem is more difficult, and spacing is then necessary.

The next point is that wiring should be kept as short as possible, yet components should be well spaced. Short wiring in certain places is the most important. For instance, the grid leak and condenser should be as close as possible to the grid of the valve.

Then again, the lead from the by-pass condenser to the quench coil should be as short as possible, so also should the leads between quench coil and its condenser.

Components should also be anchored to the baseboard so that they cannot vibrate. The wires on the radio frequency side, that is aerial, tuning coil, and valve, should be well spaced though short. The actual size of the components is usually enough to space the wiring.

There is a point where people seem to differ in their ideas, and that is the relay adjustment. In most cases this has been noticed when the SCR 522 relay has been used. The writer likes as small a movement as possible so long as there is a definite movement of the armature. With a large movement there is often a difference in the anode current caused by the armature movement. This difference has caused difficulty to some home constructors.

All the above-mentioned points were attended to when dealing with Mr. Lewis' receiver, though not all at once, and a tuning coil made to the original instructions was fitted. It was found that the setting of the aerial trimming condenser made a big difference to the working.

Finally, to get the receiver working it was tuned in without aerial, which gave only a low anode current and change. The aerial was then connected up and the aerial trimmer screwed up to raise the anode current. It went up with a jump to 1·4 ma. and dropped with signal to ·6 ma. The aerial trimmer then had to be screwed up a bit more to be sure the current would rise again when the signal was taken off. If screwed up too much the sensitivity was reduced.

The receiver proved quite sensitive and appeared to be about twice that of the old Cossor receiver. It was tested with a very low powered transmitter and gave the same range as the receiver currently in use by the writer, using an RK 61 valve. A remarkable thing about this receiver is the way the anode current change is maintained right up to the limit of its range. The change is either all or nothing, just like the RK 61. Results were considered most satisfactory. Although many things were tried the only differences between the finished receiver and as constructed by Mr. Lewis were that the radio frequency choke was put at right angles to the tuning coil, the wiring shortened where possible, the tuning condenser anchored to the baseboard, and the relay armature movement reduced.

The next item is a letter from Mr. G. B. Vanner of Barrow-in-Furness, and here is what he says :—

" It is not generally known that one of the most useful items in the adjustment and testing of R/C receivers is the ordinary domestic superhet radio, providing it has provision for normal short wave reception.

Everybody who has done anything with R/C must at some time have wished for an oscillator to generate a signal of low but known intensity and frequency. It is not satisfactory to use the ordinary transmitter in the home when one is at the kitchen table stage of the job. If it is like mine, driven by a generator from the car battery, it is virtually impossible to bring it indoors. If it is a battery job one cannot keep it on for minutes at a time because of the drain on the battery. In any event the signal strength is so great that no indication of the sensitivity of the receiver is possible.

The domestic short wave superhet radio does just what is wanted. Set the R/C receiver up with its aerial in close proximity to the radio, tune past 22 metres and you will find the receiver is fully operated by the leakage from the oscillator portion of the frequency changer stage. The receiver is being operated by the second harmonic of the oscillator which is itself tuned to a frequency less than half a megacycle from the wavelength indicated on the scale of the radio. The scale reading will be near enough for our purpose but it should be noted that we are working on a frequency twice that indicated on the scale, or half the wavelength, the R/C wavelength being about 11 metres.

The amount of signal which leaks past the screening to be available for our purpose varies from set to set, but is usually of such a strength that an average receiver is worked to full deflection at a distance of two or three feet. As the distance is increased, the signal weakens rapidly and is often almost valueless at the far end of the room.

It is thus possible by moving the receiver about in one room to simulate the result of walking it round several fields when the transmitter is used in the open. If a known receiver is moved about in relation to the radio and the results in various parts of the room noted, the sensitivity of any other receiver may be readily judged and the results of any adjustment found with ease and certainty.

It is an advantage of this scheme of working that one can vary the transmitter frequency to any degree instead of being limited to one spot frequency as when the transmitter itself is used for testing. It will frequently be found that a receiver works fairly satisfactorily on 27 m/c.'s but is very much more sensitive when tuned to a slightly higher or lower frequency. If a little time is spent testing the sensitivity at various frequencies until the most sensitive spot is found then one can return to the 27 m/cs. spot and adjust the values of tuning coil and condenser until a similar degree of sensitivity has been achieved.

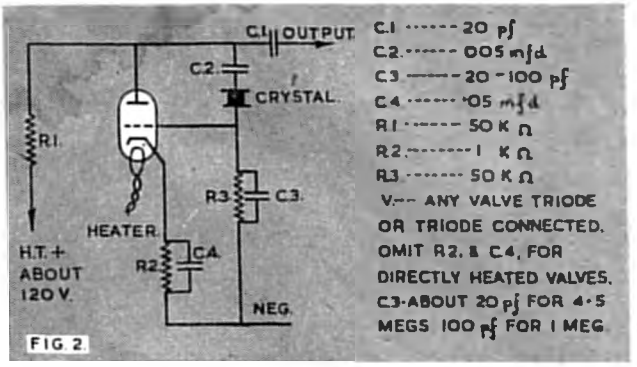


FIG. 2.

Just one word of warning. To avoid unpopularity with the females don't try to use the radio as an oscillator when Mrs. Dale's Diary is being transmitted."

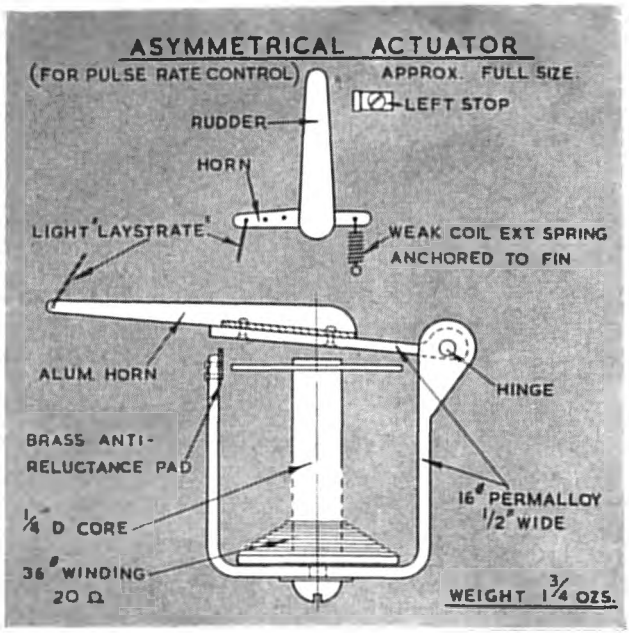
Now we have a contribution from Mr. F. G. Birden of Leicester, and as it is well written, here is the first letter exactly as received.

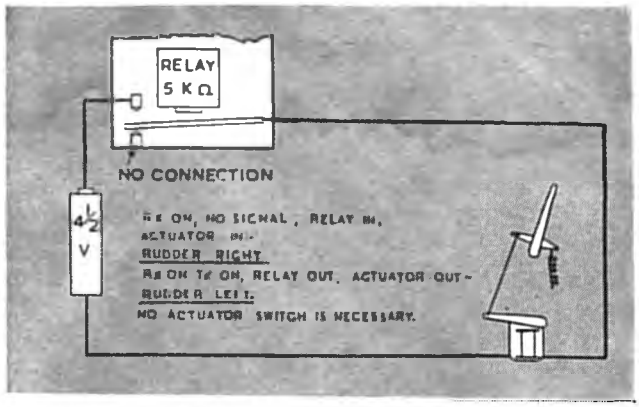
"I have read your recent AEROMODELLER *series of R/C articles with much interest and respect—respect because it is well known that you are a practical man, and not given to abstract theorizing on what might be. The publication of a reader's letter explaining the action of the self-quenched super-regenerator was a worthwhile use of valuable space. I thought it a remarkably concise account of what is one of the most difficult of radio circuits to describe. The reason for the change in anode current is still not fully obtained from the text, however, but it is an exceedingly difficult explanation which would waste the time and strain the brainbox of most aeromods of the electronic tribe.*

I really write to add my piece (if you are able to find any use for it) to point out the disadvantages of one or two common R/C practices which (it is a personal view) cause much trouble to the less radio-minded enthusiast. First on my list of pet aversions is the advice to test under reduced power (a) *by reducing the anode volts,* (b) *by shortening the aerial. To do* (a) *is in nearly every case to achieve some frequency shift ; no lecture forthcoming on Miller effect, it is sufficient to say that the altered anode current causes a change in valve input capacitance, and in the type of circuits most of us use, that means frequency trouble. To use* (b) *causes (usually) a similar shift. A change in aerial circuit impedance with simple fixed coupling has its effect on the tank circuit characteristics. My own advice is to be energetic and walk a bit further away.*

Second is the preoccupation with multi-channels. It appears that there is a lot to be done with rudder only yet.

For what it is worth, here is my own R/C experience. When bands were allotted, I used a home-made set-up with full-size valves—a super-regenerator, (105 *volts H.T.*) *very simple, the whole being fitted in, or more correctly partly out, of a Veron " Dolphin " boat. I soon lost enthusiasm for sequence control and have stuck to magnetic actuators ever since. Also I made a three-valve modulation tone receiver, but considered it not worth the extra components ; the old squegger ended its days,* 105 *volts and all, in a Radio Queen which had a very reliable life of six months until ending its life in a notoriously prang-worthy manner. One or two experiments I will skip, the present job is a year*

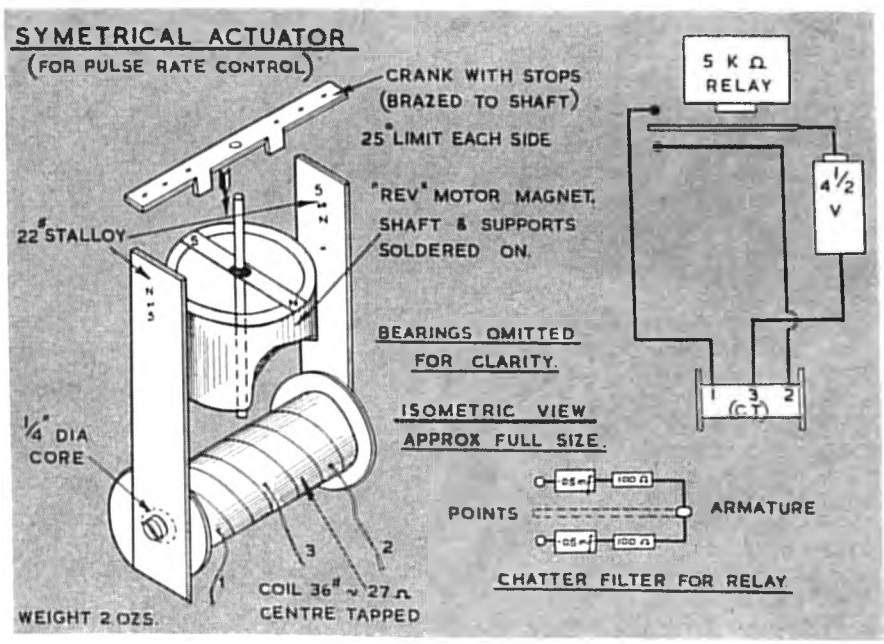




old modified "Scorpion", (·099 Arden powered), which has had its innards doctored regularly since birth. Present equipment is probably temporarily permanent (as a modeller you will appreciate the Irishism) and uses an XFG1, and a relay from the SCR 522, with a very matter-of-fact simple magnetic actuator. Control is fully proportional and self-neutralizing. The electronic pulsetime circuit proved a little troublesome, as it was very sensitive to anode voltage change at the pulse producing valve; therefore the present tin brain-box works its way out using an Archimedean spiral driven by a geared electric motor. The necessary R.F. urge is passed on by two 955's in a simple cross connected circuit. In short, both ends of the R/C gear are just about the limit of simplicity and are extremely reliable.

