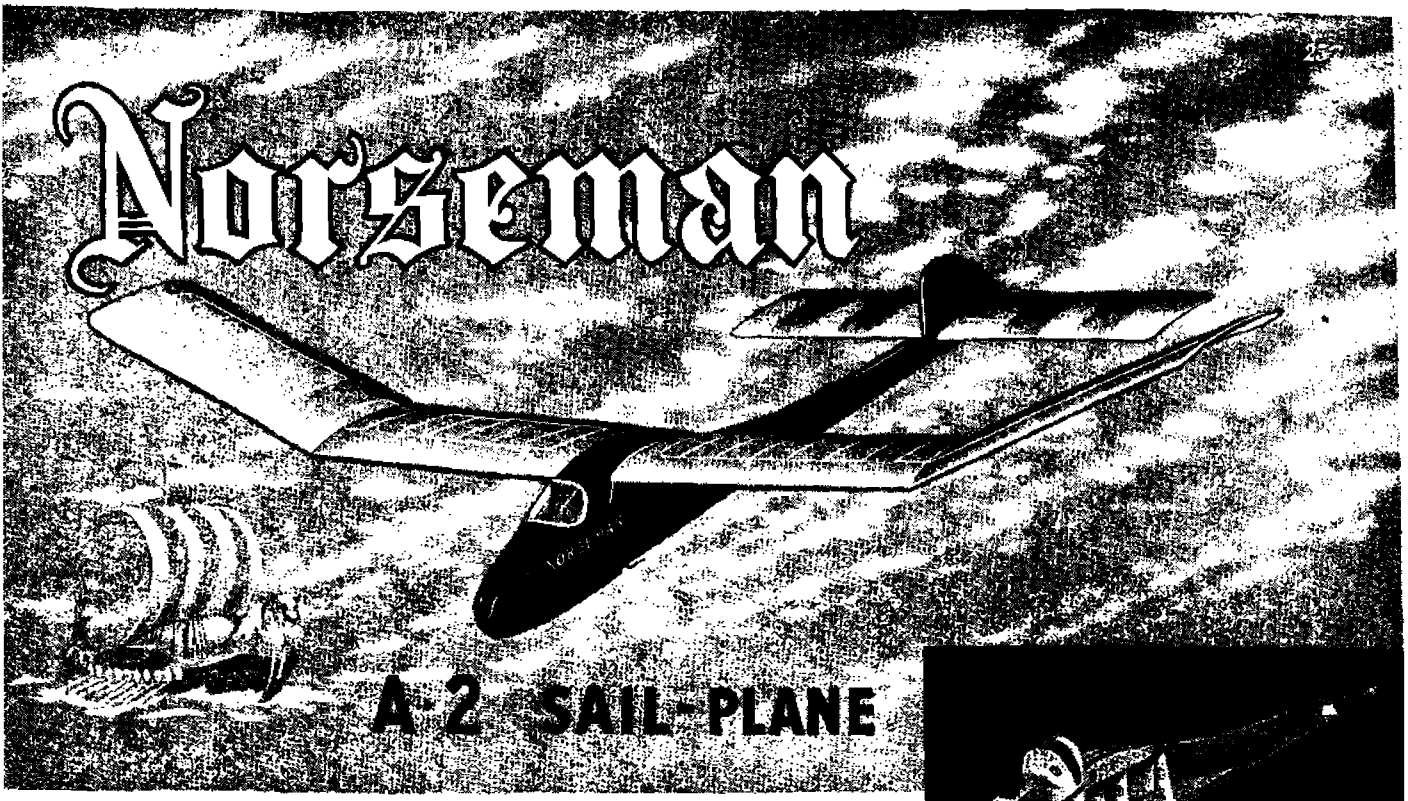
AEROMODELLER

MAY
1950

1/6



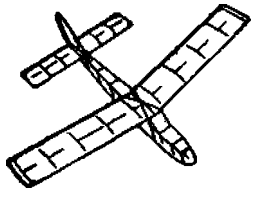
A NORDIC CONTEST MODEL BY MERCURY

THE recent announcement of the new International Contest for Nordic A2 class sail-planes will soon see thousands of modellers enthusiastically building for this season's contest and those who choose the Mercury Norseman will be assured of building a machine with the finest possible performance and with structural design to stand up to the heaviest going.

The Norseman which correctly complies with Nordic A2 contest specifications, is from Phil Guilmant in co-operation with the technical staff of Mercury Models. As a sail-plane designed for the highest standards of competition flying, it will please the most critical, and the kit being complete in detail assures the builder of the Norseman that his model is strictly to Nordic A2 standards when built to plan.

Ask your Mercury dealer to let you see the full size plan included in the kit with its real photo views of the fuselage construction. They instantly reveal the Norseman to be a model of outstanding merit from every point of view. ***The complete kit with pre-cut and pre-printed balsa costs 17/6, from all Mercury dealers.***

AND THE PERFECT GLIDER FOR BEGINNERS



Go to your Dealer and examine Magpie Kit. You will see at once that this 24" glider needs absolutely no previous experience, and that anyone can build this first-class flying model. The kit is complete and includes pre-printed balsa, ample strip, cement, tissue, etc., as well as A-B-C-simple plan and building instructions. Simplest to build — most satisfactory to fly.

MERCURY MAGPIE 3/9

This is the model chosen by Rev. F. Callon as suitable for beginners in his articles in this journal.

TRADE ANNOUNCEMENTS

The following items have been added to the Mercury Range since publication of the 1950 Mercury Catalogue. A leaflet will shortly be available through Mercury Dealers.

ELFIN 1·49
A new Class 1 Diesel by a famous maker. 59/6

YULON "29"
A really 'hot' Glow-Motor for all kits taking 5 c.c. engines. Hand finished to highest standards. 79/6

YULON "49"
A super 8·2 c.c. Glow-Plug Engine with terrific output. 99/6

MUSKETEER 19/6

TEAM RACING TANK
Exact to S.M.A.E. specification. Every one guaranteed correct capacity. 4/6

FUEL TANK
This new Mercury Pressure Feed Stunt Tank maintains supply to the last drop. No leaning - out. No four - stroking. A 'must' for G.P. motors. 4/6

TRIMSTRIP
In 3-colour bands, 12" × 1¼" long (¼" bands). Choice of 6 combinations. Per strip 6d. ¼" chequer patterns to match. 8" × 4" 6d.

No. 8 FUEL — BROWN LABEL
Castor Base Diesel Fuel meticulously blended and ready mixed for use. 8 oz. bottle 3/-

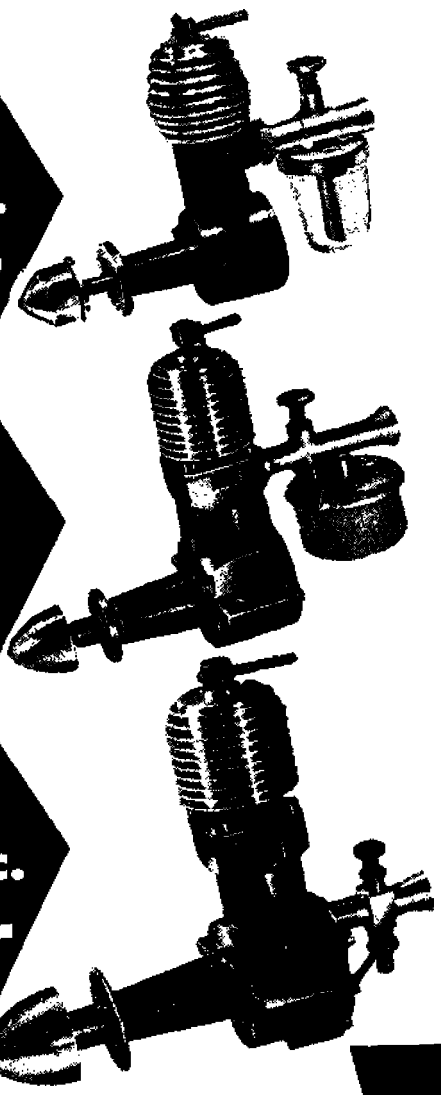
HIVAC
Grid - controlled gas - filled sub - miniature valve — the heart of radio-control 17/6

MERCURY MODEL AIRCRAFT SUPPLIES LTD., LONDON, N.7

Telephone — North 4272 and 3.

Enquiries invited from home and overseas buyers. Catalogue and lists on request.

Here's value!



·75 c.c. 50/-

1·3 c.c. 75/-

2·4 c.c. 84/-

The initial cost of a Mills Diesel is reasonable enough. But your real saving begins after the purchase, for the Mills is built to outlast an ordinary engine.
Unsolicited letters tell of many Mills Diesels still going strong after 400 hours and more of actual running. (Of course, it is generally added that Mills Blue Fuel was used throughout. ★)
This long engine life is a real saving. There is no need to waste money on spares if you have invested wisely in a Mills.
Moreover long engine life means also longer service at peak performance. The most exacting testing ground is abroad where the Mills is in daily competition with the best engines from all parts of the world. And the verdict ?

NORTH AMERICA
"In my opinion the ·75 c.c. will rain havoc in the new AA class in U.S. It will outpull any glow plug AA engine, swing a far larger propeller and fly a much larger job."

SOUTH AMERICA
"Herewith photo of the Mills powered HALCON winner of the Nationals."

AUSTRALIA
"It is not only the performance, but also freedom from engine trouble which makes the Mills so valuable."

AFRICA
"As the owner of the first Mills Diesel in this Eastern province I now have five Mills motors . . . In fact so great has been their power reliability factor that, today, far from being the only Mills owner in our Club I think they outnumber all the other engine types put together. It takes a Mills to beat a Mills."

★ To achieve the best with your engine use Mills Blue Label Fuel. It gives contest performance, guards actively against excessive carbonizing and ensures that extra lubrication so essential for long engine life. Nevertheless it is the most economical of fuels. The large size bottle or tin (approx. 10 ozs.) costs 3/- and can be refilled by your Dealer at 2/6.

P·75	c.c.	(without cut-out)	50/-
S·75	c.c.	(with cut-out)	55/-
1·3	c.c.	.. ..	75/-
2·4	c.c.	.. ..	84/-

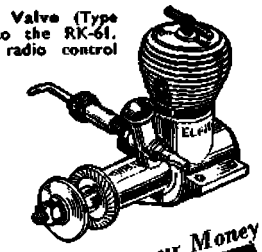
Mills DIESEL

SOLE DISTRIBUTORS (TRADE ONLY)

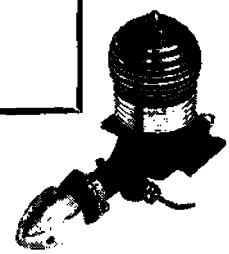
MILLS BROS (MODEL ENGINEERS) LTD.

143 GOLDSWORTH ROAD – WOKING – SURREY

Raylite geared-up for



The Hivac Thyratron Valve (Type XFG1) is the answer to the RK-61. Designed especially for radio control work. Packed in attractive carton. Price 17/6



More 'Engine' for your Money

ENGINES

Amco 3·5	£4	17 6
Frog " 180 "	£2	14 9
Frog " 500 "	£3	15 0
Mills S·75	£2	10 0
Mills P·75	£2	15 9
Elfin 1·8	£3	19 6
Elfin 2·4	£4	9 6
E.T.A. " 29 " G/P ...	£7	9 6
E.T.A. " 19 " G/P ...	£6	4 5
E.D. Bee	£2	5 0
E.D. 3·46	£4	12 6
Jetex " 50 "		9 6
Jetex " 100 "		19 6
Jetex " 200 "	£1	7 6
Elfin 1·49 c.c.	£2	19 6
Yulon " 29 "	£3	19 6
Yulon " 49 "	£4	19 6

CONTROL LINE

K.K. Phantom		18 6
K.K. Phantom Mite ...		11 6
K.K. Stuntmaster ...		19 6
K.K. Stunt King ...		18 6
Veron Sea Fury ...	£1	2 6
Veron Spitfire	£1	7 6
Veron Focke-Wulf "190"		19 6
Veron Bee-Bug ...		11 6
Frog Vandiver		12 6
Halfax Mills Bomb ...		18 6
Mercury Marlin ...		19 6
Mercury Monitor ...	£1	7 6
Shaw's Dervish ...		19 6
Bristol Bulldog ...	£1	2 6
Mercury Musketeer ...		19 6
Veron Mustang ...	£1	1 0
Keilkraft Skystreak "26"		9 6

Based on the " 30 " which won the 1949 C/L Nationals, the Yulon " 29 " Glow-Plug engine is a fine performer. Good value for money is offered to the modeller who flies stunt or speed, and it is the ideal engine for your Stunt King or Musketeer.

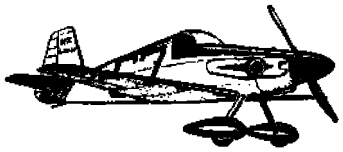
Capacity 4·89 c.c. ; Weight 5½ ozs. ; Bore 0·743 ins. : Stroke 0·687 ins.

Price £3 19 6

The model industry's latest engine is the neat little Elfin 1·49 diesel unit. For compactness and pleasing appearance this motor takes the biscuit and every class I power modeller will want to own one. Weighing 2½ ozs., it measures 2½ ins. high and 2½ ins. long. Pressure die-cast crankcase, nickel-chrome crankshaft and cylinder, cast-iron piston and main bearing ensure strength whilst still having a high power/weight ratio.

Price £2 19 6

Have you tried jet flying yet ? If not, you're not up-to-date and what's more you're missing a lot of thrills. Try the Jetex Flying Wing at 5/- for a start. It is designed for the Jetex " 50 " and is an excellent flyer. The Jetex " 50 " is the world's cheapest power unit and offers unrivalled free flight performance, combined with safe, trouble-free operation.



RUBBER

Halfax Flying Minutes 21/-, Halfax Jaguar 21/-, Keilkraft Competitor 7/-, Keilkraft Playboy 3/3, Keilkraft Eaglet 4/6, Keilkraft Achilles 4/-, Keilkraft Ajax 6/-, Keilkraft Gipsy 10/6, Frog Venus 15/-, Frog Stratosphere 17/6, Frog Stardust 10/6, Frog Goblin 4/9.

GLIDER

Halfax Tern 10/-, Halfax Albatross 25/-, Keilkraft Invader 6/6, Keilkraft Soarer Baby 5/-, Keilkraft Soarer Minor 8/6, Keilkraft Soarer Major 11/6, Frog Fairey 7/6, Sunnanvind 10/6. Keilkraft Cadet 4/-, Keilkraft Cub 2/6.

POWER

K.K. Slicker	£1	2 6
K.K. Slicker " 50 " ...	£1	12 6
K.K. Slicker Mite ...		10 6
K.K. Bandit	£1	1 0
K.K. Outlaw	£1	7 0
K.K. Southerner Mite...		11 6
K.K. Pirate		13 6
K.K. Skyjet " 50 " ...		3 9
K.K. Skyjet " 100 " ...		5 6
K.K. Skyjet " 200 " ...		7 6
K.K. Junior " 60 " ...	£1	19 6
Frog Janus		15 0
Frog Centurion ...	£2	19 6
Frog Vixen		12 6
Jetex Flying Wing ...		5 0
Jecex Vampire		5 0

—that the **Veron Midget Mustang** is a scale model designed for team racing. This way of *flying* is fast becoming popular amongst aero-modellers and the *Mustang* is the job to start with. Unlike its predecessors, it has no flap control but is fully stuntable when built round engines of the Elfin 1·49 class. Wingspan is 24 ins. and the kit itself is up to the usual high standard set by Veron. Containing all the standard accessories such as pre-cut cowl, routed engine fairing blocks, parc shaped spats, cockpit cover, metal spinner and tank parts, sorbo rubber wheels and the highest grade balsa.

Price £1 1 0

ENGINE KNOTS Some hundreds of modellers have made use of our engine servicing department. You can rest assured that if you send your engine to be repaired or overhauled, it will be as good as new when you get it back. This service is still run on the 48-hour basis and test certificate is supplied with each repair.

PLEASE NOTE Raylite Supplies Ltd. are not associated with any other model business whatever.

BASIC KITS. A new idea by Keilkraft is always good and their latest innovation is the **Skystreak Basic Kit.** You can buy the kit which contains all the main items like printed sheet, bellcrank assembly, etc., but things like strip wood and wire are omitted. Thus you are able to select your own wood and you probably have bags of wire knocking about anyway. Price of the K.K. Skystreak " 40 " Basic Kit is 10/6.

better modelling

You get more *modelling* or your money at Raylite because we are geared-up to meet the most exacting demands of those who buy the mail order way.

RAYLITE SUPPLIES LTD., 21, ARKWRIGHT STREET, NOTTINGHAM

NATIONAL GUILD OF MODELLERS

MEMBERSHIP APPLICATION FORM

I hereby make application for membership/renewal of membership to the Guild under the section/s noted below and agree to operate my model/s at all times with due care and regard to others.

REGISTERED No.

For office use only.

Surname..... *Christian Names*.....

Address .....

.....

Please use BLOCK Letters .....

		Premium
Section A. MEMBERSHIP (Third Party Liability)		
Category 1	Enrolment for Third Party Cover for Rubber-powered model aircraft ; Sail-planes and Gliders ; and Model Sailing Boats. *Premium: 9d. per annum*	: :
Category 2	Enrolment for Third Party Cover for Model Aircraft ; Model Cars ; Model Boats ; Model Locomotives ; and other models driven by mechanical motors, i.e., internal combustion engines of petrol or diesel types. Also "Jetex." *Premium: 2/6 per annum*	: :
Category 3	Enrolment for Third Part Cover for Model Aircraft ; Model Cars ; Model Boats ; Model Locomotives ; and other models driven by any form of rocket, jet, or steam propulsion. *Premium: 5/- per annum*	: :
Section B. TOTAL LOSS BY OUT-OF-SIGHT FLIGHT (Model Aircraft)		
Please insure the model/s listed for Total Loss by out-of-sight flight. The true value/s of the model/s based on materials cost, plus accessories and components is as follows:		
Model No. 1.....	Model No. 2.....	
Model No. 3.....	Model No. 4.....	
Model No. 5.....	Model No. 6.....	
Total annual premium/s at the rate of 2/6 per £2 value of model/s		: :
Section C. FIRE, THEFT, ACCIDENTAL DAMAGE and THIRD PARTY LIABILITY (Exhibitions and Models in Transit)		
Please insure the model/s listed during Exhibition, and during transit to and from the venue notified, for the period of one calendar month commencing.....19.....		
.....models up to £10 in value.	*Monthly premium: 4/- per model*	
.....models up to £20 in value.	*Monthly premium: 8/- per model*	: :
Section D. FIRE, THEFT, ACCIDENTAL DAMAGE, THIRD PARTY LIABILITY or LOSS (Exhibition, Demonstration, or Private Flying Abroad)		
Please insure the model/s listed for the purpose/s of Exhibition, demonstration, competition or private flying whilst in my possession in Europe and Eire (with the exception of the Russian controlled zones of Germany and Austria; Poland; Czechoslovakia; Jugoslavia; Albania; Roumania; Bulgaria; Greece; and Soviet Russia) for the period of one calendar month commencing.....19.....		
.....model aircraft.	*Monthly premium: 12/6 per model*	: :
.....model.....	*Monthly premium:* *4/- per model (up to £10 in value)* *8/- per model (up to £20 in value)*	: :
Section E. SUNDRIES	**Please supply.....small transfers at 1d. each**	: :
	Please supply.....large transfers at 1½d. each	: :
	Please supply.....lapel badges at 1/6 each	: :
	Please supply.....address labels at 1d. each	: :
I herewith enclose Cheque/Postal Order value.....		
to cover cost of Premiums, etc.	**Total**	£ : :

NOTE.—Details of the models to be insured under Sections B, C, & D must be attached. Membership is restricted to persons normally resident in Great Britain, Northern Ireland, Isle of Man, and the Channel Islands.

AEROMODELLER

Contents

VOL. XV. No. 172. MAY, 1950

Showing The Flag

IT is a very satisfactory thought on this year's Wakefield Contest to be held in Finland, that not only will teams have the opportunity of visiting a new and interesting country on the edge of the Arctic Circle but for the first time in aeromodelling history, the Blue Riband of the hobby will be contested within a mere droshky ride of the Kremlin! Here surely is an unparalleled opportunity for aeromodelling's equivalent of the Dynamos to sally forth with hardly a clank of Iron Curtain, and show the effete Western civilisations just how the Red Star boys get those phenomenal world records. For over ten years it has been our Editorial ambition to develop, at the very least, some sort of "pen friendship" with a Russian enthusiast. None could have been more indefatigable pullers of Russian Embassy doorbells than our Editorial staff, or borne more patiently the brunt of Asiatic buck-passing as we journeyed vainly from department to department seeking the appropriate authority. On one happy occasion we cornered a Russian Aviator-General who admitted to some official status, but even after plying him with neat gin, in the absence of vodka, the most he would admit, was that he believed that there was *some* aeromodelling in Russia. A careful study of satellite countries' literature has shown a happy burgeoning of the shy Russian flower—to the extent that we can offer a fairly sound estimate of the typical Russian rubber model, a somewhat wider knowledge of their gliders, and a firm conviction that power modelling is midway between the middle Brown Junior period and Early Diesel. Control-line flying too, we see with interest, has now been invented by a Comrade from the Steppes, and Russian impulse duct jets—curiously like Minijets, are now achieving local records at 80 m.p.h.

Now at long last, without jeopardising a minute of the current Five Years' Plan, without hazarding more than a Stakhanovite's overtime in roubles, without even leaving the immediate radius of the Russian sphere of influence, these doughty champions can show us how. Which may seem a very lighthearted approach but is, none the less, offered in all sincerity to those would-be aeromodelling friends of ours. Do please break a long silence and a complete absence from international events, Comrade Aeromodellers, and take part in the 1950 Wakefield Contest—your victory would be greeted with the heartiest of cheers—and, who knows, might do more than all the Western politicians towards a real understanding of our mutual problems.

But while we are urging others to step out and take a more active part in International events, we must remember that the British record in this respect is not entirely clear. We have so often welcomed foreign visitors to our shores for contests of one sort or another that we are apt to forget that in polite society visits should be returned. In 1948 a British team contested the Wakefield in America, in 1947 a British team went to the Frauenfeld meeting, occasional friendly visitors have been to Flers—but no other official teams have supported the wealth of continental programmes. In this issue we publish advance details of a number of International events where not only will official British teams be welcome, but in many cases—as noted—lone hands or club groups can go along to compete and "show the flag". Our continental hosts are anxious to see us—they make the few visitors they have had overwhelmingly welcome—costs are very moderate, contests interesting and well run. We shall be very happy to give intending visitors any additional information on travelling—in fact those who have sent their names in for our Foreign Contests Register will already have received translated rules for the Paris-Normandy Match in early May. Other "possibles" include meetings in Italy, France and—a new venue this—Spain. The Wakefield in Finland and the A 2 event in Sweden will of course be reserved for "officially selected" teams only.

"Return hospitality" will be provided in this country with the AEROMODELLER Rally from August 15th-25th, when the Fourth International Week will be held at Eaton Bray. In addition to the Hundred Guinea Challenge Trophy for the Champion of the Meeting, this journal is putting up prizes to the value of £150 covering awards in all classes, souvenir medals and diplomas. There will be substantial awards in contests for Power/Ratio, F.A.I. and A 2 Sailplanes, F.A.I. Rubber, Speed, Stunt, and Scale Control Line, while the meeting will close with a prizegiving dinner in the good old style. Accommodation for about 100 foreign guests will be available, while as usual we shall ask British competitors to leave this accommodation for our guests and camp out in tents on the airfield perimeter. Up to one dozen places will be reserved for an official British entry who would comprise the No. 1 team. These will either be selected by the S.M.A.E., or failing this, will be invited to take part on the basis of their competition record this summer. In the same way we hope that the leading clubs will be able to send nominees to take part in the contests, as well as substantial crowds of supporters.

This will be the big event of the British aeromodelling year, approved by the F.A.I., and competed for under strict International rules under the watchful eye of the S.M.A.E., so make your holiday plans to include this meeting for modellers by modellers—there will be no more than one contest per day, giving ample time for three flights all round and concentrating on the *fliers* having a really good time.

Wakefield Draw

Hitherto the S.M.A.E. has been reliant on a few enthusiasts and aircraft firms for the necessary money to finance participation in international events such as the Wakefield. In short, the S.M.A.E. has had to go begging for money to enable

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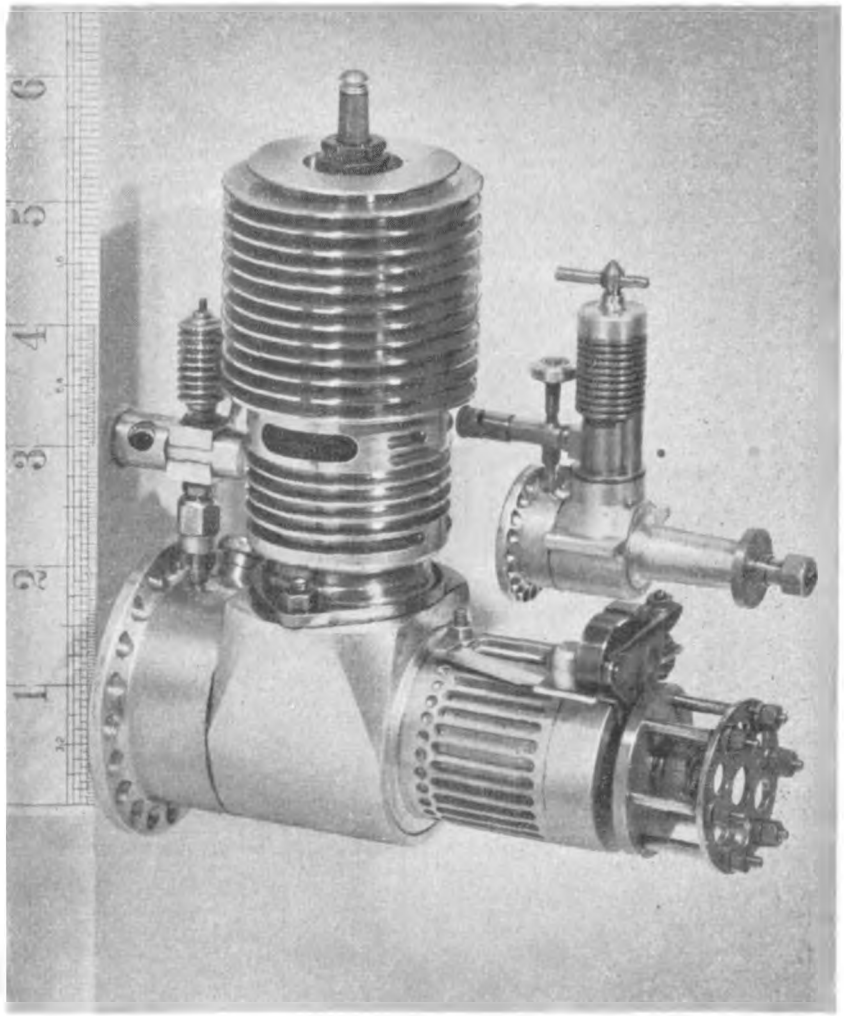


Two interesting originals, home built by W. E. Trevithick. The larger is of 22 c.c. capacity, petrol, weighing 22 ozs. The crankshaft is fitted with two Hoffman thrust races. The smaller engine is a ·900 c.c. diesel (C.I.), weighing 2¼ ozs.

British aeromodellers to take their rightful place in the International sphere.

It is appreciated that some clubs made a valiant effort to support the Council of the S.M.A.E. in this direction, but the fact remains that the vast majority of clubs make no effort whatever, and the total subscribed has been extremely small.

In order to place the matter on a self-supporting basis, the S.M.A.E. has decided to sponsor a grand draw among its members for the privilege of winning a free trip to the Wakefield contest in Finland, or a free trip to the International Glider contest in Sweden, among a total list of 100 attractive prizes.

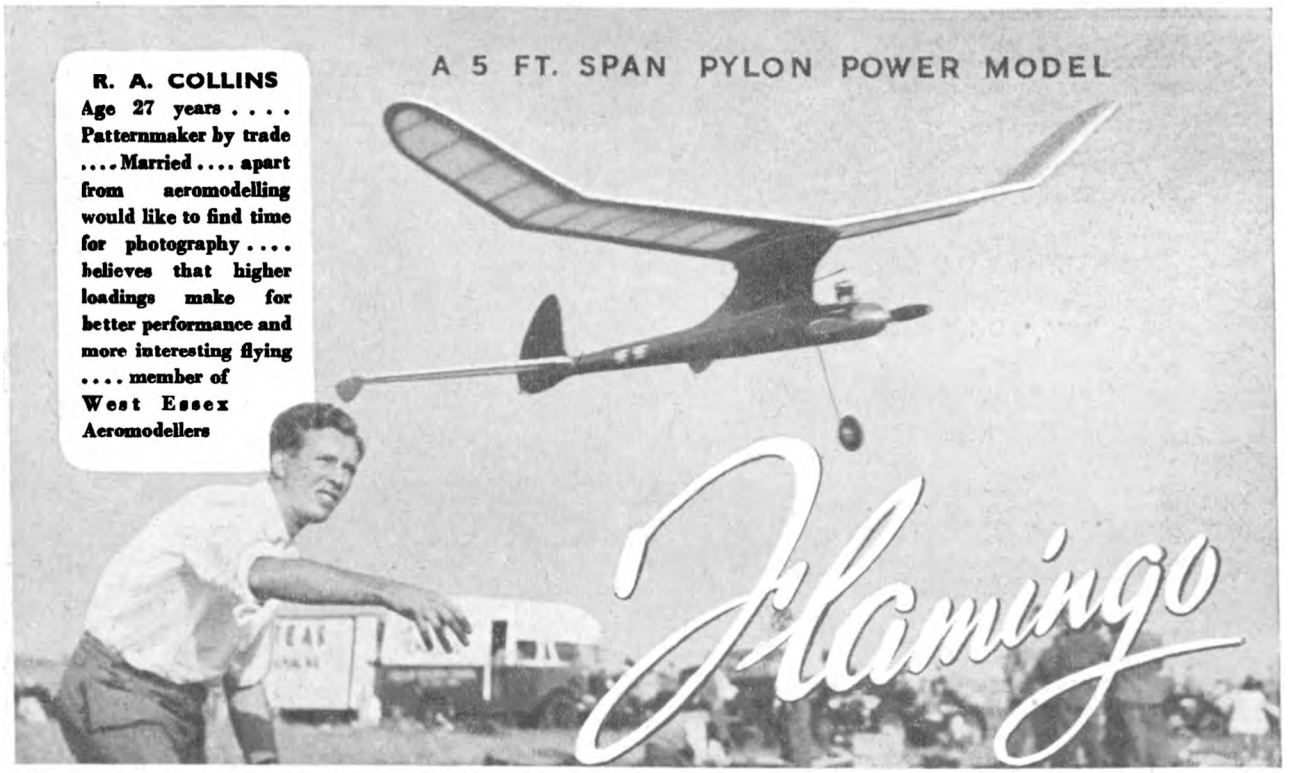
Participation in this draw is by tickets, price 1/- each, which are obtainable from the Secretary of the S.M.A.E., Londonderry House, Park Lane, London, W.1, or from our offices on their behalf.

Better Safe than Sorry

Readers may well feel before we are finished with them that they have heard as much about insurance as they can stand—we can only say that *we* are insurance-minded, and until you too are convinced we shall continue to hammer away. The answer is really very simple ; turn to page 265, fill in the form and post it off today. You can then rest easy in the thought that the first part of your duty is done, and if the other thousands of readers have likewise done their bit, the movement will be well on the way to safe flying. Once insured there is no possible risk whatsoever of your model occasioning anyone any harm that the insurance company cannot smooth over. So insured your flying can be an unmitigated pleasure, even to the extent of not really breaking your heart when you forget to light that fuse—that is if you are covered for o.o.s. ! Again your favourite model can safely be sent off to the Mammoth Stores Exhibition without worries about the ham-handling it may receive by all and sundry—again if you have made sure you are covered by the appropriate section of the now all-embracing N.G.M. And once insured—boast about it ! There are elegant transfers that make splendid roundels on each wing, and smart lapel badges to show your friends that you too are conscious of your duties to the other fellow. Yes, we know it sounds very American high-pressure salesmanship—we do not really care—if only you will be insured the day before the accident—not the day after !

New Publication Date

To bring our publishing date into line with the usual monthly magazine practice of appearing about the middle of the month before that printed on the cover—which gives the newsagent a full six weeks to sell his copies before they are " out of date "—the AEROMODELLER issue for June will be on sale on 15th May—and thereafter about that time every month.



R. A. COLLINS
Age 27 years .... Patternmaker by trade ....Married .... apart from aeromodelling would like to find time for photography .... believes that higher loadings make for better performance and more interesting flying .... member of West Essex Aeromodellers

INFLUENCED by Leon Schulman's views on pylon contest models, the Flamingo represents a logical development of the well known "Zoomer" design. Faint resemblance in outline to its American counterpart is enhanced by a different style of tail unit employing lifting instead of a symmetrical section.

Designed last summer, Flamingo proved extremely "hot" from the first flight onwards—in fact, it impressed Roy's fellow West Essex club members so much that several, including Cyril Mayes, who is noted for his own very original designs, borrowed the original drawings and made lighter Amco 3·5 c.c. powered versions. Each of these has proven to be as safe as the prototype during first trimming flights despite the difficulty of reducing the high power of the diesel. An ignition K. & B. Torpedo was used by Roy, which allows straightforward conversion to the Frog 500. The Yulon 29 or 30, Eta 29, Amco 3·5, Elfin 2·49, E.D. Mk. IV or K Vulture are ideal alternate power units.

Experience has proved that an 11 ins. × 6 ins. or 11 ins. × 5 ins. airscrew is best, 5 ins. pitch being used with the smaller capacity motors. Ignition motors will give slightly higher wing-loading and require a centre of gravity position 65% back from the leading edge. With glowplug or diesel motors the C.G. comes about 75% back, in which case the tailplane must be given an increased positive setting of 1°–1½°. Downthrust is not necessary, but 1° right-thrust coupled with ¼ in. offset at the rudder trailing edge for a left glide turn proved ideal and permanent trimming settings.

Building Details.