Why all the panic for inputs of 4 or 5 watts? Quite unnecessary. There is no point in flying a model far away. One transmitter I used for a long time had only one VR 137 (Mullard EC 52) drawing 0·9 watts, and never did the range prove insufficient. Careful tuning and less power is all that is needed. By the way, I have found the properly designed valves (usually 6·3 volt) heaters much more efficient, notably the VR 137, 955, 9002, 832 (a double beam tetrode which can be used with a 3 volt heater supply). Much remains to be done with aerials, but work on 27 m/cs. is awkward.

***Finally**, a spot of gadgetry; a Pierce oscillator. I use one as a frequency standard. Having no tuning controls, it can't be wrong. A "squegger" with any sort of "go" will pick up harmonics to the n'th degree, so a wide choice of crystals is available, and a visit to a surplus radio equipment store will yield results. My crystal is a 4,500 k/cs., that gives a harmonic dead on 27 m/cs. Simple arithmetic gives a complete list of suitable, different frequencies. Power is low, so the receiver aerial must be draped around the innards somewhere to pick up. There is no need for a definite connection. (Fig. 2 shows the circuit).*



No value is critical. If no joy, reverse crystal; if still no joy, increase C2 or decrease C3. Keep wiring short. I use a 9002 valve.

The writer must first explain that the use of a transmitter with reduced H.T. and no aerial was meant for trying receivers to find their most sensitive operating conditions, and during these periods the transmitter will often be radiating on something other than the frequency we are allowed. Reducing the power will then reduce the strength of these radiations to avoid interfering with any other radio equipment. A 5 watt transmitter can be picked up quite a long way

away. A friend of the writer's has communicated with someone in Norway using a power of only 5 watts.

The writer believes that the panic for inputs of 4 or 5 watts is due to the lack of sensitivity of the early receivers, and it is certainly not needed these days.

A letter was sent to Mr. Birden explaining this and asking for more details of his actuating system and here is the reply :—

"Thank you for your interesting letter ; explanation accepted on reduced transmitter power, and no offence meant.

I am glad to know of your interest in my own R/C system, and have pleasure in submitting a series of three rough diagrams which I hope will be self explanatory. Actually the symmetrical one - way actuator is the one now in use. The advantage of the other not appearing outstanding. It doesn't much matter whether or not the neutral position is the mid position of the knob, after all, and the current consumption is less for the simpler one.

Apparently it is the mechanical proportioner you are interested in ; the electronic one was a rather fancy way to solve the problem anyway, and has little to commend it except a great air of technicality.

Incidentally, the motor and gears came for a surplus Bendix SCR 522 receiver, as do my relays. Reed relays aren't a patch on them, although they are lighter.

All receivers and transmitters, and ancillary gear, are home designed and made ; current receiver is a Hivac XFG1 in a simple circuit, although I favour a higher L/C ratio and lower quench frequency than is usual. I gave up dust cored coils as being more difficult to lay out, and also to modify, my scheme being to adjust the tuning condenser until the feed back, and thus the anode current, is correct, and then using a signal generator to find where the receiver comes in best ; the coil is then altered to bring the tuning range on the band. Of course, there is so much interaction of component values that it often takes a lot of fiddling even then.

Having had only one of the valves lately, I can't safely criticise, but at first I found that a valve change meant a whole set rebuild. The "popping" voltage at the grid seemed to vary greatly with different values, and to get the same results was a devil of a job. One valve I had refused to stop conducting at all reasonable component values.

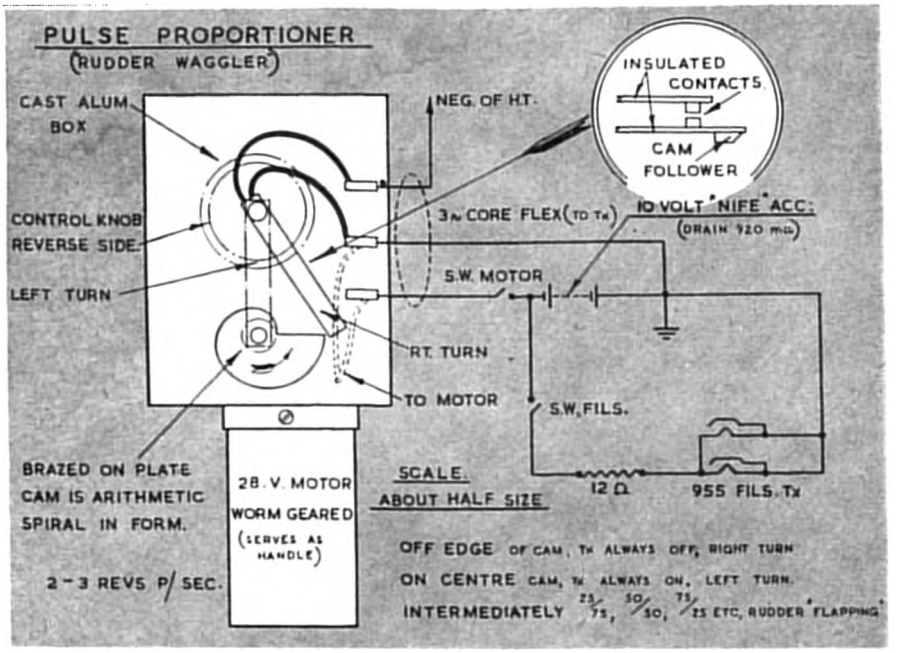
Present transmitter has two 955's on 1·7 watts. Aerial is a dipole of doubtful efficiency, and is due to be lopped off as soon as a bit of co-axial cable comes my way for (preferably) a skirted vertical rod. Other solution is to stand the transmitter on a soap box.

Note : *The relay points quench condensers, etc., are definitely desirable.*

It is interesting to note that Mr. Birden's system is almost identical to that favoured by the writer. In place of the home-made symmetrical actuator the writer uses a Mighty Midget motor using half a No. 8 battery each way for the turning. As an economy measure, one model has recently been fitted with a magnetic actuator weighing one ounce and operating on half a No. 8 battery the current drain being ¼ amp., this for a small model.

One point where Mr. Birden scores is that no actuator switch is required with his magnetic actuator. The actuator battery is only switched on with the receiver on and the transmitter off.

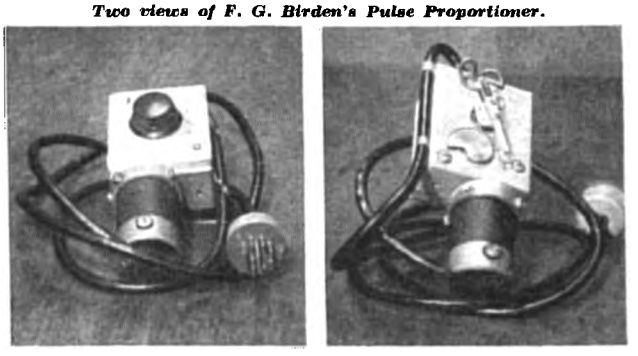
Well, it has been most refreshing to find someone using this control system, and having the same opinion of it as the writer. "Thank you " Mr. Birden.

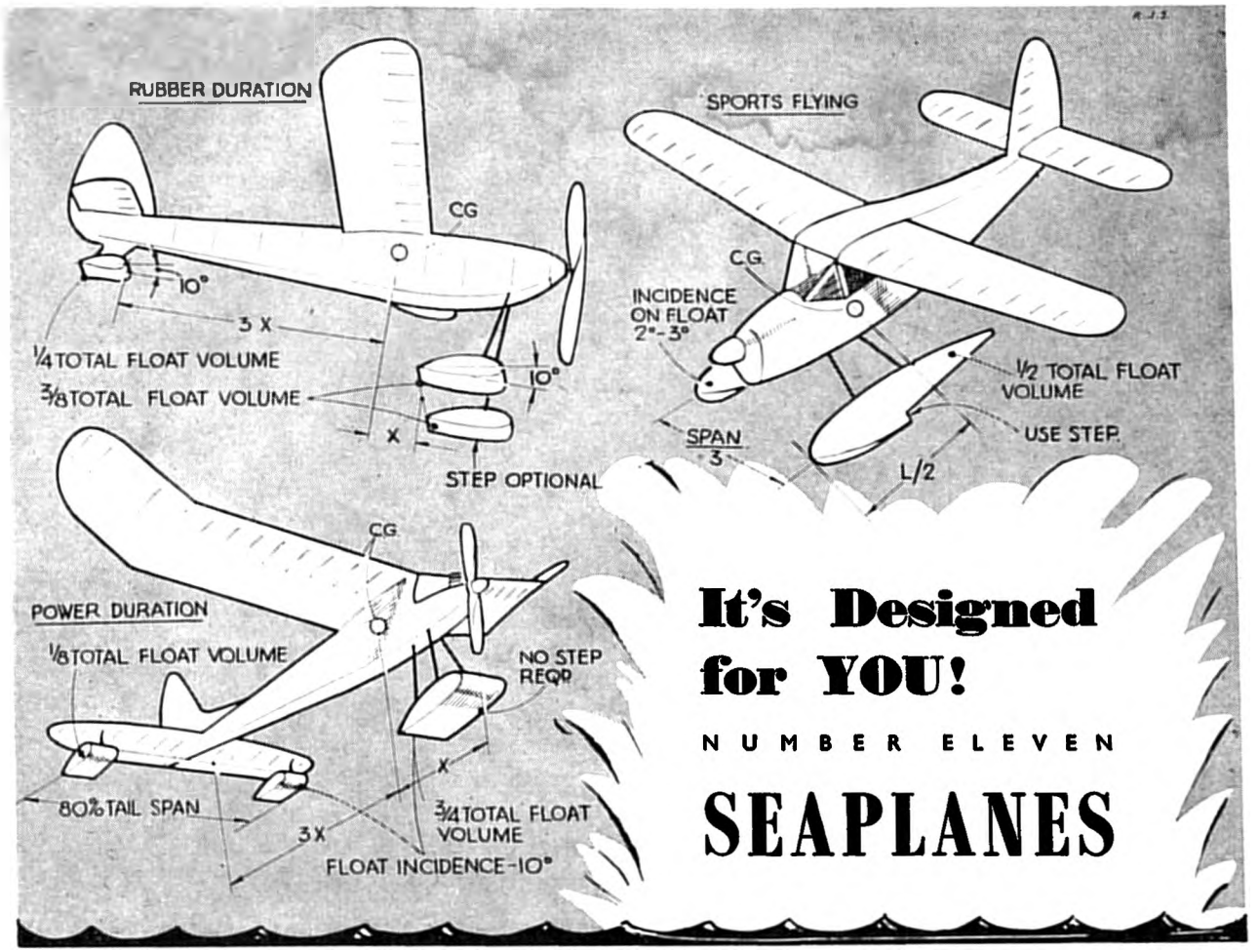


Errata Notice

It has been pointed out by Mr. D. W. Bradshaw a Tele-Service Engineer of Biggleswade, that a slight error occurred in the April issue of this feature. Amongst the component symbols given together with pictures of the components themselves, was a 3 S4 valve and Pin 6 is shown connected as the control grid. Pin 3 is of course the control grid and Pin 6 should be connected with Pin 2, to the anode. Our apologies Mr. Bradshaw and other eagle eyed readers.

Two views of F. G. Birden's Pulse Proportioner.





SEAPLANE—or, to be technically correct, floatplane—contests are now comparatively rare in this country. Before the war a seaplane contest was a popular annual event in the S.M.A.E. calendar and many local galas featured a similar event, flown off portable tanks or a suitable pond. In those days the writer remembers taking off from a river bank in an S.M.A.E. de-centralised seaplane contest. Not, in the light of this experience, an ideal method, especially with a strong tide, as there was in this case. Contests were invariably for the rubber-driven type of model where a more or less standard type of flotation gear was evolved—the three-float system involving two small main floats and a tail float. This has many advantages over the " semi-scale " twin-float layout and is applicable to all types of power models.

Unlike this country, where seaplane contests have largely fallen into obscurity since the war, America has gone ahead with this type of model and includes a seaplane event in the " Nationals ". This, however, is for various classes of power models. The rubber-driven seaplane is not recognised as a contest type over there. In many cases the design of suitable flotation gear for both rubber and power driven models is similar, but there are differences to be taken into account. Of the two, the latter has been more highly developed and it is possible that some of the modern schemes, *e.g.* single main float, could be adaptable to rubber models. But perhaps, before going any further, it would be best to classify the various possible type and layouts of floats and float systems.

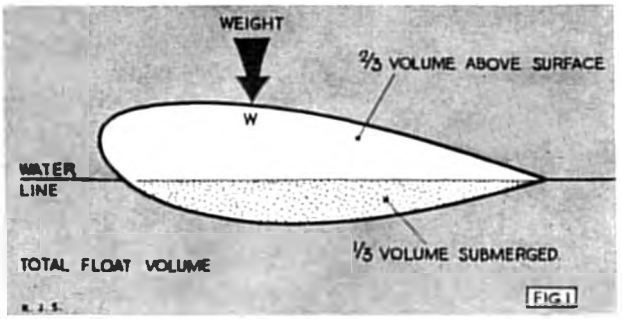
The first and most essential function of the flotation gear is to support the weight of the model so that it will rest on the surface of the water—Fig. 1. The total volume of float(s) which would do this would be any system where the weight of water displaced is equal to the weight of the model. If this were exactly so the whole of the float(s) would be just submerged. This, obviously, is not a practical solution. The floats must be larger than this minimum size and, in fact, it is a fairly well established rule that the float volume should be capable of supporting *three times* the weight of the model. It is therefore readily possible to calculate the required total. float volume.

Float volume = 5 W (approx.)

where W = weight of model in ounces.

Now just how this volume is disposed amongst the number of floats used is dependent largely on water stability. The seaplane model must be stable longitudinally and laterally, the latter being more a matter of float *arrangement* rather than float *size*.

Five possible float arrangements are shown in Fig. 2. All have been used on models and hence data is available on their comparative performances. The most used



types are B and C. Type B—two main floats forward and one rear float—is the system common to almost all rubber models. Type C is very popular in America on contest power models, although type B is also widely employed. These two, being the generally adopted layouts, will be described in more detail later. First we will discuss the failings of types A, D, and E.

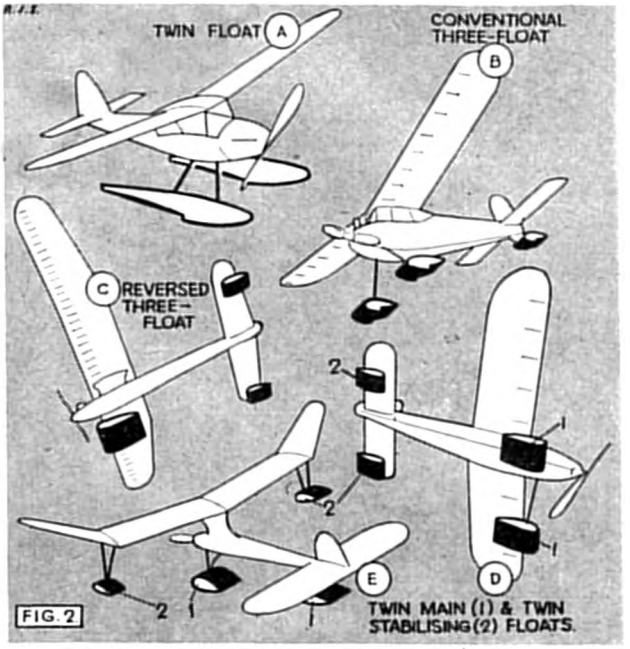
Twin floats of type A are, of course, the most realistic. Unless the main object is to preserve a certain semi-scale appearance, however, it has little else to recommend it. Water drag is high since the floats are long and thin. They have to be long to give sufficient longitudinal stability or resistance to tipping—Fig. 3. A float which "drags" fore or aft will give unsatisfactory take-off characteristics.

Where plenty of power is available, twin-floats of adequate length may be satisfactory for sport flying, but in the case of a rubber model, take-off is generally prolonged. The run required to unstick may be longer than the water space available, particularly if a tank is being used.

Type D is a system basically similar to type B, but with twin rear floats for increased lateral stability. Such extra stability, however, is only gained at the expense of increased weight and water drag and so has little to recommend it. Similarly type E has seldom worked out satisfactorily in practice. In the four-float system of type E, the two central floats are the main flotation system, the outer wing tip floats are added to improve lateral stability. Theoretically this is a very good arrangement, but should one of the tip floats be depressed during take-off—as is most likely under the torque reaction of the motor—Fig. 4—this tip float will simply slew the model round.

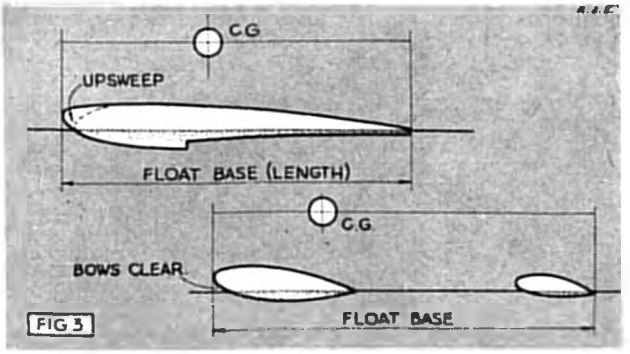
This failing—a float digging in and slewing the model round—is a failing with all twin-float systems. The increased water drag of the depressed float turns the model off course and may even cause it to tip over completely. It is aggravated by wide spacing of the floats. Thus the wider the main floats are spaced apart, in either A or B, the greater the danger of this happening. At the same time it is necessary to secure some measure of lateral stability on the water, otherwise the model may tip right over at the moment it is released. As soon as it gathers speed the lift of the wings will tend to keep the model level. Hence rapid initial acceleration is a definite asset for seaplane take-offs.

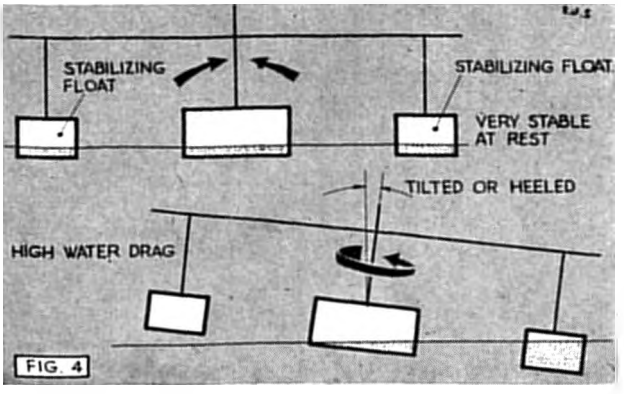
The two systems we shall concentrate on as being most suitable for contest work are B and C. Some details of A will also be given for the sport fliers who are seeking semi-scale appearance. The points to be discussed are the relative sizes of the floats, their location

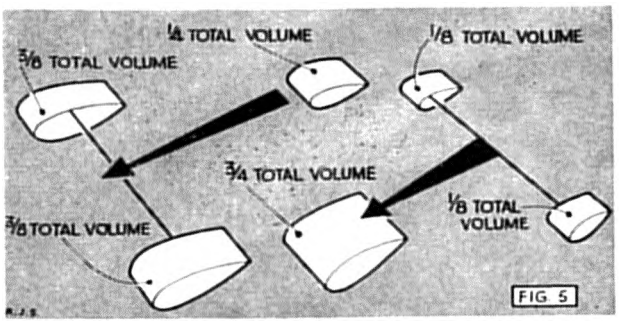


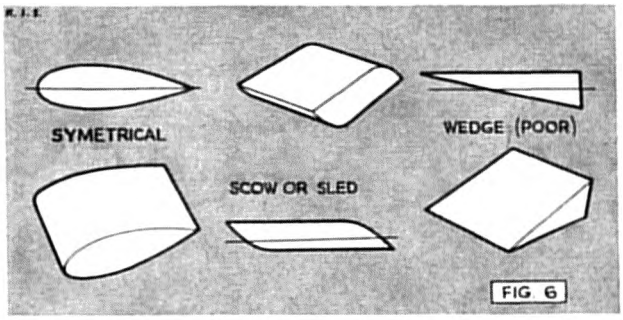
relative to each other and to the model itself and their attitude relative to the model. The actual shape and design of the floats themselves will also be of considerable importance.

As regards the relative sizes of the floats the solution for the twin-float system is obvious. The required total float volume can be calculated very simply and this









volume is proportioned equally between the floats. Some systems have been produced with one float of a twin-float system slightly larger that the other to counteract torque, but this does not appear necessary, or even desirable.

The solution for the three-float systems—B and C—is also simple. Based on practical results the recommended proportions are—Fig. 5 :—

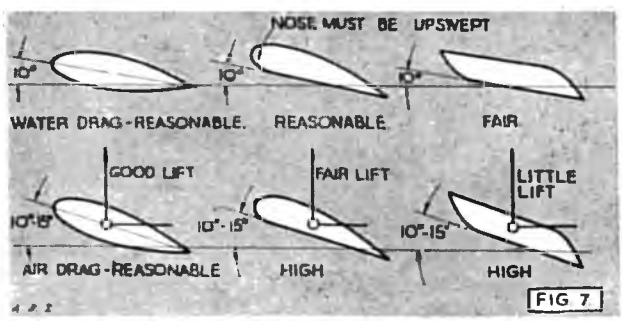
Front float(s) = ¼ total float volume.

Rear float(s) = ⅛ total float volume.