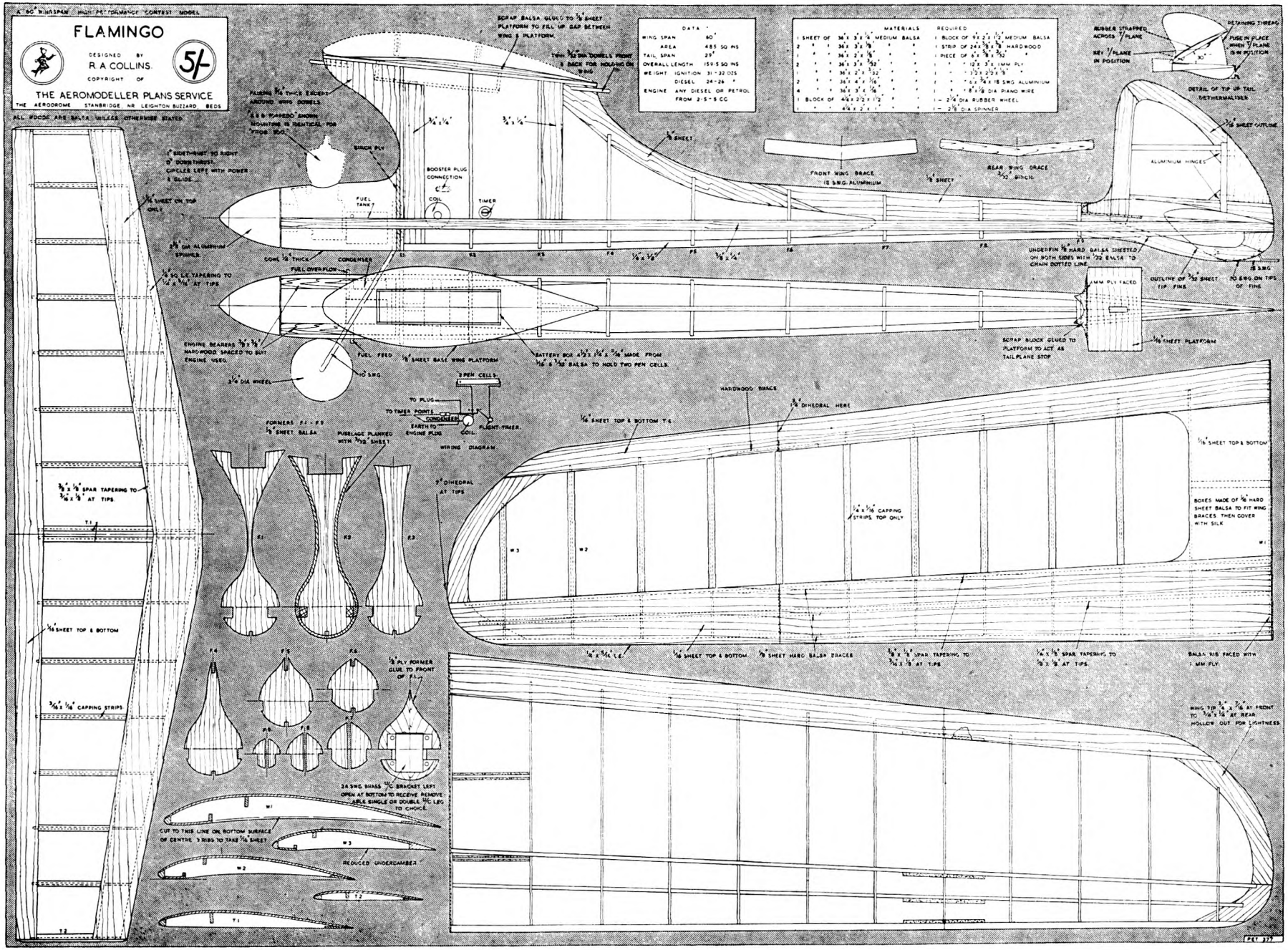
Fuselage : Pin the two main crutch members of ¼ in. × 3/8 in. in position over the plan view. Add the engine bearers drilled and spaced to suit your choice of engine. Cut each former into half so that the top half may be cemented upright on the crutch, cement the 1/8 in. sheet platform and the top half of the fuselage backbone into position and add the battery box if it is required. Remove from the plan and add the lower portions of the formers, ¼ in. × ¼ in. stiffeners, ignition coil, timer and wiring. Select softish 3/32 in. sheet for cutting into planking strips and carefully plank the fuselage.

The underfin is added and covered with 1/32 in. sheet, and the tail platform made from either 1/16 in. hardwood or very hard 1/16 in. balsa. Make the wing platform match the wing undercamber with a packing piece. Next decide the size of spinner needed to allow clearance for the exhaust port and scribe the spinner diameter on the front face of the cowling blocks which are lightly tacked in position. After carving and sanding the block contours, detach and hollow out the inside to a ¼ in. wall thickness. Fit the engine and cut the cowl to as close a fit as possible around the cylinder with allowance for the fuel feed and overflow pipes, needle valve and advance lever to project for access. Sand well, cover with tissue and give two coats of sanding sealer. Sand again with wet finishing paper and dope the final colour, finishing with fuel proofer. Don't forget to put your name and address label in a prominent position before the final fuel proofing . . . if the D/T fuse ever fails you'll be thankful of the label.

Mainplane : A very attractive feature of Flamingo is its two piece wing design which makes it an easy model to transport by bicycle. Begin by cutting templates of ribs W.1. and W.2. and rectangular pieces of balsa over length and over depth of each other rib. Pin 10 of the rectangles between the templates and carve to the template level. Sand smooth and repeat the operation for the other half of the mainplane. Cut the spars from 1/8 in. sheet, the leading edge from ¼ in. sheet and build up the trailing edge from 1/16. If possible, assemble the mainplane on a board with a jig for the polyhedral angle. Position the leading edge, bottom spar and bottom half of the trailing edge, the front edge of which should be suitably packed up off the building board. The spar and leading edge must also be raised to suit. Cement all ribs in place except those at the polyhedral angle and tip. Cement polyhedral braces and the tip, followed by the remaining ribs and top spar and brace.

Sand the sheet to be used for the leading and trailing edges before cementing in place and add capping strips.

Repeat the procedure for the other half and then make the wing brace boxes. Cut slots in the root ribs to receive the boxes but do not cement them firmly until the braces are made and the whole mainplane assembled. The correct angle for



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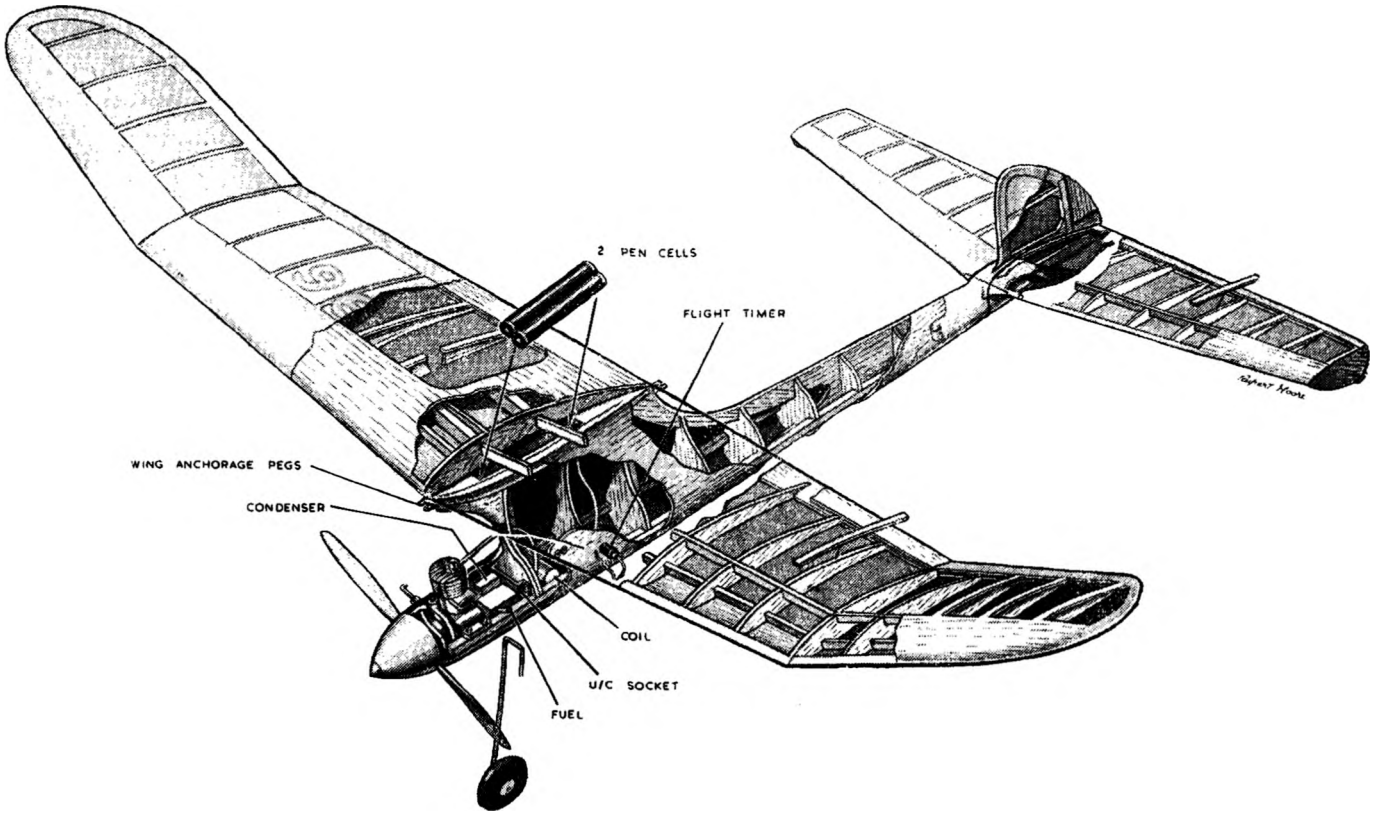


the dihedral can be fixed and the boxes secured and allowed to dry before detaching the halves to fit the leading edge underside sheeting and the centre section sheeting. Sand the structure and cover with strong tissue. Give at least three coats of dope.

Undercarriage : The detachable undercarriage can be either single or twin leg, the former being the better for minimum drag. Bend from 10 s.w.g. piano wire to fit firmly into the fuselage box.

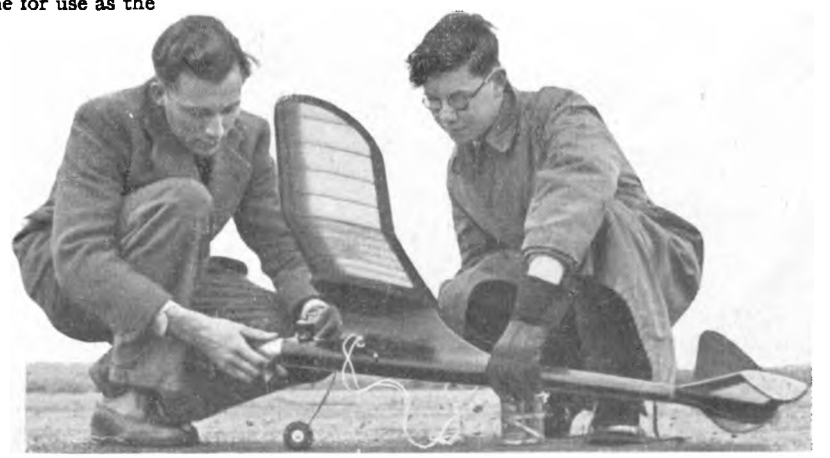
Tailplane and Fin : Pin the leading edge and lower half trailing edge over the plan and fit the centre section and top ribs.

Cut rectangular strips for the rest of the ribs and cement them in place. When dry trim these rectangles to rib shapes using a straight edge between the centre and tip ribs to check contour. Add the spar, top half of the trailing edge, leading edge sheeting and cap strip the ribs. The fin is cut from 3/16 in. sheet and sanded to streamline section, making the leading edge long enough to extend below the tailplane for use as the front lock. A piece of 3/16 in. is used for the rear lock. Tip fins are cut from 3/32 in. sheet and cemented firmly in place. Cover with strong tissue and give at least two coats of dope.

Copies of the prototype have been finished with Aerolac black fuselage and fin with Aerolac yellow lifting surfaces. The original was natural black and white tissue covered.

Trimming Procedure : Before attempting to fly, check all lifting surfaces for warps . . . do not attempt to fly in any circumstance until you have assured yourself that all surfaces are true. Try glide tests with the rudder set straight. Check any tendency to stall or dive by slight alteration of the tailplane incidence. Then trim the rudder until from a hefty launch you get a long flat circle to the left. Once satisfied with the glide, try a power flight. Set the timer for a motor run of four seconds and launch with the motor running at medium revs. Do not be alarmed at a steep bank to the left in the initial power turn as long as the nose is held high enough for the job to keep climbing. A banking turn without a climb can be cured by opposite rudder while left rudder should be used to prevent any trend to looping. If you find the glide circle too large and further rudder movement appears to be dangerous, then try a little extra motor offset. Roy says, " When trimmed, the model will bank steeply at the beginning of a flight but as the model speeds up it will spiral upwards at an angle of about 60°. Crosswind or downwind launches have been made with safety. When taking off the ground, point the nose slightly to the right of the wind so that the model turns straight into wind ".

The Designer prepares for a flight at Fairlop. Note that his assistant, " Lefty " Lefevre, is supporting the fuselage to prevent damage to the underfins.



INTERNATIONAL CONTEST CALENDAR 1950

Too little and too late characterises the usual foreign contest information that we can publish—a matter of remorseless press dates that we can do nothing to alter. In this International Calendar summary we give enough information to whet the appetites of intending contestants.

The invitation contained in AEROMODELLER ANNUAL 1949 to send in names and addresses of would-be interested competitors is repeated. Just drop us a line with your name and address and main aeromodelling interests, including dates when you might be free to travel—we will send you latest foreign contest "gen" with translated rules and any other information likely to be of interest.

Stop press information just received on the Second International Control Line Meeting at Knokke-sur-Mer indicates the municipality is really taking the sport to its heart. Hospitality to competitors is free—except drinks!—so that virtually all that is needed is the return fare to Ostend, about £7. 10s. 0d., plus tram fares to Knokke, less than 2s. 6d. each way, for three days flying in the Belgian Brighton! English fliers would be particularly welcome in both stunt and speed events.

Date	Country and Organisers	Place	Events	General Remarks
30 April to 7 May	Switzerland (Aero Club de Suisse, Hirschengraben 22, Zurich)	Geneva	Stunt and Speed C/L	Special surfaced flying areas being prepared at Airport by Organisers
13–14 May	France (P. Gilg, Aero Club de Normandy, 15 Rue de la Croix de Fer, Rouen)	Rouen, Madrillet Aerodrome	Gliders, Rubber, Power, Ratio C/L Speed 0–5 c.c., 5–10 c.c. All "open" formula	"Freelance." British entrants specially invited. (Visitors should allow 30/– per day of visit for expenses above their fares.) A good chance to gain International experience
20–21 May	Italy (Giornata Aeromodellistiche Ambrosiane, F.A.N.I., Via Cesare Beccaria 35, Rome)	Milan	Annual Ambrosia Contest for C/L Speed, Stunt and Free Flight Power	Individual or official Team entries accepted. Established Italian event
28 May	France (Club Modelliste de Cachan, 5, rue Camille Desmoulins, Cachan, Seine)	Cachan (Seine), Nr. Paris	C/L Stunt and Speed	Also Model Race Cars. No International status but might be interesting
18 June	Belgium (A. Roussel, F.P.A.B., 1 rue Montoyer, Brusselles)	Brussels	C/L Stunt and Speed	Belgium contest always good—individual entries accepted. The two contests could be covered together
19 June	Belgium (As above)	Nivelles, Nr. Brussels	Daumerie Glider	Daumerie formula is F.A.I. but limited to span of between 145–150 cms.
8-9-10 July	Belgium (As above)	Knocke-sur-Mer	C/L Stunt and Speed	Good open to all meeting sponsored by civic authorities at Knocke. Rules as A.M.A., adopted by F.A.I.
23 July	Finland (Suomen Ilmailuliitto, Mannerheimintie 14, Helsinki)	Helsinki	Wakefield	Team S.M.A.E. selected by merit on eliminators
30 July	Sweden (Kungl Svenska Aeroklubben, Malmskillnadsgatan 27, Stockholm)	Eslov, Southern Sweden	A 2 Sailplane and Power event	Team S.M.A.E. selected on merit by eliminators for sailplane. Further details on power awaited
6 August	Gt. Britain (S.M.A.E., Londonderry House, Park Lane, W.1)	London	Bowden Trophy, Precision Power	Open to all
15–25 August	Gt. Britain (P.R.O., Eaton Bray Sportsdrome Limited, The Aerodrome, Billington Road, Stanbridge, Nr. Leighton Buzzard)	Eaton Bray	4th International Rally. Contests for Power Glider, Rubber and C/L	Week's contests for £150 of prizes. Open to all subject to proficiency qualifications. Full particulars from the "Aeromodeller"
10 September	France (Federation Nationale Aeronautique, 7, Avenue Raymond Poincare, Paris 16)	Probably Nr. Paris	Rubber F.A.I.	No other details yet
14–15 October	Spain (Real Aero Club de Espana, Subseccion de Aeromodelismo, Carrera de San Jeronimo 19, Madrid)	Madrid	Sailplanes and Power	New event in highly aeromodelling-conscious country—worth supporting

A 27½" WINGSPAN CONTROL LINE STUNT MODEL

WILDFIRE

DESIGNED BY G.STOWERS & E.TAYLOR

2/-

THE AEROMODELLER PLANS SERVICE
THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS

DATA	
SPAN	27½"
AREA	133 SQ INS
POWER	1.8CC-3CC
WEIGHT	12½ OZS
LINE LENGTH	50 FT
C.G. POSITION	FROM FRONT LINE TO L.E WING WITH HIGHER POWERED ENGINE KEEP C.G FORWARD I.E L.E WING

MATERIAL REQUIRED

STRIP
4 STRIPS OF 3/32" x 3/32" x 36" BALSA
1 " 1/4" x 3/4" x 24" "

SHEET
3 SHEETS OF 1/32" x 3" x 36" BALSA
1 " " 1/32" x 3" x 36" HARD "
3 " " 1/16" x 3" x 36" BALSA
1 " " 3/32" x 3" x 6" "
1 " " 3/16" x 3" x 6" "

MISCELLANEOUS
1 3/8" x 1/2" x 8" OF BALSA BLOCK
1 PIECE OF 1MM PLY 2" x 4"
1 " OF 1/8" x 1/4" x 1/4"
4" OF 16 SWG 1/16" D ALUM TUBING
18" OF 16 SWG 4" OF 20 SWG 36" OF 22 SWG PIANO WIRE
1 PIECE OF 16 SWG ALUM 1" x 3"
10" OF 1/4" x 3/4" ASH
THIN SHEET OF CELLULOID
1 SHEET OF THIN BRASS 6" x 6"

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

ENGINE BEARERS FROM FROM 1/4" SHEET ASH.