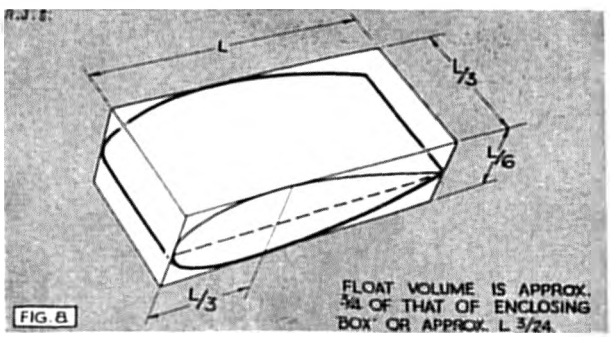
If there are two floats at the front, therefore, each float must account for ⅜ of the total float volume. Twin rear floats will be ⅛ of the total float volume each. These figures have been found to give satisfactory performance both on power models and rubber driven models. In the latter case the rear float volume is sometimes boosted above this recommended design figure, but this does not seem necessary.

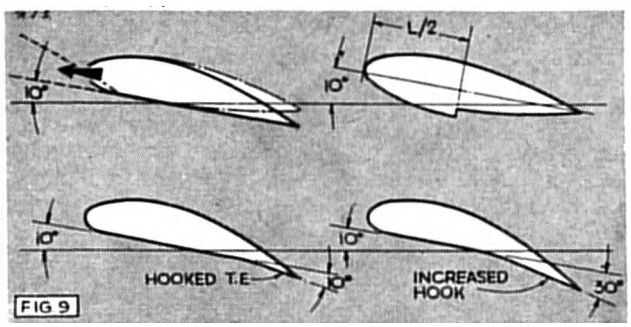
The shape of the floats comes next. Broadly speaking, shape can be divided into two classes—the plain scow type or the more complex, rounded float. The scow type is generally used and, indeed, is all that is necessary for models (including the twin-float layout). They are efficient, easy to build and relatively non-critical in shape.

The simplest type of scow float—Fig. 6— is just like a low aspect ratio thick section symmetrical aerofoil. There is a very good reason for adopting a symmetrical shape, as this affords a good compromise between water or take-off characteristics and aerodynamic or flight characteristics. It is necessary to have the nose of the float upturned to prevent it digging into the water as it moves forward. In the simple straight-sided scow float this is achieved by sweeping up the bottom line at the bows. In the air this type of float will have a higher drag than the somewhat thicker symmetrical section—a symmetrical section having reasonably low drag figures at moderate angles of attack. Under flight conditions the floats will be at quite a considerable angle of attack for, as we shall see later, they are generally uptilted at some ten degrees to the centre line of the model. Some designers have used this feature to design floats which will contribute lift in flight—Fig. 7—but all normal floats will generate some lift at such an attitude. Of the three illustrated the streamlined float still has the least drag, and possibly nearly as much " lift " as the aerofoil float. The latter has not got the upswept nose considered necessary and would probably have to be rigged at an even coarser angle, again adding to drag. Seeking to counter the weight of the floats by making them lift is no valid reason for the aerofoil shape. The symmetrical section does the same thing automatically.



Typical proportions for floats of this type for schemes B and C are then summarised in Fig. 8. The same proportions apply to front and rear floats. Width is generally about one third of the float length, and depth about one half of this figure. These proportions may be varied somewhat, if desired, but width should never be less than one quarter or more than one half of the length.





The question of whether or not to use a step in the float is an open one. Theoretically there are good reasons for so doing, but in practice none of the three float systems really seem to require stepped floats provided adequate take-off power is available. It is more important to get the model to accelerate rapidly and unstick in a few feet than to bother about correct planing angles for the floats and a prolonged take-off.

Some modellers do use steps, but similar layouts have performed just as well without. A compromise is to depart from the purely symmetrical shape and sweep the top line down to a straight aft underbody. This has a certain beneficial effect on take-off as it increases the angle of attack of the float—or rather maintains the same angle of attack as the float starts to come out of the water —Fig. 9.

Sometimes this is carried a stage further and the rear of the floats swept downwards or hooked. This appears to have a similar action to a step in helping the float to unstick and is definitely effective. The air drag of such a float, however, is higher than that of the other types. In Fig. 9 the floats are shown in the approximate order of increasing " unsticking " properties, and also increasing air drag.

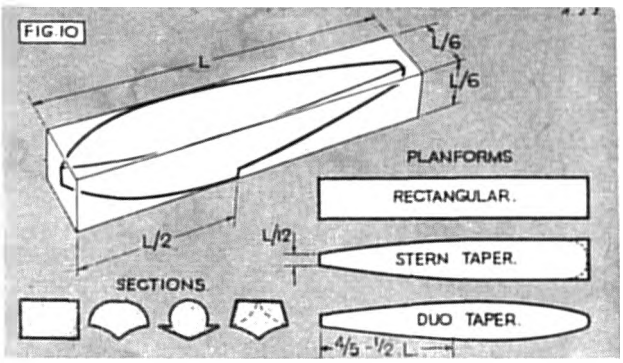
With a twin-float layout the problem is somewhat different. In the first place, being used on a sport model, the model itself has a less powerful motor. The added weight of the floats may bring it near to an under-powered condition. Also the floats themselves have a rather high water drag and, not the least factor, a semi-scale model should have a semi-scale take-off with a rather long run. Hence in such cases stepped floats should be used, either of the scow type or curved section, possibly with a " boat " entry—Fig. 10. Unlike the scow float, too, it is not uncommon to find such floats tapered in planform, although it is always advisable to retain a broad bow.

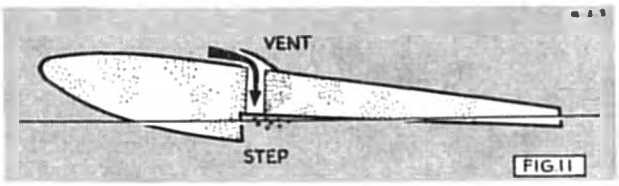
Take-off performance of low-powered twin-float models can be improved by venting the step—Fig. 11. This consists of fitting an air scoop to the top of the float which traps air and forces it out through the bottom of the float just aft of the step. This breaks up the suction attraction at this point and assists the model to rise onto the step and plane properly. Normally not used, vents may be a solution to a floatplane which otherwise refuses to unstick, especially off calm water.

We now come to the disposition of the floats. First, the three-float system—Fig. 12. The diagram summarises the basic requirements.

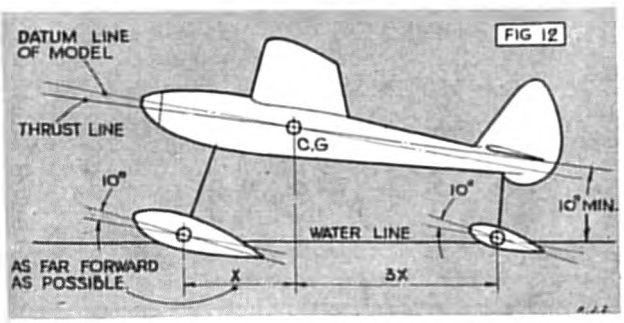
Practice has indicated that the angle of incidence of the float, relative to the centre line of the model, should be about ten degrees, certainly no less, although sometimes the floats are rigged relative to the *thrust line*, when the corresponding minimum figure is 5 degrees. The tail float(s) is set at the same incidence.

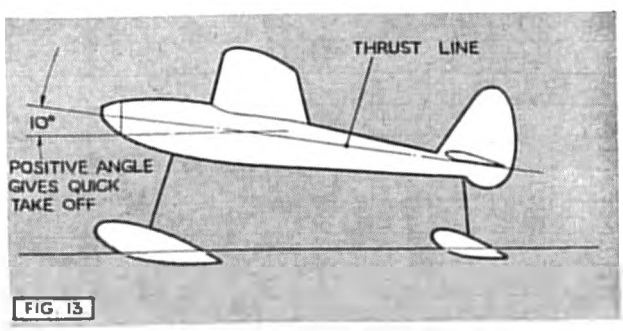
The front float(s) should be as far forward as practicable to prevent tipping. Ideally, the leading edge of the float(s) should come in front of the propeller disc. For properly balanced proportions, the rear float should then come so that its moment about the centre of gravity balances out the moment of the front float. In other words, with the proportions already given, the distance from the rear float to the centre of gravity of the whole model should be three times the distance of the front float(s) from the centre of gravity.

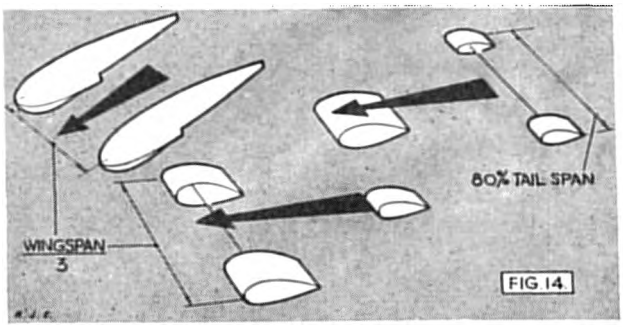


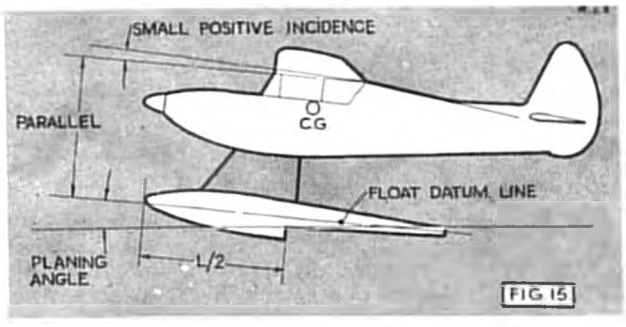


Propeller clearance will determine the vertical location of the front float(s). The height of the rear float should then be chosen so that the thrust line is at least 10 degrees inclined upwards from the waterline—Fig. 13. Unless the thrust line is directed upwards a short, snappy take-off is impossible and none of the three-float systems is particularly stable for prolonged planing. A study of plans of successful model floatplanes shows that this thrust/waterline angle is often considerably more then 10 degrees, twice this figure not being uncommon on rubber models.



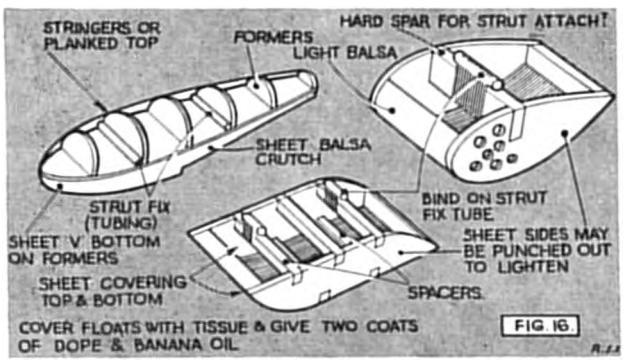






Float spacing for adequate lateral stability—without running into yawing troubles—is rather more of a guess. The quicker the model is expected to take off, the less troublesome the problem. Most designers try to use as wide a track as possible without running into trouble, and some typical figures taken from successful practice are given in Fig. 14.