TANK POSITION

F1 F2 F3 F4 F5 F6 F7

1/4" SHEET

3/32" SHEET FIN & RUDDER

NOTE:- COMPLETE T/PLANE ACTS AS ELEVATOR

MAKE TAILPLANE FROM 2 LAMINATIONS OF 1/32" HARDSHEET & COVER WITH RAG TISSUE

1/8" PLY

COVER ENTIRE FUSELAGE WITH 1/16" SHEET.

SCRAP BALSA

SCRAP BLOCK

1/4" SHEET

16 SWG 1/16" D ALUMINIUM TUBE BEARINGS BIND & CEMENT TO F.7.

20 SWG ELEVATOR HORN

16 SWG PIANO WIRE SANDWICH BETWEEN TAIL PLANE.

16 SWG PUSH PULL ROD BIND & SOLDER

"MILLS 2·4" ENGINE SHOWN

2" DIA SPINNER

1/16" SHEET COWLING END PLATE

MAKE WING ROOT FAIRINGS FROM THIN CARDBOARD

TOP 1/4" SHEET

CHAIN DOTTED LINE SHOWS OUTLINE OF BOTTOM 1/4" SHEET.

SLOT IN TOP SHEET FOR FIN.

OFFSET RUDDER 3/4"

TO CONSTRUCT FUSELAGE MOUNT ON TO A 3/16 DIA DOWEL

W1 W2

F.7. 1/16" SHEET.

TEMPLATES OF ROOT & TIP RIBS MAKE FROM PLY OR ALUMINIUM SANDWICH REQUIRED Nº OF STRIPS BETWEEN TEMPLATES & SAND TO SHAPE.

F1. 3/16" SHEET. F2. 3/16" SHEET F3. 1/16" SHEET. F4. 1/16" SHEET F5. 1/16" SHEET F6 1/16" SHEET

HOLE FOR MILLS 2·4 INTAKE.

FILL IN BETWEEN SPARS IN CENTRE 2 BAYS WITH SCRAP.

1MM PLY STRENGTHENING PIECES REPEAT FOR T.E.

3/32" SQ SPARS TOP & BOTTOM

MAKE TANK FROM THIN BRASS SHEET.

BEND AT 90° HERE

16 SWG. ALUM. CONTROL PLATE.

1/32" SHEET TOP & BOTTOM

W2

ALUM TUBES

22 SWG LEAD-OUTS

W1

1/8" x 1/2" x 4" SPRUCE

1/16" SHEET RIBS

BALSA BLOCK TIPS

1/32" SHEET TOP & BOTTOM

3/32" SQ SPARS TOP & BOTTOM

CL 364

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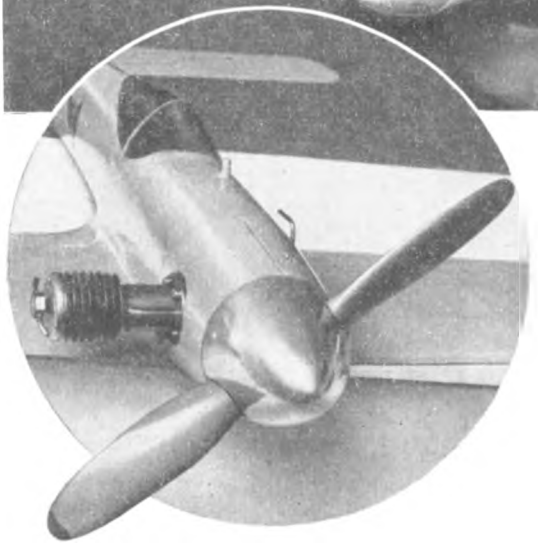
WILDFIRE

A 27½" WINGSPAN CONTROL LINE STUNT MODEL



BY G. STOWERS & E. TAYLOR

G. Stowers. Age 20 . . . . . Clerk by profession . . . . . Married . . . . . Interested in free flight scale and semi-scale.
E. Taylor. Age 29 . . . . . Single . . . . . Keen on control line and power duration.

THOUGH "Wildfire" has considerably less wing area than is fashionable for a 2·5 c.c. diesel powered stunt model, its speed and clean appearance make it a sporty model with a difference. Loops, Bunts, inverted flight and figure eights are well within its capabilities. The motor used in the original was an E.R.E. 2·5 c.c. which can be seen in the accompanying photographs.

Flying weight was 12 ozs. with the E.R.E. and speed 60 m.p.h. which is fast enough for really impressive stunting. An unusual wing section, similar to both the Isaacson symmetrical and Jim Walker's stunt "Fireball" airfoils, probably accounts for the high speed and a long but slow, flat glide.

By the installation of a 1 oz. fuel tank and small structural modifications, it is possible to make a fast team-racer out of "Wildfire." S.M.A.E. rules require an undercarriage which can be bolted to bulkhead F.2. Make this from $\frac{1}{16}$ plywood instead of Balsa. Carve a dummy pilot's head to suit the cockpit, and enclose the engine cylinder with a Balsa cowling. Another dummy cowl should be mounted on the opposite side of the fuselage to balance the appearance. Don't forget to allow access to the contra-piston lever.

The most unorthodox feature of this model is the tail unit which is a complete elevator without fixed surfaces. This provides extremely sensitive movement with maximum manoeuvrability.

Balance point of the finished model should be on or in front of the "down" elevator line.

Construction. First build the wings; make templates of the largest and smallest wing ribs, using either good plywood or 1/16 in. aluminium and sandwich 18 pieces of medium 1/16 in. sheet balsa between them. These can be decreased in size towards the tip to save wood. Chip down to rough size and then finish with sandpaper block. Make notches for spars (when making templates do not forget to make notches or spars and allow for 1/32 in. sheeting).

Spars are hard 3/32 in. balsa; trailing edge spars are tapered slightly towards tip so as not to weaken ribs. Build in normal way. Note.—There is no leading edge spar.

Sheet L.E. and T.E., add soft block tips, strengthen centre joint with 1 m.m. ply after filling in between the spars of two centre bays with scrap. Add $\frac{1}{2} \times \frac{1}{8} \times 4$ ins. spruce bearer for bellcrank. Bolt bellcrank into position, be sure it is loose running. Punch holes in ribs for lead out wires, fit aluminium tubes in block tips. Add lead out wires, solder firmly to bellcrank, bend end into coil ring clips.

Fuselage. Make jig from 3/16 in. straight dowel, cut formers from medium 1/16 in. sheet, except F.1 and F.2, which are 3/16 in. medium sheet. Split F.1 down centre line. Slide formers on to jig, cement $\frac{1}{4}$ in. soft block into position on rear fuselage above and below. Cut bearers from $\frac{1}{4}$ in. ash, cement firmly in position. Add fin and rudder from 3/32 in. sheet, cement firmly into slots in $\frac{1}{4}$ in. soft block.

Method of Making Mechanism. Cut piece of 16 g. wire 4½ ins. long, cut 20 g. wire bend and solder as shown to centre of 16 g. wire to make elevator horn. Slide two pieces of 16 gauge aluminium on to 16 g. wire to act as bearings. Bend over 1 in. of 16 g. wire at each end at right angles, check from side view to make sure these are also at right angles to elevator horn, fit in front of former F.7, cement aluminium tubes to former, check elevator horn for free running. Cement medium 1/16 in. to each side of fuselage, this can be done in two pieces as there are no difficult curves, except the left side of the cowl. This can be overcome by cutting shallow "V" slots horizontally (i.e., from nose to tail) between the formers, F.1 and F.2. Note that the stunt tank should be fitted before the final sheeting is done. Check that it is lined up with the centre of the carburettor to ensure good feed.

Fit the wing, solder the pushrod to bellcrank, this is also better done before the final sheeting. Fit the tailplane cut from 1/32 in. sheet, sandwich the pivot arms between the two sheets and cement firmly, cover with rag tissue.

Give fuselage and wings a final sanding down. Cover wing with rag tissue. Cover fuselage with English tissue which strengthens it, give entire model two coats of clear dope. Wings and tail have two coats coloured dope and the fuselage four. Rub down the fuselage and polish.

When flying it is best to use a dolly and let the model take off itself without any up elevator.

Note. The E.R.E. is supplied with a heavy flywheel spinner; this was not used but a 2 in. dia. snap-on was used in its place.

A 48" WINGSPAN RADIO CONTROL MODEL

QUEEN BEE

DESIGNED BY
P. GRIMWADE

3/-

THE AEROMODELLER PLANS SERVICE

THE AERODROME, STANBRIDGE, NR LEIGHTON BUZZARD, BEDS.

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

MATERIALS	REQUIRED
BALSA STRIP	MISCELLANEOUS
10 STRIPS OF 3/16" x 3/16" x 36" MED	6" x 6" OF 1MM PLY
4 " " 3/8" x 1/4" x 36" "	3½" x 4" OF 1/16" "
2 " " 3/16" x 3/4" x 36" "	12" OF DOWEL 1/8" DIA.
BALSA SHEET	4" x 5" CELLULOID
3 SHEETS OF 1/16" x 3" x 36" MED	23" x 7/8" x 7/8" HARDWOOD
1 " " 1/16" x 3" x 18" "	38" OF 14 S.W.G. STEEL WIRE
1 " " 3/16" x 3" x 18" "	13" " 16 " " "
1 " " 1/8" x 3" x 18" "	20" " 18 " " "

E.D. BEE SHOWN.

FILL IN WITH 1/16" SHEET.

COVER THESE 2 BAYS WITH CELLULOID.

3/16" SHEET GUSSETS

3/16" x 1/8" GUIDES FOR ACTUATOR BASE.

1/16" PLY ACTUATOR BASE. BOLT ACTUATOR TO BASE THEN INSTALL IN THIS SLOT.

RUBBER BANDS

16 S.W.G. HOOKS (2 OFF) PUSHED & CEMENTED INTO MAINSPAR & SHEET.

STRIP OF SILK

MEDIUM SOFT 3/8" SHEET BETWEEN SPARS.

DETAIL OF WING CENTRE SECTION

ALL LONGERONS, UPRIGHTS & CROSS STRUTS FROM 3/16" SQ.

FIN & RUDDER FROM 3/16" SHEET.

18 S.W.G. ½" ALUMINIUM TUBING TOP & BOTTOM OF FIN.

COVER WIRE WITH SILK.

16 S.W.G.

1/8" x 3/16"

1/8" SHEET TAILPLANE PLATFORM

3/16" SHEET GUSSET

16 S.W.G.

18 S.W.G.

1/8" DOWEL.

BLOCK BALSA.

3/16" SHEET SKID.

SILK HINGE

1/16" SHEET TRAPDOOR

FILL IN THIS BAY WITH 1/16" SHEET.

3/8" SQ HARDWOOD ½ BLOCKS.

1/16" SHEET.

1/8" SHEET FAIRING.

PLAN VIEW

SIDE VIEW

REAR ½ LEG. 14 S.W.G.

FRONT ½ LEG. 14 S.W.G.

2½" DIA AIRWHEELS TRACK 10½"

PRESS STUDS USED FOR ALL ELECTRICAL CONNECTIONS.

ALL BATTERIES FIXED TO 1/8" BALSA BASE WITH RUBBER BANDS & THEN INSTALLED IN SPACE A.

F4 1/8" BALSA

F3 1 OFF 1MM PLY 1 OFF 1/8" BALSA

F2 1MM PLY

F1 1/16" PLY

F5 1MM PLY

3/16" SHEET TIPS

1/8" x 3/16" L.E.

1/8" x 3/16" TAILPLANE MAINSPAR

1/8" DOWEL.

TAILPLANE PLATFORM.

1/8" SQ FOR TRAPDOOR TO BUTT AGAINST

TRAPDOOR

1/16" SHEET ON TOP OF BEARERS.

RECEIVER & RELAY BASE SUSPEND ON 4 HOOKS & SECURE WITH RUBBER BANDS.

1/8" DOWEL.

1/4" SHEET COWLING.

3/8" SQ HARDWOOD ENGINE BEARERS.

1/16" SHEET.

A

3/16" SHEET TIPS

3/16" SQ L.E.

1/16" SHEET

W1. 2 OFF 1/8" SHEET
W2. 2 " 1/16" "
W3. 18 OFF 1/16" SHEET

W3. W2 W1

1/8" x 1/4" T & B.

1/8" SQ.

3/16" x 3/4" T.E.

W1-W2

W3.

1/8" x 3/16" RIBS SAND TO SECTION SHOWN IN SIDE VIEW OF FUSELAGE

3/4" x 1/8" T.E.

DIHEDRAL 4" AT TIPS

RC 376

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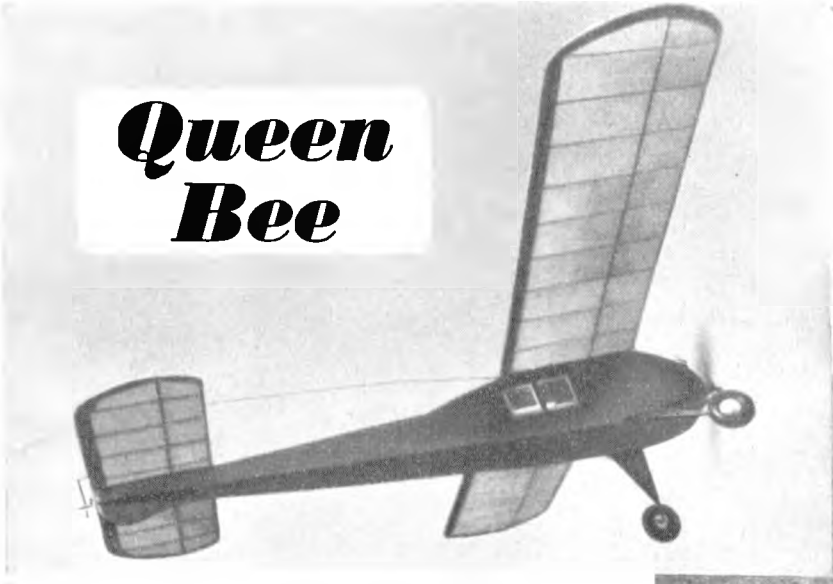
Queen Bee



A 48 in. RADIO CONTROL MODEL

BY P · GRIMWADE

Age 18 years . . . . a commercial artist . . . . aeromodelling interests mainly Radio Control and Stunt Control Line . . . . . no other hobby . . . . . member Regent's Park M.A.C.

THE Queen Bee was designed for the E.D. Bee and built around the Dews Radio Unit, so that the average builder can build a cheap but efficient R/C model. Two of these models were built to give it a thorough testing, and the weight of each one came to about 1 lb. 10 ozs.

Fuselage. The two fuselage sides are built flat on the plan in the usual way, the top longerons being cut off just behind F.4. While the sides are drying, cut out the formers F.1 to F.5. When the sides are dry remove from plan and glue formers F.1–F.4, and engine bearers in place. The rear ends of the bottom longerons can now be cemented together and F.5 fixed in place, after which the lower spacers can be added. The next thing to do is to pack up the front of the fuselage, and add the top longeron and the two struts which form the "V". When the longeron is dry, the uprights can be added. The tail platform can now be cemented in place, the blocks added at the front and the whole platform sanded to shape. U/C blocks should now be added, together with cowling and all other sheeting as shown on plan. When dry the whole fuselage can be sanded lightly and the cowling shaped.

Wings and Tailplane. The wings and tailplane are built flat on the plan in the usual way, and call for no comment except at centre section of wings (see sketch).

Fin. Usual construction, but for rudder which is hinged by means of 18 s.w.g. wire bound to rudder and let into 18 s.w.g. brass tubing at top and bottom of fin. Cement fin to tailpiece.

Undercarriage. This is constructed from 14 s.w.g piano wire and a ¼ in. balsa fairing.

Covering. Original models were bamboo tissue covered, the wings and tail unit being yellow, and the fuselage and rudder black.

Doping Fuselage. Two coats of clear dope. Two coats of banana oil.

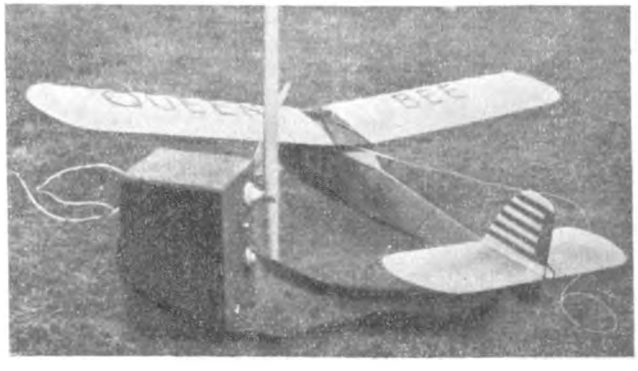
Doping Wings. Two coats of clear dope.