Layout of the twin-float seaplane differs somewhat, for in this case we have not got the short take-off run—what amounts almost to a " jump start " in the case of three-float contest models. Hence there is not the same need for a coarse float incidence, the object being to get the floats to ride up onto the step and plane in this attitude, allowing the model to pick up speed until the wings generate enough lift to " unstick ". Planing, the water resistance of the float will be reduced, since less volume is immersed and also suction will be reduced since the wetted area of the float is less. Until the float is planing, however, water drag is high. A common fault with such types is poor float design, so that the floats never do reach their planing attitude and all the power is used up in dragging the floats through the water.



It is still desirable, but not strictly necessary, to maintain a certain positive angle between the thrust line and the waterline, but this now need only be a degree or so. An excessive float incidence, in fact, is undesirable. When the model is running on the forebody of the floats, *i.e.* planing, the wings must have a positive angle of attack, otherwise however much speed is built up, the wings will not generate enough lift to unstick. If, for example, the model planed nose-down with the wings at a *negative* angle of attack, increasing speed would build up more *negative* lift, holding the model on the water more firmly. For this reason, therefore, there should be a certain positive incidence between wings and float line, even if this means that the thrust line has a negative value relative to the waterline—Fig. 15.

To conclude, typical construction details of flotation gear are summarised in Fig. 16, whilst the tables list suitable float sizes and proportions for a range of rubber and power models, together with material specifications. It goes without saying that all floatplanes should be given a more waterproof finish than ordinary models—this not only confined to the floats themselves. Banana oil is a good waterproofing medium, especially if applied after a coat of ordinary dope. On power models, ignition circuits (where applicable) should be protected by coating with warm paraffin wax. The motors themselves, if ever " dunked ", should be washed out with alcohol (*e.g.* methanol) and thoroughly dried off.

TABLE I—APPROX. FLOAT DIMENSIONS—LAYOUT B
(Rectangular Section Floats—Symmetrical Form)

MODEL Weight (ounces)	TOTAL FLOAT Volume Required (cu. ins.)	FRONT FLOATS Length	Breadth	Depth	REAR FLOAT Length	Breadth	Depth
4	20	5¾	2	1	5	1⅜	1
6	30	6¼	2¼	1⅛	5½	1⅞	1
8	40	7¼	2⅜	1¼	6½	2⅛	1
15	50	7¾	2½	1⅜	6¾	2¼	1⅛
18	75	8¾	3	1½	7¾	2½	1¼
20	100	9¾	3¼	1⅝	8½	3	1½
30	150	11	3¾	1⅞	9¾	3¼	1⅝
40	200	12	4	2	10½	3½	1¾
50	250	13	4½	2⅛	11½	4	2

TABLE II—APPROX. FLOAT DIMENSIONS—LAYOUT C
(Rectangular Section Floats—Symmetrical Floats)

MODEL Weight (ounces)	TOTAL FLOAT Volume required (cu. ins.)	FRONT FLOAT Length	Breadth	Depth	REAR FLOATS Length	Breadth	Depth
4	20	7½	2½	1½	4	1½	¾
6	30	8½	2¾	1⅝	4½	1⅝	⅞
8	40	9	3	1¾	5	1¾	1
10	50	9¾	3½	1⅞	5½	1⅞	1
15	75	11	3¾	1¾	6½	2	1½
20	100	12	4	2	6¾	2¼	1¼
30	150	14	4½	2¼	7¾	2½	1⅜
40	200	15½	5	2½	8½	2¾	1½
50	250	17	5½	2¾	9½	3	1⅝

Buzzed by a Buzzard

DEAR SIR,

Your readers may be interested to hear of this incident.

Whilst my "Skyskooter" was circling with its tomary steadiness some 300 feet above Haldon Moor, it was attacked by a large bird.

At this moment the engine cut, and the bird, surprised by the plane's change of behaviour, sheered off to a distance of some twenty feet where it took up position as it were "in formation".

Bird and plane came down together, in a perfect glide and still in formation, through three full circles, until the bird, apparently satisfied that the "Skyskooter" was *hors de combat*, disappeared into the distance.

Owing to bad visibility, I was not able to identify the bird precisely, but its wing span was only a little less than that of the "Skyskooter" (48 inches) and local ornithologists tell me that it was probably a buzzard.

Although the bird actually succeeded in shifting the aircraft several degrees off its course, I could find no trace of damage when it landed.

I am now about to fly with R/C over the same area in the hope of producing a repetition of this curious incident, and of luring the bird into camera-range.

This is not so far-fetched a proposition as it may sound, since it seems that buzzards stick to much the same pitch and regularly "see off" any invaders of their territory.

You may not think it amiss if I add a word of tribute to the "Skyskooter" which has survived not only the attack described, but also many dozens of flights and hard landings on this rough country, performing with astonishing reliability in every kind of weather.

Bishopsteignton, S. Devon. JOHN MCMILLAN.

Aeromodelling Olympics

DEAR SIR,

I would like to offer my support of your "Olympics" proposal, for it does seem time that other branches of the hobby received the same official support as the Wakefield. At the moment it seems that some aspects are being neglected by the Council of the S.M.A.E. in order to maintain the status of the Wakefield.

This belief may be unfounded, but it does exist, and steps should be taken to remove this belief and allow Power Duration, Radio Control and Control-line (to name but three) to try to reach the high status enjoyed by the Wakefield. After all, if the Council could devote a fraction of the time given Wakefield matters to other branches of the hobby there would be no grumbles.

Doncaster. K. G.

(Many readers voice similar opinions, but we point out that this year sees all classes of aeromodelling featuring in the International Calendar, and it is the intention of the S.M.A.E. to send teams to participate should funds permit.

However, we still maintain that the logical system in the future would be to group such International Contests into a grand "aeromodelling week", thus preventing the broadcast travelling of small groups with its attendant higher costs, and providing a spectacle that would be an aeromodellers' dream.

Never mind the "sales slogan" of "Hands off the Wakefield"—we repeat that this contest will hold its premier position whatever else is introduced on the same programme, but an ostrich attitude that turns a blind eye to other aspects of the hobby will inevitably become a boomerang. ED.).

Bowden Rules for 1952

DEAR SIR,

Past supporters of the Bowden International Trophy for power models may feel that this year's rules have deserted their interests in favour of a restricted duration design, which is now the standard of free flight power competitions. I feel that it is therefore necessary to say that through an oversight the original intentions behind the trophy were lost sight of for this year, and that those who have found an outlet for their activities in the "Bowden" may take comfort for the future years from 1952 onward, when the original stipulated intentions behind the trophy will be considered.

Duration of all types is very well catered for in the major competitions. Therefore, when I originally gave the trophy to the S.M.A.E. I made certain stipulations which encourage a wide range of engine types and capacities, and also flying other than pure duration. The idea was to encourage variety rather than restriction. These stipulations covered the following points:—

1. To encourage all type of internal combustion engine of any capacity up to 10 c.c., the S.M.A.E. limit. (Even jets were not ruled out should they become safe for free flight and come under the term "internal combustion" and not rocket).

2. Realistic type of flight, as opposed to exaggerated duration climb.

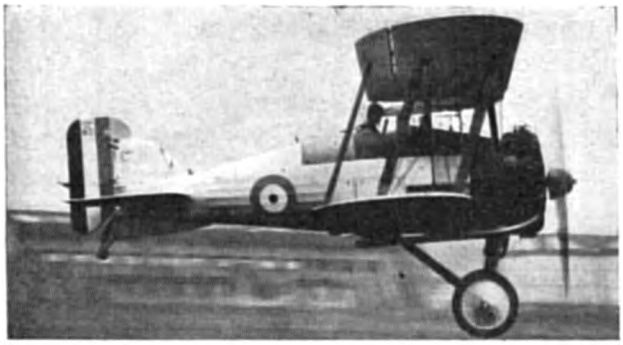
3. Precision control of flight.

4. The encouragement of variety in design of the aircraft.

5. To hold the competition yearly in the London area in order to encourage foreign entries to visit this country, London being an easy centre.

In conclusion, I would say that I consider there are still a number of modellers who like realistic flying models and the spice of experimental variety, and it is these people I wish to encourage, for I consider they are somewhat neglected by clubs in favour of the more easily run duration competitions. It is therefore up to those who support this outlook in the "Bowden" to let us have their views on the best rules to comply with the above mentioned aims.

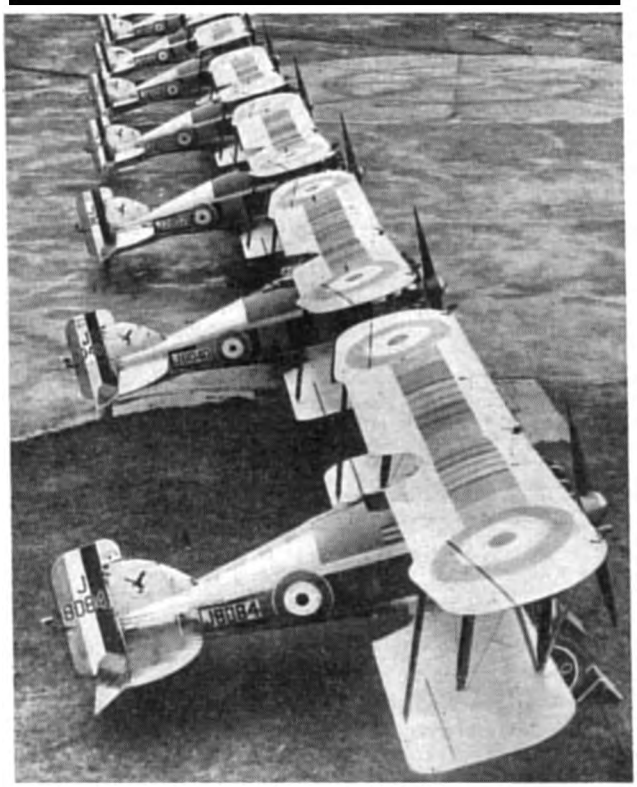
Sandbanks, Bournemouth. COL. C. E. BOWDEN.

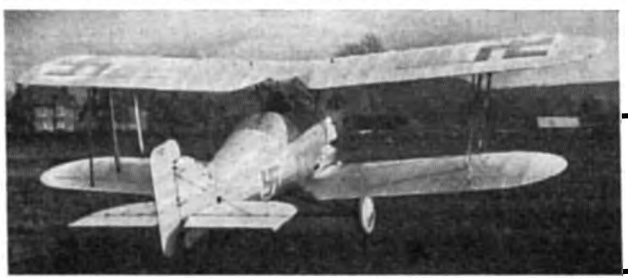


AIRCRAFT DESCRIBED No. 42

The GLOSTER GAMECOCK

BY G. A. CULL





IN the summer of 1924 H. P. Folland, famous as the designer of the S.E.5, started design work on a fighter to replace the Gloster Grebe, which was the R.A.F.'s. standard fighter at the time. The resulting machine was the Gamecock and, like the Grebe, it employed the special combination of the Gloster H.L.B. wing sections, which accounted in no small measure for its lively performance. In this arrangement a thick section was used for the top wing and a thin profile for the lower wing, which was rigged so that in level flight it gave practically no lift and very little drag because of its low camber. For take-off the area of both wings was effective, and this layout also gave an exceptionally small centre-of-pressure travel; this made possible the short fuselage, and so endowed the same quick response to manœuvre fore and aft that the short-span wings and four powerful ailerons gave in the rolling plane. With the 450 h.p. Bristol Jupiter VI engine close to the centre of gravity, this clever design was a most compact little fighter whose manœuvrability was to be marvelled at for years to follow.

Two ·303 guns were mounted in troughs in the fuselage sides, and numerous sliding panels set a new standard of accessibility. Fuel was carried in two 56-gallon tanks in the upper wings, and the undercarriage had oleo legs.

After appearing in the New Types Park at the 1925 R.A.F. Display, the Gamecock I first went into service with No. 23 Squadron in 1926, and eventually equipped Nos. 3, 19, 32 and 43 Squadrons also. At the R.A.F. Displays up to 1931 these nimble little biplanes repeatedly stole the limelight with their perfect aerobatics and made an equally perfect picture at all times in their silver dope, big roundels, vivid squadron markings and streamers. Further glory was gained by Gamecocks in the yearly inter-squadron Sassoon Cup Race, when they won the 1927, 8 and 9 events, beating Grebes, Siskins and Woodcocks. In different uniform to these machines was Gloster's demonstration Mk. I machine, registered G–EBNT, which had no guns nor the exhaust-collector ring of the service machines.

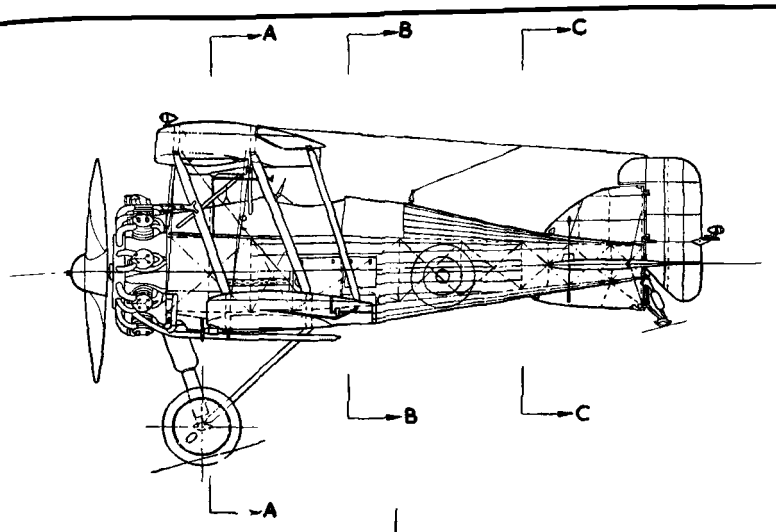
The Mark II was produced for Finland, who often used it on skis, and this Mark was also built at Helsinki with a French Gnome et Rhone Jupiter IV. This Mark was slightly improved all-round, and featured a centre section and increased span wings with rounded tips and stiffer narrow-chord ailerons. Each cylinder had separate exhaust stubs.

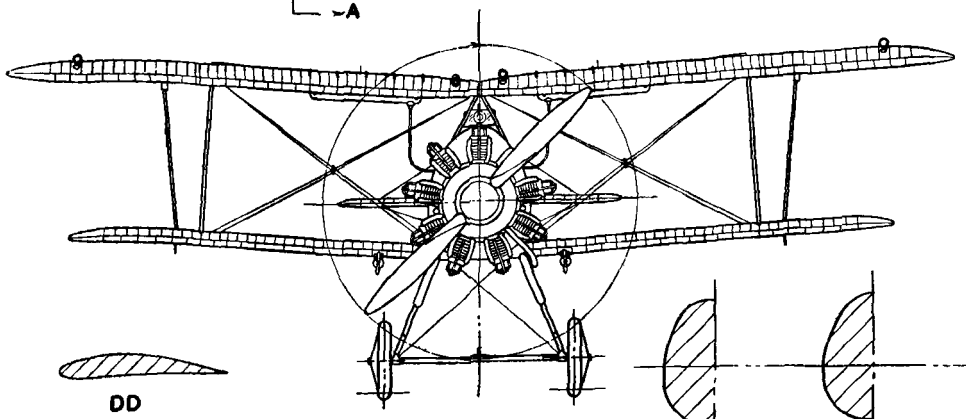
One Gamecock was experimentally fitted with the turbo-supercharged Bristol "Orion" which was not a success, and another recorded speeds up to 275 m.p.h. at Martlesham, where it was used for flutter investigation, and made twenty-two consecutive turns in spins.

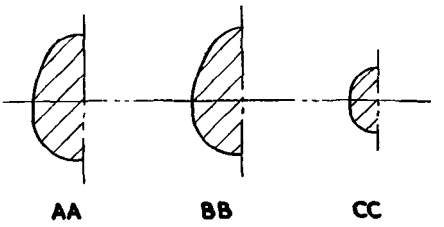
From 1928 to 1931 the Gamecock was gradually replaced in the squadrons by the all-metal Siskins and Bulldogs, and so had the distinction of being the last of the R.A.F.'s "wooden-walled" fighters of the old school. One, however, was stripped of military equipment and lived a little longer in the hands of an East Anglian farmer.

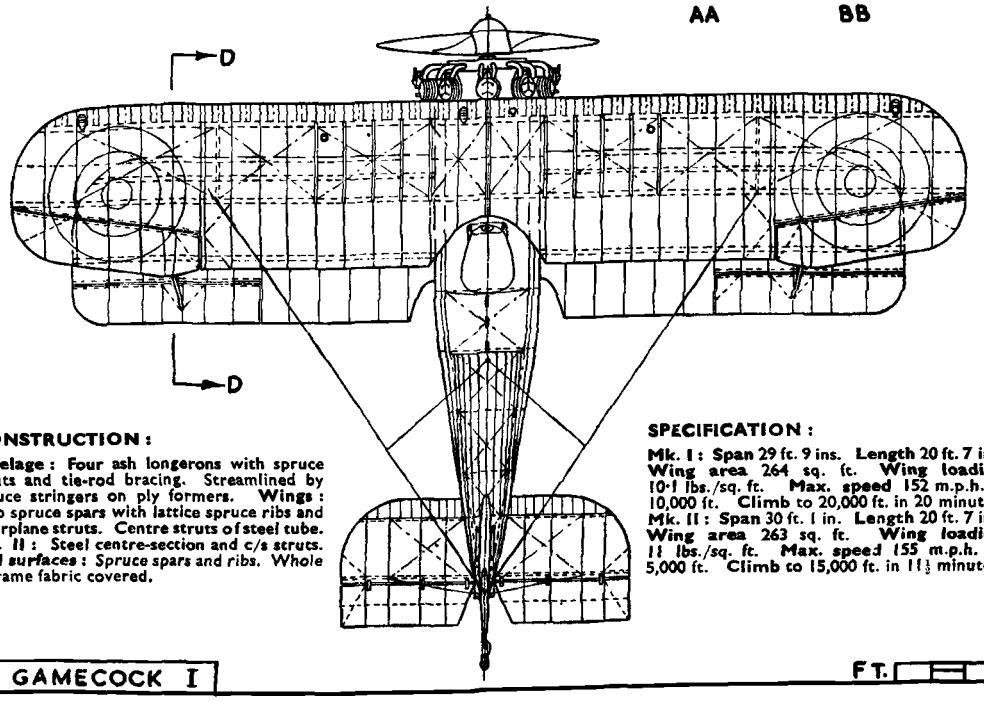
Top, a Gamecock II, and middle, a line up of 23 Squadron, Mk. I machines. In the foreground is the Sqdn. leader's machine, with red tailplane and elevators, and the red and blue squares on fuselage decking as well as sides and wings. Below, is a Gloster built Gamecock II in Finnish markings.

Top two photographs by courtesy of "FLIGHT" *Lower picture: Gloster.*









CONSTRUCTION :

Fuselage : Four ash longerons with spruce struts and tie-rod bracing. Streamlined by spruce stringers on ply formers. **Wings :** Two spruce spars with lattice spruce ribs and interplane struts. Centre struts of steel tube. **Mk. II :** Steel centre-section and c/s struts. **Tail surfaces :** Spruce spars and ribs. Whole airframe fabric covered.

SPECIFICATION :

Mk. I : Span 29 ft. 9 ins. **Length** 20 ft. 7 ins. **Wing area** 264 sq. ft. **Wing loading** 10·1 lbs./sq. ft. **Max. speed** 152 m.p.h. at 10,000 ft. **Climb** to 20,000 ft. in 20 minutes. **Mk. II : Span** 30 ft. 1 in. **Length** 20 ft. 7 ins. **Wing area** 263 sq. ft. **Wing loading** 11 lbs./sq. ft. **Max. speed** 155 m.p.h. at 5,000 ft. **Climb** to 15,000 ft. in 11½ minutes.

GLOSTER GAMECOCK I

FT.

CLUB NEWS

Prize winners at the York M.A.S. dinner. From left to right, R. Hodgson, R. Hope, M. Steel, R. Firth, E. Sykes, F. Miskin. Note the Midget Mustang.

WELL, it seems that 1951 is not to show much improvement on its predecessor, if present indications are anything to go on. The "Gamage" and "Pilcher" Cup events started the new season, and in most places it was a complete "blow-out", with models swept away from sight well under the 5 minute maximum, and it is to be hoped that the weather will soon relent and allow a reasonable attack on the 1951 contests.

Conditions were utterly impossible for flights in the "Ripmax" event for radio-controlled models, on April 15th, though one or two hardy souls did make stout efforts to beat the high winds. Added to which, conditions were slightly different throughout the country and it seems that R/C contests are best run as centralised meetings.

In order to obtain sufficient experience of the current programme of National Contests, it is proposed to maintain a similar schedule for 1952, the opinions and findings of the two seasons being collated and used as a basis for the 1953 programme. This seems to me to be a most logical system, for we have been prone in the past to chop and change far too rapidly, often on the experience gained in one contest, invariably where changeable conditions have produced an entirely distorted result from that anticipated when the event(s) were planned. It remains to be seen just what advantage the "double season" programme will have, but it is worth trying.