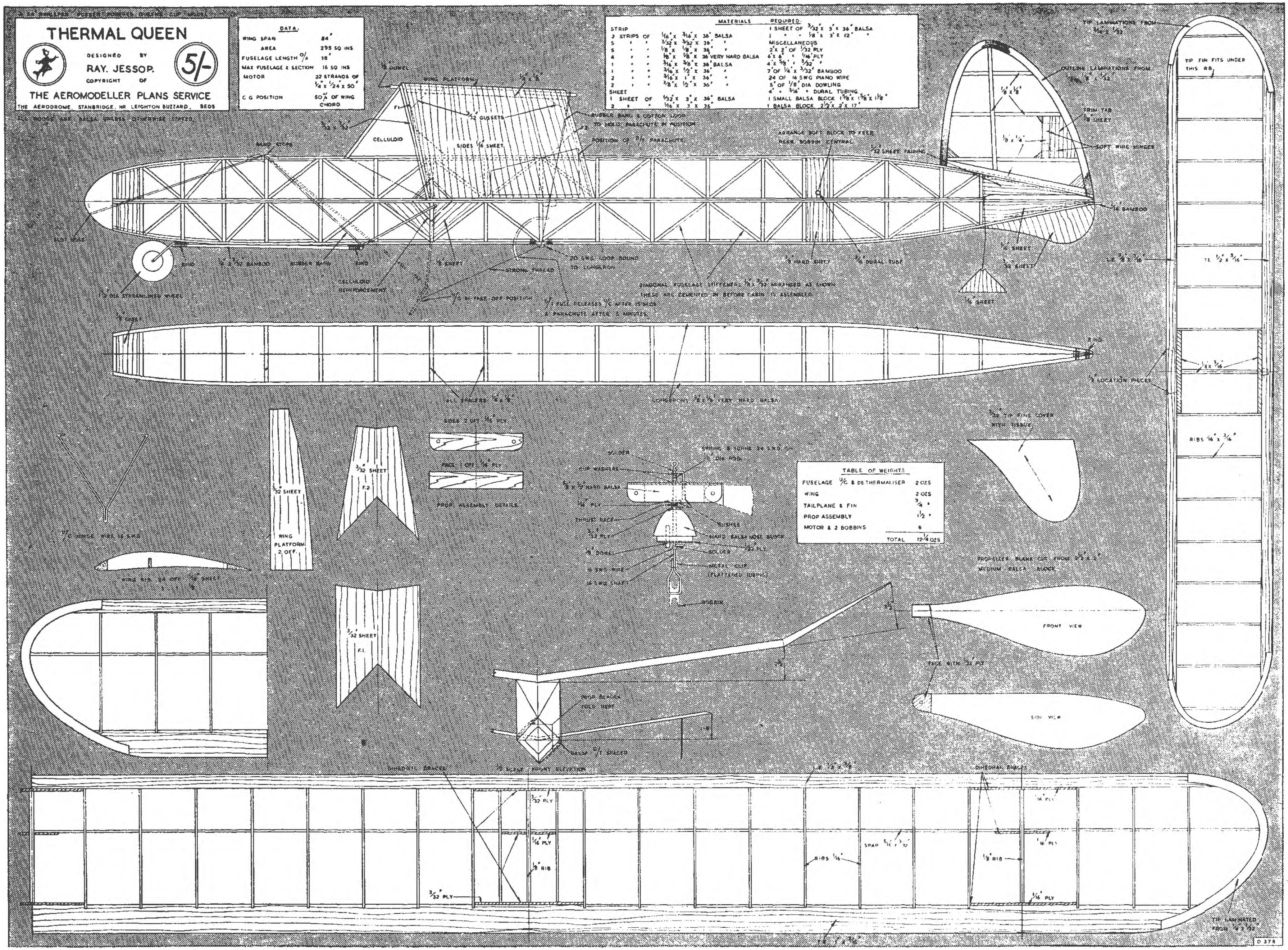
Tail Surfaces. One coat of clear dope.

Flying. Check up balance to see that the C.G. is in correct place, as shown on plan, and check wing and tailplane alignment and incidence, wings 3°, tailplane 0°. Check glide once or twice and then switch on batteries and test for movement. For first flight give an engine run of 20–30 secs. Only give a few signals for the first few flights and then increase engine run and signals accordingly. The tank used was the one supplied with engine and gives a run of approx. 4 mins. Keep all couplings and movements as free and as simple as possible.

Radio Installation. The installation of receiver, relay and actuator can be clearly seen from diagrams.

The relay and actuator used were the ones manufactured by E.C.C.





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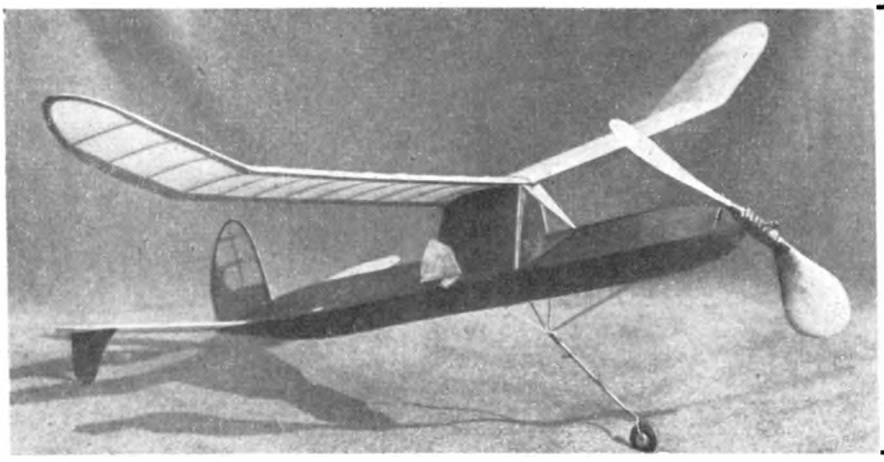


Thermal Queen

A 24' SPAN QUEEN'S CUP MODEL

By RAY JESSOP

Age 19 years . . . . engineering apprentice at Vickers Armstrongs . . . . member of Zephyrs M.A.C. . . . . second in 1949 Queen's Cup . . . . flew proxy for South Africa in last Wakefield . . . . interested in all types of model aircraft . . . . now concentrating on Wakefields.

WITH the advent of the Queen's Cup Contest in 1948 I decided to have a crack at one of these outsizes in rubber models. After much consideration I decided to build an enlarged version of my 1947 Wakefield model which had proved a consistent performer.

About a week before the 1948 contest, my model was finished ; it had a streamlined cabin fuselage with a high wing position, 54-in. polyhedral wing, 18-in. diameter Wakefield prop. with 4½ oz. motor.

The first two flights gave an average of about 2½ minutes. When it came to the final flight, maximum turns were applied. This was too much for the model, as it climbed away steeply and then stalled into the ground, thus ruining my chances.

Early in 1949 I decided to start on a new Queen's Cup model. This also had a streamlined fuselage and I managed to get the weight down to 6½ ozs. so that I could use a 20 in. dia. prop. with 6 ozs. of rubber. This model proved a complete failure.

I finally decided that the fully streamlined model was not the answer for the Queen's Cup specifications, and decided to build a purely functional model having the following considerations in mind.

1. A high power weight ratio is necessary to obtain a high rate of climb, a 50/50 ratio with 6 oz. motor and 6 oz. airframe being optimum. Although a 6 oz. motor has a terrific amount of power to handle, it can be wound using a large winder, a strong arm and a weak mind.

2. High strength with tightness is necessary, so the model wants to be as simple as possible.

3. The model must have the utmost stability to handle the enormous power.

4. That the prop. be of small dia. with fairly large pitch and blade area. A free-wheeling prop. of this size produces drag of no small measure and is very prone to damage ; therefore a folder is desirable.

5. A model of this size lands rather heavily and requires an undercarriage of very large proportions, which would create much unnecessary weight. Then why not retract it and thus reduce drag and keep the weight down ?

6. Last but not least, an efficient dethermaliser.

All these points were considered in the design which placed second in the Queen's Cup 1949 and which is presented here.

This model exceeded my expectations, being extremely stable with a high rate of climb. The glide is very flat and more like that of a good glider than of a rubber model.

In the 1949 contest, it averaged approximately 2¾ minutes with no noticeable thermal assistance and using only 700 turns, whereas the maximum was near 900.

Fuselage. (*a*) Construct basic box fuselage in usual manner using very hard ⅛ in. for longerons.

(*b*) Add sheeting, wire fittings and all diagonal braces.

(*c*) Cover basic fuselage with " Silk Span " or some other strong tissue, water spray and give four coats of dope.

(*d*) Assemble wing mount in correct position with all gussets, wing pegs, etc., as shown, cover sides with 1/16 sheet.

(*e*) Construct undercarriage, cement the celluloid hinge point reinforcement patches in position and attach U/c.

(*f*) Use 3/16 in. diameter dural tube for motor peg.

Wings. These are of orthodox construction and need few comments. Use good quality wood and take great care in construction, keeping all panels dead flat. Cover with lightweight " Silk Span ", Jap tissue or best tissue available. Water spray and give two coats of thin dope. Don't over dope.

Tailplane and Fin. Again very orthodox and little need be said. It is important to build these components *very light*.

Cover with light weight tissue and give one coat of dope.

Build up fairing and cement to tailplane, then cement fin to fairing, add tip fins and tailplane location pieces, so that tailplane is locked in position when on fuselage.

Propellor Assembly. The whole performance of the model depends on this essential item, so take great care.

(*a*) Cut out blank to lines shown and carve blades so that they have about ⅛ in. undercamber and are ⅛ in. thick at maximum width.

(*b*) Dope and polish blades and complete assembly as shown in detailed drawing.

(*c*) It is important to cement a thick celluloid reinforcement completely round the front and sides of the prop. centre, as this strengthens it tremendously.

(*d*) Use Durofix on all plywood joints as balsa cement does not stick ply effectively.

(*e*) 16 s.w.g. wire was used for prop. shaft on original model. This tended to twist with the terrific torque, so use 14 s.w.g. if you can bend it.

(*f*) Small bands are attached to prop. blades to keep them folded against fuselage on glide.

(*g*) Adjust stop so the motor is just tight between hook and rear peg.

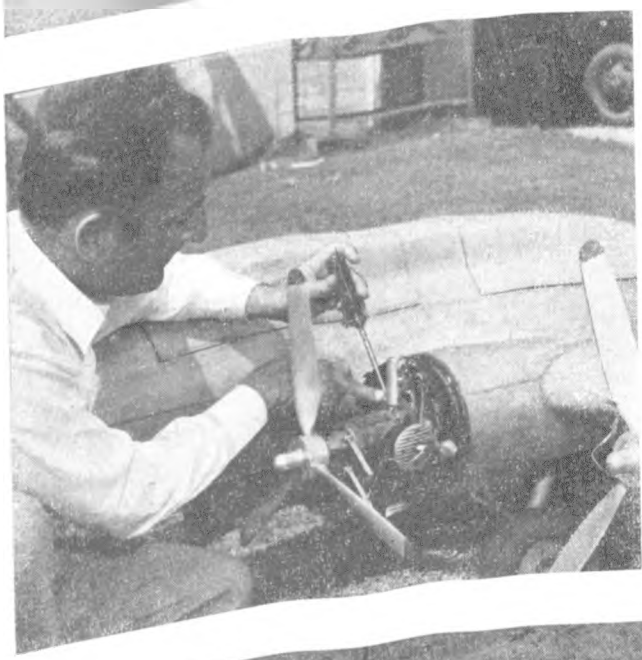
The Motor. This consists of approximately 6 ozs. of Dunlop 6012 ¼ in. × 1/24 in. made up into strands 50 ins. long.

The Dethermaliser. This is of the standard parachute type with cord attached to rear of fuselage. My original parachute was a 12 in. dia. paper one. The fuse first burns through the U/C cord and then operates the D/T.

Trimming. Check flying surfaces for warps ; if any are present, twist them out in front of electric fire. Assemble model, wind motor and allow to run until prop. stops and blades fold. The motor should be tight between ends with a few turns kept on. Test for C.G. ; the model should balance at half way across wing with U/C retracted. If C.G. is not quite in the correct position, adjust with plasticine at nose or tail. With U/C in retracted position test glide. If not quite right, adjust wing or tail incidence. When glide has been perfected, put trim tab over to right about 3/32 in. and cement a piece of 3/32 in. side and down thrust to rear of left-hand face of the nose block.

Starting with 150 turns, work up to full turns, making adjustments to side and down thrust and trim tab until a steep tight right-hand climb in circles of about 75 ft. dia. and a right-hand glide in circles of about 100 ft. dia. is obtained.

OPERATION RESEARCH



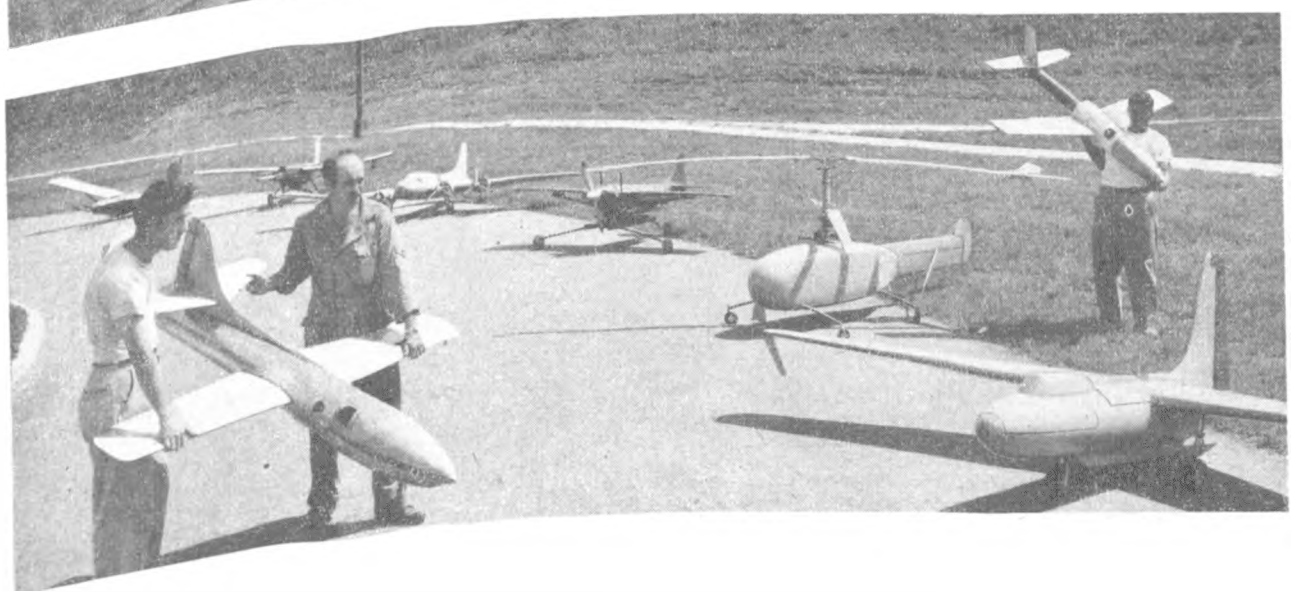
NEAR to Wright and Patterson fields at Dayton, Ohio, there is a workshop any aeromodeller would long to visit. The Dynamic Model Unit, as it is known, was started under Capt. Adam J. Stolzenberger in 1945. First the work was confined to Radio Controlled scale models of full size projects. Then a permanent U-control base was made and now it is commonplace to see the world's biggest and fastest U-control models lapping at a steady 200 m.p.h. Plans are made to extend the workshop to high speed free flight research with models attaining supersonic speeds.

Models built by the unit vary in size from a four foot wingspan multi-jet job to a 20 ft. span B.17 Flying Fortress; the cost may be anything up to £9,000 and nine month's research and constructional work may be necessary before test flights.

By using remote controlled models, new designs can reach the prototype stage without risking life and expensive equipment. Since the models are large, one is known to be quarter full size, scale effect is reduced as far as possible.

Before the unit workshop undertakes construction of a test job, 1/20 scale miniatures of the models themselves are tested on a 21 ft. diameter rig. Once beyond that stage, the complex research model, free flight, R/C or U/C is built in spruce and ply or all metal structure.

Four flat-twin two-strokes are used in the 20 ft. Fortress. Each develops 2·5 b.h.p. at 7,000 and weighs just under 4 lb. They appear to be cleaner versions of the Ohlsson and Rice 1·6 b.h.p. twin used by the Consolidated Vultee model



ON OPPOSITE PAGE

Heading :

With six cylinders already humming, the flexible drive for starting is used on No. 4 motor. Imagine the din—then imagine the model on one of its many successful Radio controlled flights.

Centre :

Maker of this beautiful twin is unknown but it is similar to the older Ohlson twin layout. Carburetter is rotary disc valve with a butterfly choke control. Make and break is at the rear, exhausts are downswept. The props could even be constant speed. Model is free flight Radio control but probably lands by parachute.

Bottom :

Some of the models made by the "Dynamic Model Unit". In the background are two OQ-2 target models, one with a trike undercarriage, next, the 20 ft. Flying Fortress, then the unit's "Goat" high speed control liner, a remarkable Helicopter and the unique radio controlled XFG1. Held up are two jet control liners each of which has the cluster jet unit.

radio controlled flying boats, designed in 1945. Rotary disc valve induction is used in all the flat-twin motors.

While the most ambitious experiments will remain secret to the technicians of Wright field, information on the XFG1 model has been released and indicates the wealth of detail utilized in a model not much larger than the radio glider in AEROMODELLER Annual 1948 (page 132).

Span is 13 ft. 6 ins., weight 131 lbs., wheels are 6½ ins. diameter and a 24 ft. safety parachute is packed into the fuselage for landing. Radio equipment consists of two separate receivers, one on 73 megacycles, the other at 68 megacycles. Each has five channels which are used to operate elevators up, elevators down, rudder right, rudder left, parachute door, aileron up, aileron down, spoiler, a neutralizer unit and a secondary parachute door solenoid.

By fitting a trike undercarriage to a standard target plane, the model unit's test pilot was able to familiarize himself with radio control, then when trained he made first tests with the XFG.1.

The model was taken to the Lakehurst Naval Air Station and was carried to 4,000 feet above the field by Blimp. Five tests, each including spins, were made at Lakehurst. After safe parachute landings, the recorded data, taken during each descent by a movie camera focussed on the instrument panel was analysed. Then the full size glider was tested later; it was found to have indentical characteristics to the extent of a fatal spin without recovery.

Top :

Adam Stolzenberger checks the parachute hatch on the XFG1. Note the two short rigid aerials and perfect scale control surfaces.

Centre :

From a pilot's seat, Adam Stolzenberger controls his speed jobs at ease. The two cables in foreground go to a central pivot, the third electrical flex connects with one of the flying wires.

Line tension is always maintained by the great power of the models.

Bottom :

Powered by a flat twin motor with a high pitched propeller this job should be fast enough to break any of our speed records! The Dolly looks strong and large enough for a Tipsy Junior.

Top: Safety first when starting is essential with jets of this size. Fire extinguisher at the ready, airline connected, the jet is fired and released for a high speed test. In the original photo it is possible to discern the two heavy gauge flying wires with an additional electric flex connection between one wire and wing tip.

Centre: Approximately 60 ins. span, this metal and wood super Jet is capable of speeds up to 200 m.p.h. Power unit has five separate Dyna-jet style intakes and presumably multiple valves in each intake. The jet tubes blend into one large exhaust orifice. Note the landing skid. Two plug leads are used for starting, plus a high pressure airline and earth clip. Box in foreground contains the trembler coil for starting plugs. The tricycle dolly (except for its robust tubular construction) closely resembles those used in more conventional aeromodelling spheres.

Bottom: Nothing but straight and level flying here, but with a difference. The Pilot has perfect control from outside the circle with the conventional joystick method.

Top: *A massive control tripod supports the pylon. Wires from the control seat are lead to a crank at the base. Motion is via a push rod to the balanced "mechanical handle", the whole being perfect remote control. Lines are actually 200 ft. long, the model is approximately 72" long.*

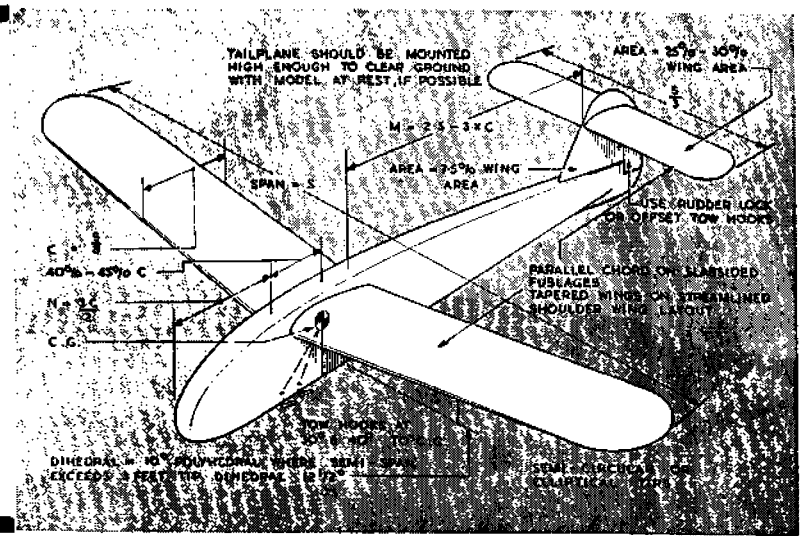
Centre: *Full handed flick is required here to start the 2·5 horse power motor. Landing skid blisters are at nose, tail and each wing tip. Note that rudder offset is used with this model.*

Bottom: *Birth place of the model is this huge workshop where the latest equipment is utilised to turn out sleek midgets for testing by the U.S. Air Material Command's Dynamic Model Unit. One innovation is the use of cheap, expendable plastic replicas like those in the foreground which are due for high speed tests that might otherwise mean destruction of expensive models. From this series of photos one may assume that the workshop is staffed by eight men. Each an expert in his particular sphere of model aerodynamics.*

It's DESIGNED for YOU!

NUMBER TWO—PART TWO

GLIDERS



As a general rule, less tailplane area is needed on a glider than on any other type of free flight model, to give adequate longitudinal stability. The larger the wing area, the less the proportion of tailplane area required. The smaller models, 300 sq. in. and under, can well use a 33 per cent. tailplane area as, on account of their size, they are more apt to be displaced and thrown about in rough weather. They need, therefore, the greatest reserve of stability to recover their normal glide path quickly. Above this size, tailplane area can be proportionately decreased, until at 1,000 sq. in. wing area and over, a 25 per cent. tailplane is adequate. There is no particular rule on the subject, and the proportion is far from critical. If in any doubt it is better to err on the generous side, but there is never any need to exceed 33 per cent.

Unless the model is to be a fully streamlined design, there is very little reason for departing from a rectangular wing plan-form with elliptic or rounded tips. From the purely practical point of view, it is infinitely simpler to cut a large number of ribs of identical size, than to plot or carve a set of ribs all of different lengths for a tapered wing. However, with a shoulder wing *streamliner*, it is more pleasing and better aerodynamically, to have a tapered wing. The taper is restricted so that the tip chord is generally not less than two-thirds of the root chord, and never less than one-half.

Aspect ratio for a rectangular wing should be between 8 and 10, as these figures give the best compromise between low drag and optimum structural weight. Structural weight is not as important with gliders as with most other models, but it is always an advantage to make the wings as light as practicable. Heavy wings can set up towline instability on their own, due to their inertia when displaced. It is best practice, in fact, to produce the whole airframe of the model to the lightest weight consistent with the required strength, and then load up with ballast to conform to F.A.I. rules, *by adding weight in the fuselage around the C.G. position.* This is where a shoulder wing design scores to a certain extent, for the actual wing fixing can be made extremely tough and robust, the extra weight added at this point being desirable rather than a handicap.

The most popular type of fixing, in such cases, is the tongue and box, but it should be noted that, for all wings of 300 sq. in. area or more, the tongue should be located in the fuselage and the boxes in the wing halves. Using plywood tongues this scheme works extremely well, even right up to the very largest size of models (e.g. Gilbert's Thunder King of 1,520 sq. in. area).

Straight dihedral is adequate for all types of glider; "Fancy" dihedral forms should be avoided in any case, as adding weight and structural difficulties and as possible sources of warps. Polyhedral, or more usually a straight centre section with dihedralled tips, is often used where the semi-span exceeds the standard wood length of three feet. To avoid splicing all the mainspars necessary to get a straight wing panel, each half wing is built in two sections. These are joined together at a dihedral break which comes somewhere about mid-way out along the semi-span.

The wing section is rather important, particularly as the size, and thus the chord, of the wing increases. As a general rule, thin sections are not desirable since, although they generally have an excellent lift/drag ratio, they have to fly quite fast to develop the necessary lift. Although the lift/drag ratio, and resultant gliding angle are flattering, both drag *and* lift are low, and therefore, to get lift, the wing has to operate at a reasonably high airspeed. There is still insufficient evidence to point to any one particular section being superior. Some of the laminar flow and turbulent flow sections have been tried quite successfully, but conventional sections like Gottingen 532, Eiffel 400, RAF 32 and so on, appear equally good in practice. The choice is extremely open offering an interesting field for practical research.

On theoretical grounds there would appear to be a strong argument in favour of using the largest possible wing *chord*, i.e. reducing the aspect ratio, to get a higher operative Reynolds Number and thus greater aerodynamic efficiency. This is particularly applicable where the wing area is restricted, as in the "Nordic" class, and no doubt we shall see models of this type appearing, where the aspect ratio has been reduced to 6, or thereabouts. Since lowering the aspect ratio increases the induced drag of the wing, it is still a matter of doubt as to whether any specific advantage is gained by this method. On the basis of past results, the original aspect ratio figures quoted appear best. In the case of shoulder wing models, the tendency is to go even higher, about 12 : 1 being the top value, even with rectangular wings.

Structurally, a wide variety of methods are available to the designer, for there is no reason for economy of space *inside* the fuselage. For the smaller and medium sized models, therefore, with a streamlined fuselage, crutch construction is probably the ideal method. This applies to fuselage lengths up to about four feet (even if the crutch members have to be spliced to obtain these wood lengths), but above this the figure tends to be a little on the heavy side, owing to the generous section required.

The simple slabsided box construction holds throughout the range. Adequate diagonal bracing and/or sheet covering must be used in the larger sizes, but fuselages of six ft. length or more have still proved satisfactory with only ⅛ sq. balsa longerons. The pod and boom and hatchet types need careful boom construction, and preferably, these components should be true monocoque, rolled from balsa sheet or even thin ply. Metal booms, incidentally, have seldom proved satisfactory; when small enough to be of economic weight

they have a tendency to whip or twist, and fail by buckling or bending in a hard landing. Once bent they are difficult to straighten successfully.

Many successful streamlined fuselages have been built by the half-shell method, using a vertical keel of sheet balsa on which the side elevation of the fuselage is traced and cut out. Formers and stringers are added to each side of this keel to complete the structure. The best guide in attempting unorthodox construction is to study the plans of a previous successful model of similar size and type and use similar wood proportions. The constructional tables given with this article provide a guide for most normal fuselage forms.

TABLE 2 STRUCTURAL DATA

Type	WINGS					FUSELAGE				TAILPLANE		Tow Hooks
	Type	L.E.	Spar(s)	T.E.	Covering	Type	Members (main)	Stringers	Covering	Type	Spar(s)	
Non-contest	Sparless	⅛ sq.	—	⅛×⅜	Tissue	Box	¼ sq.	⅛×⅜ or ⅜ sq.	Tissue	Sparless	—	18 swg
	Monospar	⅜ sq.	¼×⅛	⅛×¼	Tissue	Box	¼ sq.	—	Tissue	Monospar	¼×⅜	18 swg
Small	Monospar	¼ sq.	⅛×⅜ or 2×⅛ sq.	⅛×¼ or ⅛×⅜	Tissue or sheet L.E.	Box	⅜ sq.	—	Tissue	Sparless	—	16 swg
						Stream-lined	¼×¼ Crutch	⅜ sq.	Tissue	Monospar	¼×⅜	16 swg
	Two-spar	¼ sq.	¼×⅛ & ⅜	⅛×¼	"	Pod or Boom	Hollow Log	1 mm ply or ⅜ balsa	Balsa	Multi-spar	⅜ sq.	16 swg
Nordic	Monospar	⅜ sq.	¼×¼	¼×⅜	Tissue or sheet L.E.	Box	⅜ sq.	—	Sheet nose	Monospar	⅛×¼	16 swg
	Two-spar	⅜ or ¼ sq.	¼ & ¼×¼	¼×⅜		Stream-lined	¼×¼ Crutch	⅜ or ¼ sq.	Tissue	Two-spar	¼×⅜	16 swg
Medium	Monospar	¼ sq.	2×⅜ sq.	1×¼	Sheet L.E.	Box	¼ sq.	—	Sheet nose	Monospar	¼×¼	14 swg
	Two-spar	¼ sq.	¼×¼ & ¼×⅜	¼×⅜	"	Streamlined	Keel	⅜×¼	Rag Tissue	Two-spar or multi	¼×¼	14 swg
Large	Two-spar	¼ or ¼ sq.	1×¼	1×¼	"	Box	¼×¼	—	Sheet		¼×¼	14 swg

LITTLE IVAN

The recent publication in a model journal of an International Record List, coupled with an editorial plea for more news of aeromodelling activities abroad, invites the following:

East of Moscow's Metropoloski,
Within easy reach of bus and drosky,
Or some little Red pop-pop-ski,
Lies an airfield called Fairlopski,
Where on the workers' day of rest—
Which we call Sunday in the West—
With latest model, most hush-hushki
Came little Ivan Staticmushky.

The OGPU guard at the barbed wire gate
Affixed him with a look of hate,
Rummaged his box for atomic bombs
And frisked him down to his little red combs.
Grunting the while: "It's rather oddski
That you should be the only bodski
Venturing on the field to-day,
What's happened to the others, hey?"

The muzzle of a Tommy-gunski
Prodded little Ivan's Tumski,
Who, in a quavering voice, replied:
"Please Sir, I'm told they now abide
Repentant in Siberian mists—
Ideological Anarchists".

"A directive from the Politbureauski,
Personally signed by Uncle Joeski,
Noted that the Record Sheet
Wasn't Soviet all complete.
And lamented that the greedy scamps,
In the capitalistic camps,
Through some subversive, fell device,
Contrived England's name appearing twice.

"And forthwith urged all aeromodskis
In Omsk and Tomsk and other odd-skis
To greater efforts aeronautic
From Asia Minor to the Baltic.
And thus redeem the sad defection
Of records not in their collection.
To which, with pride, I here must addski,
Our Club's response was far from badski".

The guard looked puzzled, and exclaimed:
"If, as you say, your Club was famed,
Why then should our rulers wise
Damn them in the People's eyes".
At which little Ivan began to blubber:
"Please Sir, we used American rubber,
A treacherous crime, which I submit
Should not of clemency admit".

"Yet the Justice of the Court decreed
That I was a too young and tender reed
To languish in the dark interior
Of a mine in Trans-Siberia,
But in his wisdom stipulated
That my traitorous action rated
Every hour of leisure spent
On record breaking should be bent".

With credentials now approved
Into the airfield Ivan moved,
Precipitated by the thumpski
Of a boot against his rumpski.
But even as about to fly
A dark-red object caught his eye.
He saw towards him speed a car,
That of the local Commissar.

As it came to a halt by Ivan's side
Out popped the Commissar and his aide.
"What have you there, you little monkey,
With the rudder underslungski"?
"Please Sir, it's a new design evolved
To get the record problem solved".
"What a scallywag you are,
That's an English fag-u-ar".

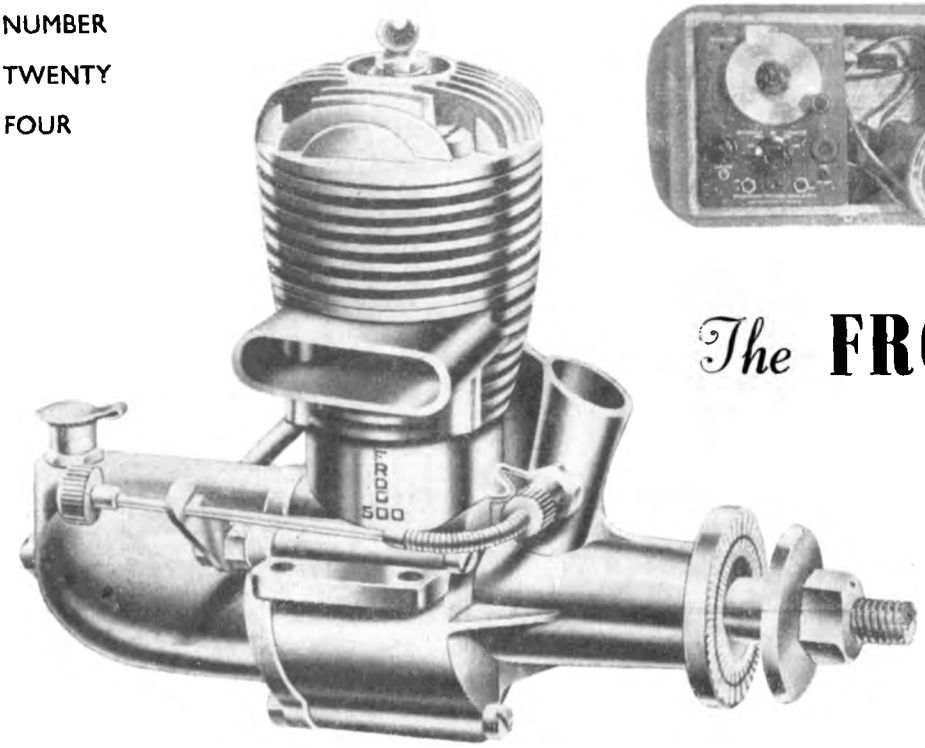
"Seize him, guards, and thrust him deep
Into the darkest dungeon keep.
Where detained at the People's pleasure
Will give him time in ample measure
To purge his mind of all affinities
With such West-inspired obscenities.
Ultimately his trial to stand
For actions anti-Fatherland".

Arraigned before the People's Session
Little Ivan made confession—
Disclosure of such monstrous guilt
That made the hardened judges wilt.
So sad to relate, Little Ivan's name
Will never grace a record claim,
For one cold morning, white and tremblin'
They shot him—just outside the Kremlin.