Gamage day saw the **NORTH EASTERN AREA** under snow, with models disappearing o.o.s. in 20 seconds or so, flight times being consequently rather poor! However, the conditions had improved for April 1st, when the "K. J. Warriner Memorial Trophy" was flown off for the first time, venue being Birchester. K. Murray (North Shields) scored one maximum flight when scoring 8 : 30·5 to win, followed by T. Oliver (Seaham) 6 : 42·8 and A. J. Nunn (Durham City) 6 : 38. Stockton and Darlington clubs are holding a slope-soaring

CONTEST CALENDAR

May	20th.	Bushy Park M.F.C. Gala.
	27th.	GUTTERIDGE TROPHY & K.M.A.A. CUP. (Area.)
June	3rd.	South Wilts Rally. R.A.F. Old Sarum Salisbury.
	10th.	WAKEFIELD & A/2 TRIALS. Cranwell Aerodrome, Lincs.
	13–17th.	Power Championships & Radio Control. Paris.
	17th.	West Essex Gala. Fairlop; Walsall Festival of Britain Rally. Walsall Airport; South-Western Area Rally. Chudleigh Knighton Heath; Scottish National C/L Rally. Montrose Cricket Park.
	23rd.	La Coupe du Salon & Challenge Plymouth, control-line, speed and stunt international. Le Bourget, Paris.
	24th.	Merseyside 9th Annual Clwyd Slope Soaring Meeting. Clwyd Hills, N. Wales; Northern Heights Gala. Langley.
July	1st.	MODEL ENGINEER CUP; WOMEN'S CHALLENGE TROPHY; POWER 1·5 c.c. (Area). South Midland Area Rally.
	7–8th.	Wakefield Finals. Finland.
	14th.	FESTIVAL OF BRITAIN CONTROL-LINE CHAMPIONSHIPS. Wembley Stadium.
	15th.	KEIL TROPHY & LADY SHELLEY CUP (Decentralised.)
	22nd.	Wakefield (Yorks) M.F.C. Open Day. Heath Common, Wakefield.
	29th.	Control-line Championships. Belgium.
August	5–6th.	BRITISH NATIONALS. Fairwood Common, Swansea.
	6th.	Control-line Rodeo. Chester.
	12th.	South Coast Gala. Brighton; Bolton M.A.S. Annual Rally. Affetside, Bolton.
	15–20th.	A/2 Glider Finals. Yugo-Slavia.
	18th.	INDOOR NATIONALS. Manchester; Daily Dispatch Rally. Woodford Aerodrome.
	19th.	All Herts Rally. Radlett.
	26th.	4th Huddersfield Rally. London Area F/F Championships. Fairlop.
August to September	21st to 1st. 2nd.	Model Engineer Exhibition. Royal Horticultural Hall.
		F.N.A. Cup. Holland; FARROW SHIELD; JETEX CONTEST; FLYING SCALE (Power) (Area.)
	9th.	Northern Area Rally.
	16th.	BRITISH CHAMPIONSHIPS & TAPLIN TROPHY.
	30th.	DAVIS CUP FINALS. Fairlop.
October	7th.	UNITED KINGDOM CHALLENGE MATCH. Heathfield, Scotland.
	14th.	FLIGHT CUP & FROG JUNIOR CUP. (Decentralised.)
	28th.	HAMLEY TROPHY. (Decentralised.)
November	17th.	S.M.A.E. Annual Dinner & Prizegiving.
	18th.	S.M.A.E. Annual General Meeting.

contest on the 13th May at Sheepwash, Osmotherley, Northallerton. Pre-entry is required, and should be made not later than 6th May to Mr. A. M. Robson, 24, Coniston Road, Stockton on Tees.

The first of the season's meeting staged by the **EAST ANGLIAN AREA** was held at R.A.F. Martlesham Heath, when A. Longstaffe of Belfairs totalled 8 : 14 in the A/2 event, and J. Chinn of Norwich 6 : 57 in the Astral (Power) contest. This Area reports a fine calm day to start with, but this deteriorated into the standard high wind before the comps. got under way. Although seven R/C jobs arrived for the contest, owners considered the conditions unsuitable for flying in the " Ripmax ". Wise bods !

Flying at R.A.F. Pershore near Evesham, the **MIDLAND AREA** seems to have got off a bit better than most Areas, though the wind was well in evidence throughout the day. However, the Malvern Hills may have tempered it a bit, and the configuration of the airfield, with the ground gradually sloping away to the downwind side of the field gave timekeepers a fine view for miles. W. Trow of Dudley made best time in the power event, his times of 3 : 16, 3 : 26 and 3 : 31 being commendably consistent, his engine times being 19, 18 and 20 seconds. C. Aitkenhead of Loughborough College was also consistent in the A/2 class, his times being 3 : 16, 3 : 27 and 4 : 49. Two maximums were scored during the day, but many fine models were taken out of sight and lost, and many more finished up ingloriously in a heap of scraps. However, in spite of the conditions, flying was of a generally high standard, particularly in the power event.

Enquiries among the local clubs having proved fruitless, Mr. D. White of 20, Kings Road, Dereham, Norfolk, asks our assistance in finding the owner of a 20-inch span Kalper powered model, featuring a clear doped fuselage and tail, with red tissue covered wing. The job is a pylon type, parallel chord wing with tip dihedral, and he would appreciate word from the rightful owner, though as Mr. White says—" the clot who made it deserves to lose it for not sticking his name and address on it".

Members of the **HALIFAX M.A.C.**, anxious to regain some of their pre-war prestige, flew with the Burnley club on Gamage Day. Their ground is a vast stretch of moorland, very boggy on this occasion, but in dry weather it should be perfect. E. North proved best man in both the rubber and glider classes, scoring 3 : 12 with a modified " Bazooka " in the rubber event, and 11 : 03 in the glider class, his machine travelling 2¼, 1¼ and 1 miles on the three trips. Tiring, what !

The first club meeting of the **EXETER M.A.C.** this year took the form of a free-for-all on Easter Sunday, when some 40 members turned up. Jack Hecker's " Rudder-bug " put up the most impressive flight of the day, making a majestic 5 mile tour of the countryside, ending with a perfect three-point landing in a field about a mile away. The latest recruits acquitted themselves well, and the club is looking forward to the best season in its history, with membership now past the half century.

The " K.L.M. Trophy " (for Scottish power modellers) will be held on Abbotsinch Aerodrome on Sunday, 17th June at 12 noon. First prize is a silver trophy, and a free trip to Holland with the opportunity of meeting Dutch aeromodellers. Trophy and trip are provided by Royal Dutch Airlines, and the contest will be conducted by the **GLASGOW M.A.C.** Entry forms should be obtained from the secretary, Mr. R. Todd, 273, New Edinburgh Road, Fallside, Uddingston, Glasgow.

YORK M.A.S. Pilcher results were quite good considering the usual " damage " weather. H. Johnson was the only entry for the rubber event, scoring 4 : 40, but the Pilcher drew the gliders out, scores being K. A. Buckham 6 : 18, K. Brown 6 : 11, and R. Hodgson 5 : 00. York beat Cresswell in an Area knock-out event, their hosts at Sheffield proving most admirable.

WINCHESTER M.A.S. proved the winners in a bout with the Odiham club, flying from that fine field at R.A.F. Odiham. R. H. Lewis was the top individual with 4 : 49, next in line being L. Brambley of Odiham who scored 4 : 29. Final points were 19 to 17 in Winchester's favour. Lewis also placed top in the aggregated results of the club Construction and Finish contest.

Although bad weather has been almost ceaseless, the **CHINGFORD M.F.C.** C/L boys are pressing on regardless, especially the Class A T/R lads. A great absence of junior members is causing concern, some of the " hot " seniors now having to wind their own lines in and wipe their models down !

G. H. Wariner of 27, Fanhams Road, Ware, Herts., is anxious to get a club going in that district, and asks any like-minded bods to contact him without delay.

The newly formed **HOGSTHORPE (SKEGNESS) & D.M.A.C.** started their activities with a successful exhibition at which the standard of construction was very high. Flying capabilities were amply tested during a recent club rally in competition for the " Griffith Cup ", run over a series of meetings to find the best all-rounder. A fleet of A/2's showed great promise, and K. Horry put in top score with 3 : 22 in spite of consistent rain.

Looks like the infamous " Fairlop Spivs " have moved up into the Midlands, for the **BIRMINGHAM M.A.C.** report two machines returned after o.o.s. flights with the engines wrenched off the machines ! The second job to suffer this fate belonged to Len Harding, the machine having gone right o.o.s. overhead after a time of 15 minutes, this during an eliminating club comp. to pick a team for a " bash " at the Solihull club. Johnny Hudman's glider disappeared on the same day, and was found three weeks later inside a Dutch barn on top of a load of hay that had not been disturbed for some time ! Mugs for luck ! ! In the Gamage event, flown off in very rough conditions, Wal Dallaway was the best of the Birmingham entry with a total of 5 : 21, his best time being 3 : 00 with his own design shoulder wing Wakefield. Unattached modellers are welcome to any club meeting, held each Friday evening at Birchfield Road Schools, Perry Barr at 8 p.m.

PHAROS M.F.C. hope to wrest the club championship from Croydon this year, and new models are regularly flown on the local flying ground. One of the most promising is a 200 sq. inch machine powered by a 1·8 c.c. Elfin dreamed up by Keith (Madman) Baker. This model features a razor blade wing section, has a fierce climb, and clocks a steady 20–1 ratio. High aspect/ratios of 13 and 19–1 plus D.T.'s that really work are features of new A/2's by Pete Gilbert and Laurie Barr, in addition to weird wing sections. The club's annual dinner was a great success, the evening being rounded off with a quizz. (Can anybody tell them how many spots there are on a Lesser Crested Bush Whacker ?)

Mr. P. Mack of the **ROCHDALE & D.M.F.C.** has

built his own R/C unit mainly adapted from an American bomb sight. The set has been tested and works perfectly and will shortly be installed in a modified " Queen Bee ".

After struggling along for some time the **DEREHAM M.A.C.** is on its feet, and anticipates a more active season this year. Team racing is the main interest, inter-club events with the Fakenham club being a regular feature.

The " junior encouragement " scheme of the **WEST HANTS A.M.C.** bore fruit with the first contest of the glider project. The youngsters were given a spot of trimming assistance and towline gen, and then set out to see what they could do with three flights and about 50 feet of line. Brian Gover, who had also built very well, quickly caught on to the line technique, and totalled 77 seconds to win, collecting a Hobbies tool outfit for his prize. (No entry fees are charged for these junior contests, and prizes are provided by senior members interested in the junior side of the association.)

The annual glider gala of the **SURBITON D.M.F.C.** was cursed with about the worst weather possible, a sharp thunderstorm with a downpour of hailstones delaying the start and making the launching area extremely muddy. Things eventually got under way about 11.15 a.m., D. Butler being first man away. The strong wind and slippery conditions underfoot made towing very difficult, with the result that few contestants got their models to the top of the line, one exception being Ron Yeabsley, whose model disappeared on a 4-minute flight quite early on. The first maximum was recorded by F. H. Boxall of Brighton, but his model travelled some 5 miles and he did not get it back. A further downpour of rain delayed the afternoon proceedings, but this seemed to clear the weather a bit, and the remaining competitors went at it to improve their earlier times. The Croydon and St. Albans boys were at it hammer and tongs trying to snaffle the team event, the decision finally going to Croydon when (three minutes before closing time) Geesing of Croydon managed a flight of 3 : 35 which gave him third place, and Croydon the Team event. Results were :—

Roy Yeabsley	**Croydon**	**8 : 50·6**
G. Fuller	**St. Albans**	**8 : 17·4**
T. Geesing	**Croydon**	**6 : 08·5**

First round of the Inter-club affair between the **LEEDS M.F.C.** and Pontefract was held in poor weather, but in spite of this some good times were recorded. Alan Archer set a new open club glider record with a time of 7 : 55 o.o.s., the final scores showing a win for Leeds with 1,471 points, with Pontefract 813·5. A high number of entries were received for the Gamage/Pilcher, when in spite again of bad weather, good durations were scored, notable being a time of 5 : 36 o.o.s. by G. Joyce on his second Gamage flight. The model was later retrieved and put up for a further 3 : 40 on its last flight.