L. Ranston.

NUMBER
TWENTY
FOUR

The FROG "500"

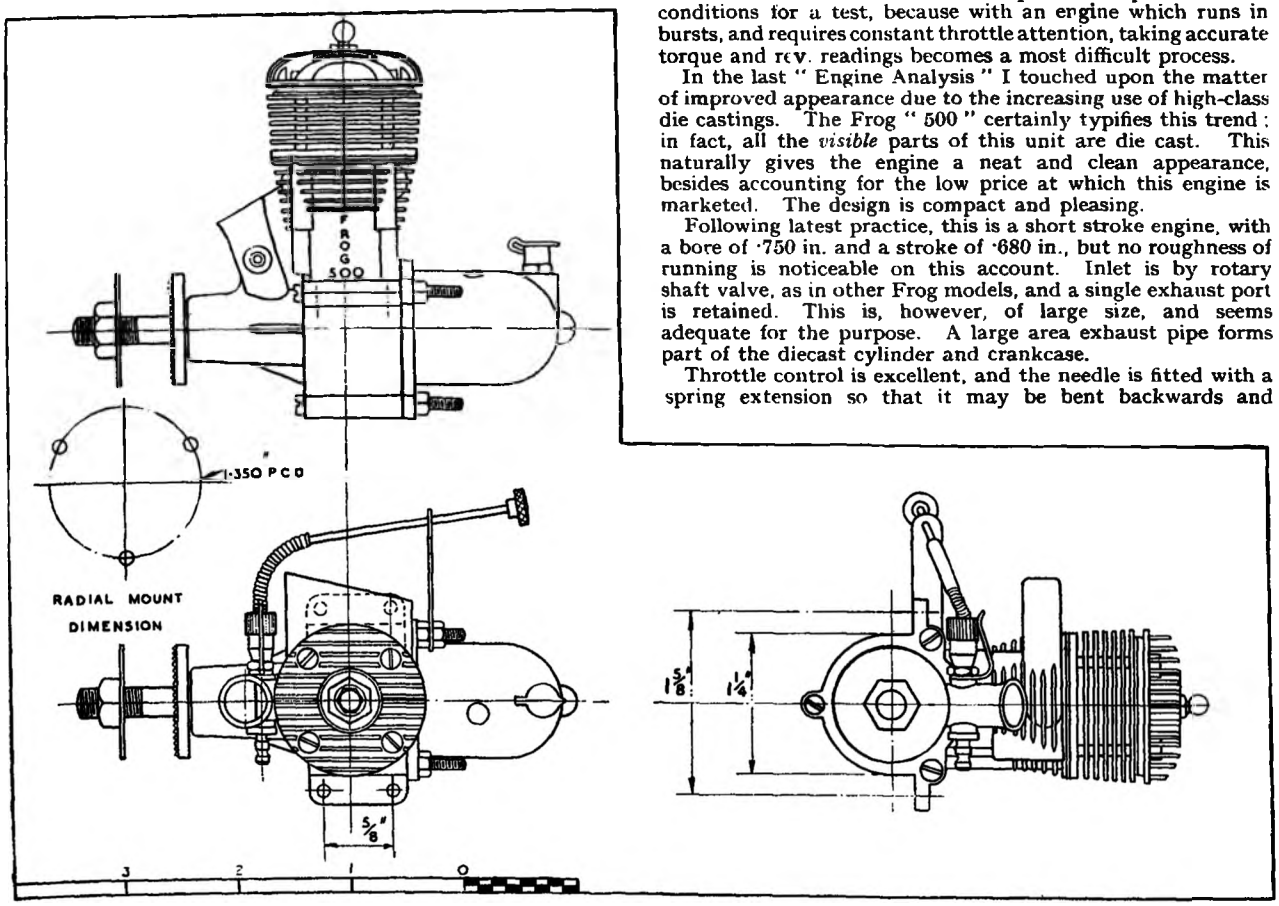


IN common with the other engines of the Frog range which I have tested, the "500" was a very nice engine to handle on the test stand. This manufacturer has an unfailing knack of making engines which run smoothly and evenly over a large range of speeds, and even when pushed above the 15,000 r.p.m. mark — with the b.h.p. falling rapidly — it purred with the same confidence as it did at 6,000 r.p.m. This provides ideal conditions for a test, because with an engine which runs in bursts, and requires constant throttle attention, taking accurate torque and rev. readings becomes a most difficult process.

In the last "Engine Analysis" I touched upon the matter of improved appearance due to the increasing use of high-class die castings. The Frog "500" certainly typifies this trend; in fact, all the *visible* parts of this unit are die cast. This naturally gives the engine a neat and clean appearance, besides accounting for the low price at which this engine is marketed. The design is compact and pleasing.

Following latest practice, this is a short stroke engine, with a bore of ·750 in. and a stroke of ·680 in., but no roughness of running is noticeable on this account. Inlet is by rotary shaft valve, as in other Frog models, and a single exhaust port is retained. This is, however, of large size, and seems adequate for the purpose. A large area exhaust pipe forms part of the diecast cylinder and crankcase.

Throttle control is excellent, and the needle is fitted with a spring extension so that it may be bent backwards and



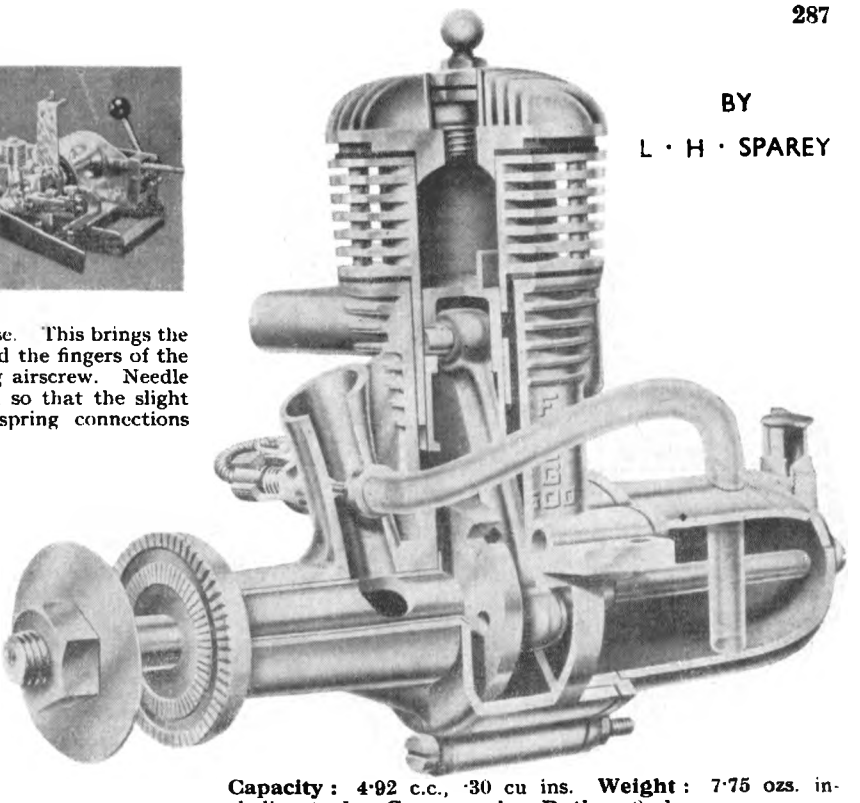
BY

L · H · SPAREY

hooked into a clip attached to the crankcase. This brings the control knob to the rear of the engine, and the fingers of the operator are well away from the spinning airscrew. Needle setting does not seem to be over critical, so that the slight "sponginess" usually associated with spring connections becomes no handicap.

As is usual with glow-plug engines, starting is good, the engine will start and run even if the needle control is badly out of adjustment.

The engine is supplied complete with fuel tank attached to the rear cover of the crankcase. By releasing one bolt, the tank may be rotated should it be desired to run inverted or upon its side. An unusual feature is that the fuel tank has no nipple to which the flexible petrol tubing may be attached. The tube is simply pushed into a hole in the tank, and forms a tight-fitting connection, which is neat and efficient.

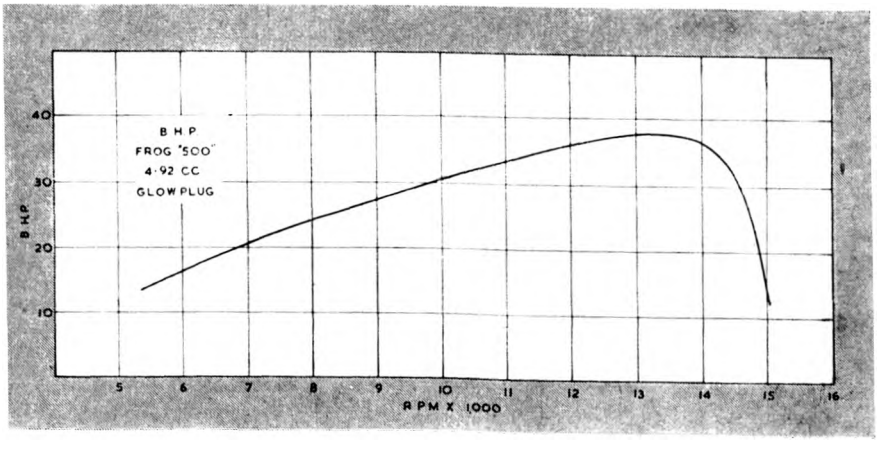


TEST

Engine : Frog " 500 " " Red Glow " : 4·92 c.c. glowplug.
Fuel : Frog " Red Glow " glowplug fuel.
Starting : Pulley and cord for convenience of test, but experimentally hand-started from time to time. Excellent at all times and in all conditions.
Running : This engine is remarkable for its extreme flexibility, as it ran smoothly and evenly at all speeds from 4,500 to 15,000 r.p.m.
B.H.P. : The engine shows an extremely good performance as it will be noted that a maximum b.h.p. of almost ·400 was attained. Actual figure was ·381 b.h.p. at the very useful speed of 13,300 r.p.m. Further increase in speed lowers the output, until at 14,300 it is down to ·340 b.h.p. Beyond this the output falls rapidly, so that at 15,000 r.p.m. the b.h.p. is only ·130. The graph shows that the efficient range of speeds lies between 12 and 14,000 r.p.m.; a drop from maximum of only ·020 b.h.p. is experienced between these points.
Checked Weight : 7·5 ozs. with tank.
Power/Weight Ratio : ·320 b.h.p./lb.
Remarks : The engine was purchased at random from a retail shop, and was run-in for ½ hour at 4,000 r.p.m. No trouble or mechanical failure was experienced throughout the tests. It should be noted that the manufacturers state that the weight of the engine is 7·75 ozs.

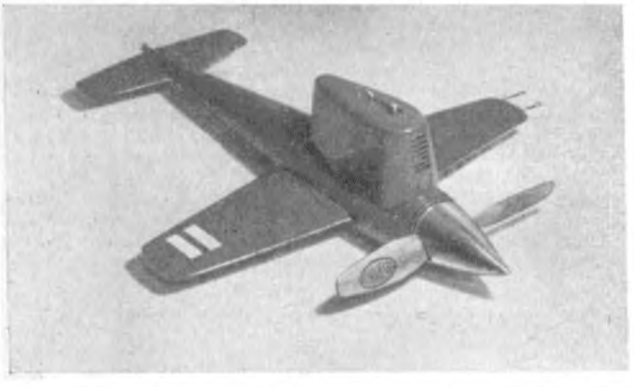
GENERAL STRUCTURAL DATA

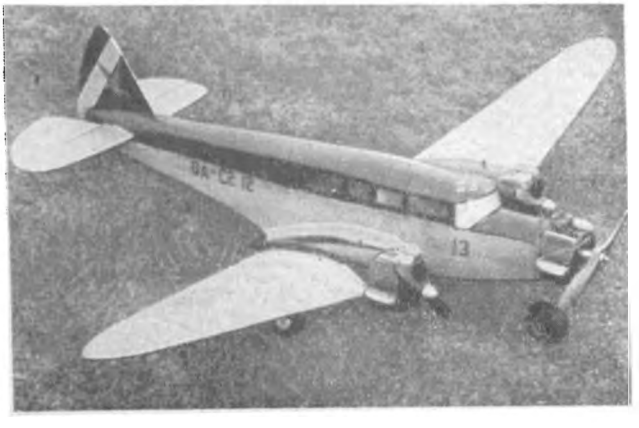
Name : Frog 500.
Manufacturers : International Model Aircraft Ltd., Morden Road, Merton, London, S.W.19.
Retail Price : 75/-.
Delivery : ex-stock.
Spares : ex-stock.
Type : Gloplug.
Specified Fuel : Frog " Redglow ".
Capacity : 4·92 c.c., ·30 cu ins. **Weight :** 7·75 ozs. including tank. **Compression Ratio :** 8 : 1.
Mounting : Beam or Radial, upright or inverted.
Recommended Airscrews : Free Flight : 10×6 ins., 11×5 ins., 11×6 ins. Control Line : 9×6 ins., 10×6 ins
Flywheel : 2×7/16 ins., 5 ozs. weight.
Tank : Detachable, universal mounting.
Bore : ·750 ins. **Stroke :** ·680 ins.
Cylinder : Hardened steel. Retained by 4 6B.A. screws deep spiggoted to crankcase. 1 transfer port, 1 exhaust port.
Cylinder Head : Diecast Aluminium. Retained by 4 screws to cylinder. **Crankcase :** Diecast Aluminium.
Piston : Meehanite. Deflector type. No rings.
Connecting Rod : Forged Hyduminium, R.R.56.
Crankpin Bearing : Plain. Drilled for con. rod retaining pin. **Crankshaft :** Hardened steel, ground and honed.
Main Bearing : Phosphor Bronze honed.
Little End Bearing : Plain. **Gloplug :** ¼ in. short reach, K.L.G. " Miniglow "
Special Features : Flexibility, with high power output. All parts machined to fine limits to ensure interchangeability Contact breaker assembly available shortly for spark ignition



MODEL NEWS

SELECTED ITEMS BY FLIAR PHIL





THIS month, Fliar Phil is happy to bestow the title of "Models of the Month" upon the two exquisite little 1/72nd scale models shown in the photograph appearing at top right, which was sent to us by P. L. Gray of Luton.

The one on the right is of the well known Hannoveranna CL..III, and the other is a Halberstadt CL.II—two machines of German design which attained fame during the 1914–18 World War. Mr. Gray, who submitted the photograph in response to Fliar Phil's recent plea for more "solids," says that he built them with the aid of plans appearing in "The Book of 1914–18 Aircraft" whilst confined to bed. Every part of them is home-made including the wheels, and the "occupants" were faked together from safety match heads and plasticene. They are both finished in the characteristic "lozenge" camouflage pattern of the period—a mixture of green, mauve, brown and orange coloured patches, with black crosses on a white background. The photograph was taken by a friend, Mr. K. Wingrove also of Luton.

Starting with the picture at top left, we have a 42 in. wing span duration model by Mr. Wood, who flew proxy for Walters of Canada in last year's Wakefield Competition at Cranfield. Impressed by the performance of N. McKay's Canadian Wakefield entry, which placed twelth, Mr. Wood has been working on this pylon style lay-out since last August, Fairlopian visitors will recognise this characteristic attitude of a job that should place well in the 1950 eliminations. The model has a two-bladed folding airscrew, Davis wing section, and the photograph was taken by E. Stoffel of Ilford, a regular contributor to these pages.

Below this, we have one of the baby class 1 speed control liners by E. P. Edwards of Braintree, Essex. This machine, which reader Edwards has christened "Hot Roger," has a length of 15½ ins. and a span of only 10¾ ins. At the moment it is powered by a Mills 1·3 c.c. diesel, but at a later date Mr. Edwards aims to instal an Albon Arrow. In the hope that he may get similar results from other builders who have the goods but who fight shy of the photographic angle, Fliar Phil supplies the following photographic gen:—Time exposure of two seconds at lens aperture F.16 with a single 100 watt lamp suitably placed and using Plus X roll film.

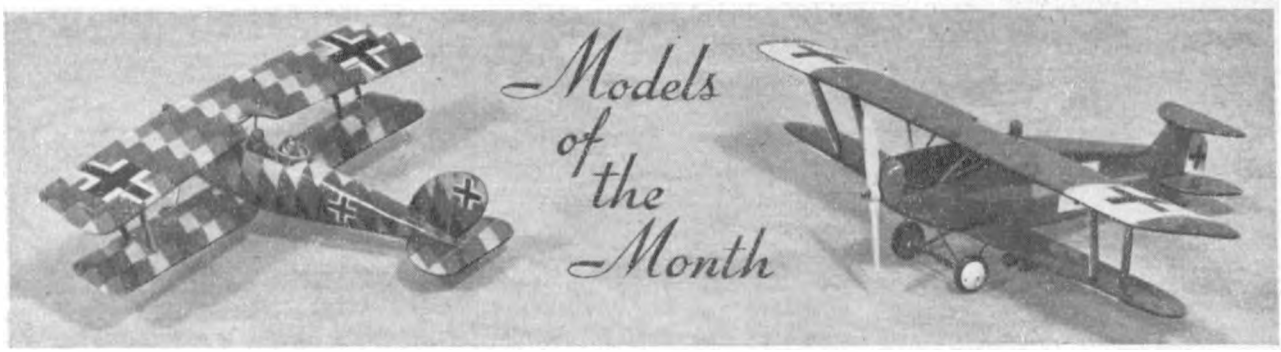
The machine shown at lower left is an ambitious free lance semi-scale powered flying design by F. Banks of Rotherham, Yorks. Bearing a strong resemblance to an Airspeed Envoy, the model has a tricycle undercarriage and is powered by two E.D. "Bees" and an Amco 3·5 c.c., the latter being located in the extreme nose, and the E.D. "Bees" situated one in each wing nacelle. "Golden Eagle" as the model is named, has undergone its flying tests successfully, and has even showed itself capable of assymetric flight—as proved by a photograph which Mr. Banks sent us showing the model in flight with one outboard motor stopped. Technical aeromods may care to work out whether or not the Amco is doing all the work in spite of the two E.D. motors.

It should be quite a calculation to work out which motor shall have what diameter propellor and which pitch to get them all plugging away efficiently at cruising speed. Congratulations to Mr. Banks for producing our first "Triplette."

The photograph shown here is the work of R. Cooke, also a member of the Rotherham and District M.F.C.

The gentleman supporting the outsize in sailplanes is Sonny Colquhoun, Chief Launcher, right and left-hand man to the constructor, Mr. W. Meacham of Glasgow. The model is, of course, Fillon's well known "Champion" design. Reader Meacham tells us that on the first occasion that he entered the machine in a competition it pulled off second place in the Concours as well as making the best flight of the day—at Edinburgh in 1948. In 1949 it won the Bathgate Cup and was second at the Ayr Association Rally. Towards the end of the season, however, the machine was getting somewhat heavy with successive coats of dope, and it had to be content with a mere 4th or 5th place at the Scottish Glider Championships. In spite of this load factor, the model pulled itself together, so to speak, and won the Edinburgh Glider Competition last year for the second time running. George Howard, also a member of the Paisley Club, took the photograph.