The **OLDHAM & D.M.A.C.** comp. sec. gives details of their indoor " team-racing " scheme. Any type of rubber driven model can compete, and a " team " consists of the entrant and one helper, the latter bod. being well instructed in picking up the model quickly without poking his fingers through the tissue or snapping the line. I'm told that anyone who finishes the comp. with both model and nerves intact deserves all he gets!

Three prizes were gained by members of the **WHITEFIELD M.A.C.** in the recent Northern Models Exhibition. Gamage day started better than was expected in this part of the country, but conditions deteriorated rapidly. In spite of this J. O'Donnell aggregated 9 : 18 in the Gamage, his last years' Wakefield being lost on its third flight of over 3 minutes in pouring rain. On March 30th, some amazing durations were witnessed, mainly due to D/T failures! E. Stafford managed 8 : 26 with a " Norseman ", while A. Cropper and H. O'Donnell lost their Nordics with times of 11 : 30 and 21 : 10. Late in the afternoon J. O'Donnell lost his Wakefield with a time of 11 : 15 on its third flight ever, the job being returned in a very battered state after hitting a factory when going downwind.

Indoor r.t.p. models are gaining in popularity with the **BROMLEY M.A.C.**, Jetex speed being the best supported class. Models start off at 3 ft. span, and the wings are trimmed gradually till every ounce of speed is attained, or the model drops through sheer lack of supporting surface. However, a very nice scale M.I.G.15 has been flown by R. (Piggy) Hawkins, though the tail end does catch fire occasionally!

BLACKHEATH M.F.C. have changed their meeting places, their pow-wows now taking place in a tea room annexed to the Downham Tavern, Downham Way, Bromley, where the amenities are first class. Plenty of scope for r.t.p. next winter. An exhibition just completed saw a fine model of the " Sea Bee " entered by Mr. Baines, the cabin being complete even down to miniature newspapers and maps. The fully retracting undercarriage is another feature, and the excellent finish which has always been the hallmark of Baines' work produced many admiring remarks from spectators.

Gamage day dawned bright with the **SUNDERLAND & D.M.A.C.**, raising hopes of members who had arranged to fly with the Seaham M.F.C. However, as the first flights were commencing snow began to fall until at last snowed-up models were floundering around in 30 second hops. A few hardy spirits put up gliders in the Pilcher, but with visibility dropping to 20 yards they would have been better off with St. Bernards than " retrievers ". Well, there's a coincidence! We reported last year the loss of Ken Chapman's Kalper powered " Dwarf " in fog and dusk. The club treasurer, earning his daily bread in the radio trade, called on a farm outside Sunderland to examine a set, and there—perched upon the set in question—was the " Dwarf ", a much prized exhibit. When the story was told, the finder promptly returned it, but Chapman didn't really deserve his luck—no name or address on the model!

Grahame Gates, winner of the Pilcher Cup this year, and a member of the **SOUTHERN CROSS M.A.C.** started off by making a flight of over 12 minutes, the model finishing up in the grounds of Brighton Grammar School playing fields, the only open space in that part of the town, and surrounded entirely by houses, school buildings, glasshouses and a convent! His model was undamaged, but the second flip ended abruptly when the job hit an electric pylon. Extensive repairs were carried out, and he proceeded to clock another maximum.

FORRESTERS (NOTTINGHAM) M.F.C took part in the local Hobbies Exhibition, erecting an aquarium-like structure (slabsider of course) which contained several models—and a " stillograph ", whatever that is! A Mills ·75 was demonstrated to the crowd

Continued on page 384

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424	*Snorky* by G. J. Rae. 36″ span. 1·5 c.c. motors.	3/6
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CLUB NEWS *(continued from page 376)*

whenever they had sufficient bods to hold the stand down. A recent purge of non-paying members has reduced the numbers from 53 to 27, but this will halve expenditure on postages, and the remainder are all keen.

The **RUGBY M.E.S.** held their club rubber and glider comps. on the same day as the national affairs, when R. Dowdeswell scored flights of 2 : 45, 2 : 21 and 3 : 30 with his new Wakefield to place top in the rubber class. W. Eales was second with a best time of 1 : 40, while K. Sansom made best glider time with a modified "Nord" model, best time being 2 : 48. Members of neighbouring clubs are invited to fly with the Rugby boys, but as they fly on a service 'drome, please first contact the secretary, F. Powell, 63, York Street, Rugby, in order to ensure admittance.

The **SHEFFIELD S.A.M.** season is always wound up with an indoor flying scale contest, and the last resulted in some really good times. D. Canny scored 2 : 00, A. Burkinshaw 1 : 48 and J. Walton 1 : 28. The first outdoor events of the season have found some promising juniors, K. Emmett breaking the rubber record with a flight of 21 : 08, this being all the more surprising as the job landed no more than 300 yards from take-off point.

Through the kind offices of F/Lt. Verney, the **CARDIFF M.A.C.** are able to fly at Llandow Airport, and an inter-club match with the Penarth and Bargoed Eagles resulted in a triumph for Cardiff, taking first three places in the glider event, and first two in the power. After this auspicious beginning to the contest season, the club attended Swansea on the 15th April, where their successes were repeated, Phillips, Bennet and Cherrett taking first three places in the A/2 event, and Cherrett and North first and second in the Astral. Owing to the high wind that prevailed, Phillips lost two gliders, and Cherrett lost his power job on its one and only contest flight. However, the result seemed to justify the risk!

Forthcoming meetings of the **RADIO CONTROLLED MODELS SOCIETY** are as follows:—

May 20th.—Wellington Chambers, 2, Victoria Street, Manchester at 2.30 p.m.

May 25th.—176, Westgate Road, Newcastle-on-Tyne at 7.30 p.m.

June 2nd.—University of Birmingham, Edmund Street, Birmingham at 2.30 p.m.

June 10th.—Horseshoe Hotel, Tottenham Court Road, London at 2.00 p.m.

John Shepperd of Tairua, via Waihi, North Island, New Zealand, asks for a pen friend. He is 16 years of age, interested in rubber jobs, sailplanes and small F/F power models.

Which brings us to the end of this month's chatter, and we still pray for better model flying weather. Wonder when we shall see another season like 1949—there was a year of fine Sundays.

THE CLUBMAN.

NEW CLUBS

SOCIETY OF BEDFORD AEROMODELLERS.
A. J. Pritchard, 56, Chandos Street, Bedford.

EDMONTON M.A.C.
H. C. Medhurst, 346, Hertford Road, Edmonton, N.9.

SECRETARIAL CHANGES, ETC.

PHAROS M.F.C.
L. Barr, 32, Sunley Gardens, Perivale, Middlesex.

STRABANE M.A.C.
J. J. Quinn, 9, Townsend Street, Strabane, Co. Tyrone, N. Ireland.

BURNLEY & NELSON M.A.C.
E. St. John, 72, Belvedere Road, Burnley, Lancs.

CLASSIFIED ADVERTISEMENTS

PRESS DATE for July issue May 25th, 1951.
ADVERTISEMENT RATES:
Private — **Minimum 18 words 6s., and 4d. per word for each subsequent word.**
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COPY and Box No. replies should be sent to the Classified Advertisement Department, The "Aeromodeller," The Aerodrome, Billington Road, Stanbridge, Beds.

FOR SALE.

Allbon 2·8, good condition 50/-; E.D Bee 30/-; Nife 1·4 V Accumulator 10/-. Broome, 68, Galley Lane, Barnet, Herts.

Complete set AEROMODELLERS to February '50, except January, 1942, 8 volumes bound. Offers. F/Lt. Chambers, Officers' Mess, R.A.F., Oakington, Cambridge.

R/C equipment for sale. E.D. lightweight and Cossor receivers, E.D. rubber and clockwork servos. 5 watt long range transmitter, lot £9, or offers. Will sell separate. Details from 22, Sandford Road, Bromley, Kent.

E.D. 3·46; Wildcat 5; E.D. ·2 c.c.; Frog 160; 2 pair airwheels. £10 or nearest offer. Ball, 127, Doncaster Road, Woodlands, Doncaster, Yorks.

"Kandoo" stunt model with new E.D. Comp. Special, £4 or offers. Ohlsson "23" glowplug £3. 10s. "Hotted" Majesco "22", £3. New Allbon Javelin £3. Wilson, 30, Clouston Street, Glasgow.

100 AEROMODELLERS between June, 1938 and November, 1948. Offers. K. Surridge, 7, Longwick Road, Princes Risborough, Aylesbury, Bucks.

E.C.C. "Standard" R/C unit, unused, as new, £7 or nearest offer. Fox, Oakhouse, Upland Drive, Brookmans Park, Herts.

Vols. 1–3, 4, 5, 6, 7, "Aircraft of Fighting Powers", £5. AEROMODELLERS, January, 1944 to March, 1951, £2. Samson, 34, Savile Road, Leeds, 7.

Reducing stocks. Power models, Wakefields, drawings, accessories, literature. Evenings, weekends, or S.A.E. Wilmot, 11, Bridge Walk, Horfield, Bristol 7.

56 AEROMODELLERS 25/-. "Aircraft of the Fighting Powers", Vol. IV, 18/-. Lot £2. Setchell, 27, Ludlow Avenue, Luton.

Selling up—Eta "29", Yulon "30", E.D. III, Allbon Arrow, all in first-class condition, also books, kits and sundries. Write for lists. Box No. 328.

AEROMODELLERS—January, 1943 to March, 1950. Excellent from January, 1945, 30/- the lot. Jackson, 107, Heywood Road, Bowles, Middleton, Lancs.

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America's Model Airplane News—instructions, plans, for building genuine models various types aeroplanes. Monthly from America, 27/6 one year. Bibliotheque Ltd., D24, 15, Sussex Chambers, Hastings.

Government Surplus—Jane's "All the World's Aircraft," 1943/44, and Jane's "Fighting Ships," 1943/44. Published at £3. 3s. each. our price, 16/- each. Post free. The Modern Book Company, 19–23, Praed Street, London, W.2.

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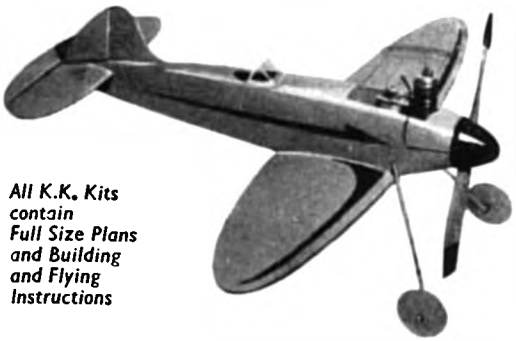

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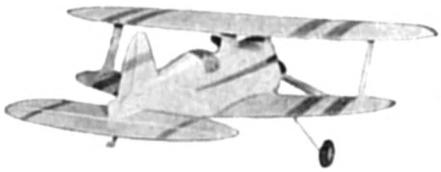

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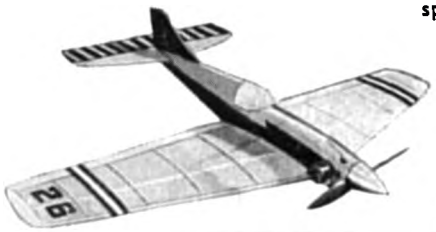

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