At lower right we have a nicely posed photograph which was sent to us by an Australian reader, D. G. Davis of Yarrowonga,



Victoria, showing a Mills-powered " Wren " built from A.P.S. plans. Born with a razor blade in one hand, reader Davis has been balsa butchering ever since he can remember and has tackled nearly every branch of the game during that time—being converted to powered scale models by his success with the " Wren." The model is finished in a red and aluminium colour scheme—complete with " borrowed " Australian registration letters !

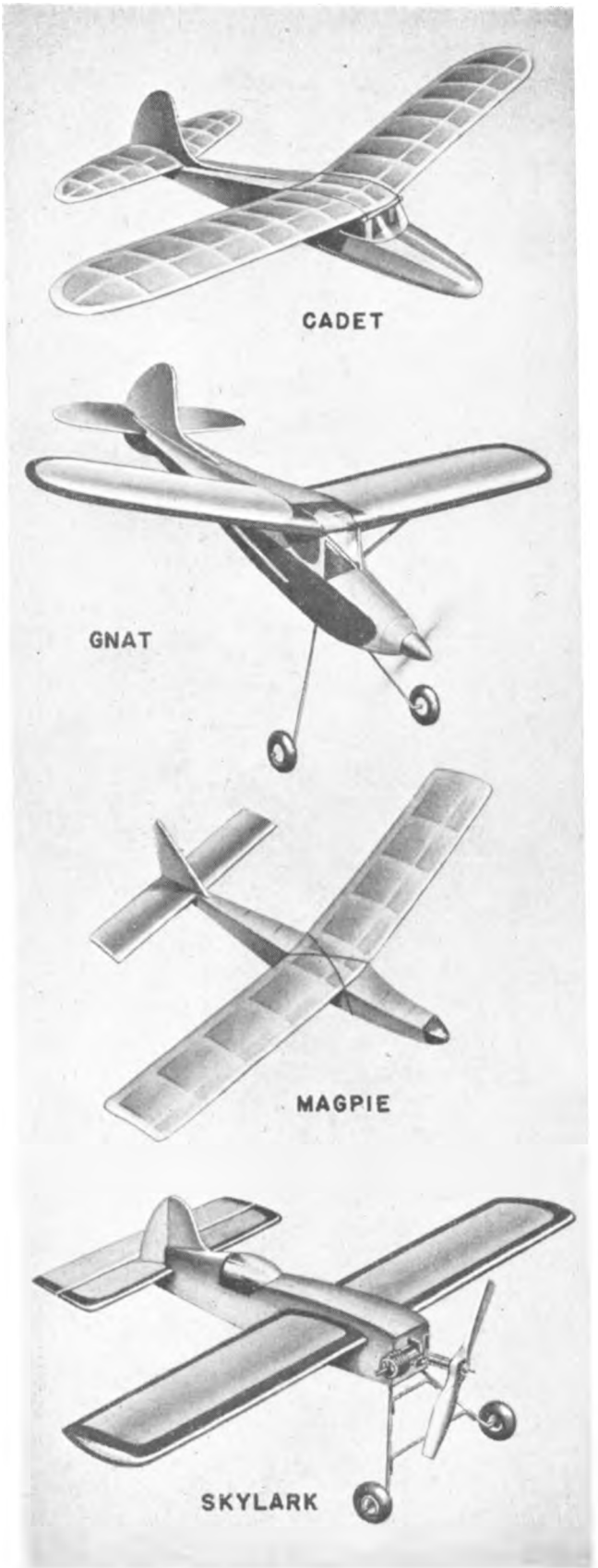
English Diesels and A.P.S. drawings are very popular with the boys " down under " we notice.

Finally, a fine action picture by H. W. Hyde, of Hampton Hill, Middlesex, showing C. H. Wollington, competition secretary of the West Middlesex M.F.C., launching his " Timer's Nightmare "—a 34 in. wing span competition power model built from plans appearing in the " AERO-MODELLER ANNUAL." The engine is a ·75 c.c. Mills Diesel. Photographic gen :—Exposure 1/250th secs. at F.8, using Super XX cut film.

Oh !—your Fliar nearly forgot to mention his model shop depicted in souper detail up there in the top left corner, where we came in. Why not call round some time—we would enjoy fleecing you. This month we are offering magnificent free presentation jars of never-dry colour dope with each purchase of our wonderful new pre-dried cement tube, price only five razor blades or two satin walnut washstand legs per tube. If you happen to have an old dining table, dressing table top or a nice line in wardrobe doors you might be presented with the shop and contents. Our new su-potent, trigonometric nitrated, frustrated and bacteriarised fuel, which Fliar Phil personally guarantees, if you want power, speed, high revs. and easy starting, is now in the course of development and first issues should be ready early in the 1953 season. At the moment your ignoble scribe is awaiting replies to his widespread adverts. for platinum wedge tanks . . . it seems to be the only F.P. fuel resistant metal.

In conclusion, Fliar Phil would like to renew his request for more and better model photographs. At the commencement of the flying season there should be scores of models as yet unsullied by contact with the flying field, so now's the time, chaps—take 'em before it's too late !

TRADE



WE are pleased to be able to offer readers a more varied selection of kits in this Review, thanks to the manufacturers who have sent them in, and it will, doubtless, meet with the approval of many to see gliders, rubber and power duration holding their own with controliners.

To make a logical start with beginners' models, the KEIL KRAFT "CADET," manufactured by E. KEIL & CO. LTD., London, E.2, sells at 4/-. It is a semi-scale glider of 30 in. span with very pleasing lines, and no difficulties in either construction or flying should be experienced by the veriest beginner. The combination of clear plan and detailed step-by-step instructions take care of the whole procedure, from cutting the first piece of wood, to tow-launching the finished model. The kit contains all necessary parts printed on good balsa sheet, in thin, clean black lines. Plenty of strip wood of accurate section is supplied, also rag tissue for covering, dowel and wire, shaped celluloid for cabin windows, a tube of balsa cement and coloured transfers. Test flights proved the model to be well up to the high standard claimed by the manufacturer. Just the job for that first model and very good value. Rating *****

The MODEL SHOP, Newcastle-on-Tyne, put out the "M.S." "GNAT," a semi-scale rubber-powered model, very suitable for the beginner. It is a high-wing cabin job of orthodox construction and pleasing appearance. The wing-span is 20 ins. and the completed model weighs only 2 ounces. The price is right for this one, too, at 4/6. The airscrew, spinner and shaft are supplied in one finished unit, the fuselage sides, tailplane, fin and front decking are pre-cut, ribs, formers, and gussets are printed on sheet. There is ample strip balsa, all necessary hardware, plastic wheels, tissue, tissue paste and balsa cement, in fact, everything necessary. The plan is clear and well covered with building instructions. We have only one criticism: since there is no provision for altering the wing and tail position, we found a tendency to spin to the right very difficult to check. A pity that the pleasing lines of the design could not have incorporated some method of trimming adjustment. Rating ****

Another beginners' glider is the "MAGPIE" by MERCURY MODELS, London, N.7. This is of 24 in. span with slabsided fuselage and parallel chord wings and tailplane. The price is low, 3/9, and the kit is absolutely complete. Wing ribs are printed on sheet, Solarbo balsa being used and the trailing edges are pre-shaped. Pre-cut trim tab, nose block and sufficient strip are supplied, as are tissue, celluloid and cement. The plan and building instructions are done in the straightforward way usual with this firm, and the kit is very good value for the money. This is one model that is as simple to trim and fly as it is to make. Good results are guaranteed for the rawest beginner. Rating *****

While not designed, primarily, as a beginners' model, the "SKYLARK" STUNT CONTROLINER, ROADWAY MODELS, New Malden, Surrey, is of simple construction from a, largely, prefabricated kit. While it will perform all the stunts when suitably powered, it is of sufficiently robust construction to stand up to some hard knocks. The price of this very complete kit is 17/6 and the model was designed for radially-mounted engines weighing 4–4½ ounces. This gives it a varied range of possible power units, with accompanying variety of performance. All fuselage parts, tail unit and wing trailing edges are pre-cut, wing ribs are printed on sheet and all parts have their position in the construction printed on them. The wheels are solid rubber, brass-bushed, all hardware, including dural bellcrank, is supplied, also hinge tape, celluloid, tissue and cement, and, of course, the plan. Yet another kit which shows the improvement of quality and value now evident in British model aircraft manufacture, this one also contains a Stant airscrew. An economy kit for the same model is also on the market, complete, save for airscrew and cement, at 12/-. We found some discrepancies when trying to match parts of this kit; but flying tests proved it

REVIEW

to be a "book" stunter when fitted with an Elfin 1·8 c.c. With an Amco 3·5 c.c. it should be faster but is definitely small for stunting. Rating ****

Brian Hewitt won the 1949 Gold Trophy by a polished performance with his "STUNT KING," now kitted by E. KEIL & CO., at 18/6. The model was designed for the Yulon and gives an excellent performance with the Amco 3·5, as it would, no doubt, with the Frog 500. The kit has pre-cut tailplane, elevator and fin, printed parts on balsa and ply, hardware, wheels, everything, in fact, to build this advanced Stunt job. The design incorporates all known devices to keep the model out on the lines in any manœuvre and wing flaps cut out "mushing," however tightly it is looped. The plan and building instructions leaflet have the usual Keil Kraft clarity and greatly simplify the construction. Flying the model the performance gave us no evidence to doubt that this is a true replica of the original trophy winner. Rating *****

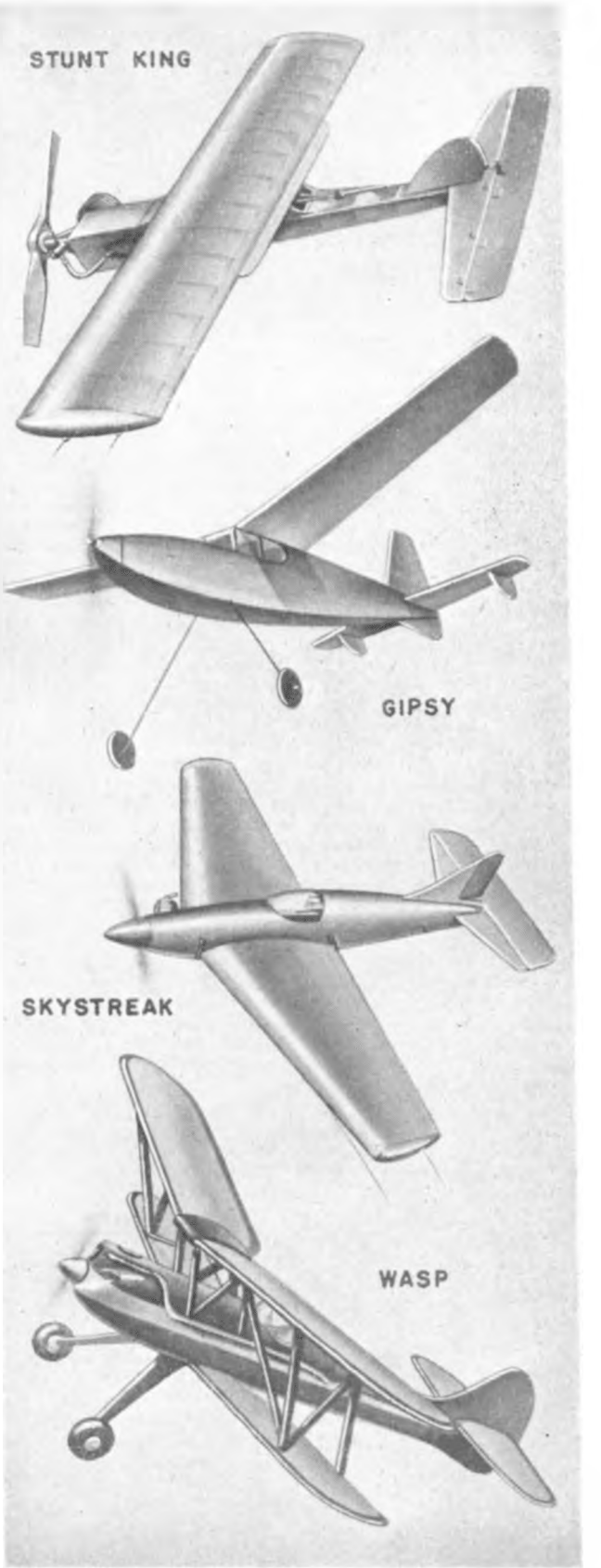
Rubber enthusiasts and Wakefield fans, in particular, are catered for with the "GIPSY," a KEIL KRAFT contribution to this Review. The span of this model is 40 ins., the all-up weight 8 ozs. and with a wing area of exactly 200 sq. ins., "Gipsy" comes in the lower limits of the Wakefield Specification. The fuselage is of conventional boxframe construction and the flying surfaces feature warp-resistant build-up. The price of this kit is 10/6 and it should be of interest to the expert and the not-so-expert, alike. The very complete kit contains all necessary parts printed on three sheets of balsa, plenty of strip and block, part finished 17 in. sawcut balsa prop., celluloid for cabin, part preformed undercarriage and other wire, streamlined hardwood wheels, brass bushes, etc., sandpaper and transfers. A clear plan and building instructions complete another A.1 kit. Substitution of 1/20th rubber instead of 1/24th improves the performance considerably. Flying tests require no alteration from design settings for excellent high average flights. Rating *****

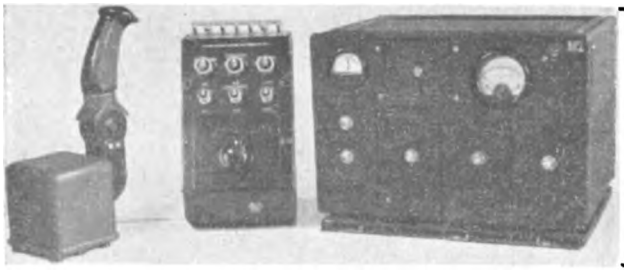
Another KEIL KRAFT product, their latest Stunt model, is the "SKYSTREAK," for engines in the ·75 to 1 c.c. range. With pleasing supersonic lines this job is an attractive proposition for the smaller motor owner at 9/6. The span of the model is 26 ins., wing area 120 sq. ins. and the all-up weight under 6½ ozs. All parts are clearly printed on balsa and ply, there is plenty of strip and block, hardwood engine bearers, celluloid cockpit canopy, nuts, bolts and washers, tissue, wire, tape, tin plate, sandpaper, plan showing several motor installations, numbered building instructions and flying hints. To do the complete stunt schedule with the 1 c.c. range of motors, one must make this job as light as possible. Only the overhead manœuvres proved difficult in our tests. Rating *****

Last, but by no means least, are the two free flight power models "WASP" and "HORNET" from the MODEL SHOP, Newcastle. These can be reviewed together, as they bear a very close relationship. Both are semi-scale jobs of 42 in. span for engines up to 1 c.c. and they have identical fuselages and tail surfaces. "Wasp" has a parasol wing, while "Hornet" is a biplane. They are both attractive models of realistic appearance, the kits are priced at 19/6 and 22/6 respectively, there being rather more material in that for the biplane. These models are good looking in the air and for that reason they more than justify their more complex construction.

The kits comprise pre-cut and printed balsa and ply, extra sheet, ample strip and dowels, celluloid sheet, wire, rag tissue, plastic tubing, plastic spinner, balsa and tissue cement and a clear and detailed plan. For 5/- extra, a pair of "M.S." "SUPERLITE" AIR WHEELS, with special adaptor for inflation, would give the finishing touch to either of these very nice models. Rating *****

In the next issue of Trade Review we shall present the many new accessories that have recently appeared in the model market.





The L.S.A.R.A. Radio Control Project

REPORT FROM P. R. PAYNE.

FOR some time now the L.S.A.R.A. has been working on a project for a Radio Controlled aerodynamic research aircraft. Considerable progress has been made and it is hoped to have a set providing three proportional control channels and a twelve position sequence switch early in the year.

Before design was started a thorough investigation of the various control methods available was made, and it was decided to use a time modulated sub-carrier proportional system for the three flying controls, and a multi-position sequence switch for ancilliary controls. It was felt from the start that the simple sequence operation of the control surfaces such as is used in most commercial sets was quite inadequate for all but some specialised work, also, it was necessary that at least two, and preferably all three flying controls should be capable of simultaneous movement. It was decided therefore to use a separate sub-carrier for each flying control and a fourth for the operation of the sequence switch. Amplitude modulation of the sub-carriers was discarded because of the impossible demands it makes on the automatic gain control circuits on the receiver (Ref. 1), and the choice finally made was to use a special case of the pulse length modulation system In order to keep down the size and weight of the inductances used in the discriminator, the sub-carrier frequencies should be as high as possible, so, because of the Post Office band width limitations, it was seen that it would be necessary to work in the 464–465 Mc/s R.F. band. As very little of the work done in this U.H.F. region has been written up, the Association was obliged to embark on a research programme to decide on and develop techniques of oscillator and receiver design. This accounts for most of the 2 years' delay between the start of the project and the target date for completion of the first aircraft. During the past month, however, we have been fortunate in enlisting the help of two radio amateurs with practical experience of the 464–465 Mc/s band, who were closely connected with the development of the radio controlled D.U.K.W. shown at this years Model Engineers' Exhibition. This first aircraft will be fitted with a super-regenerative receiver, which fills the requirements for a sensitive broad band detector with a marked A.G.C. action, and also discrimination against pulse type interference.

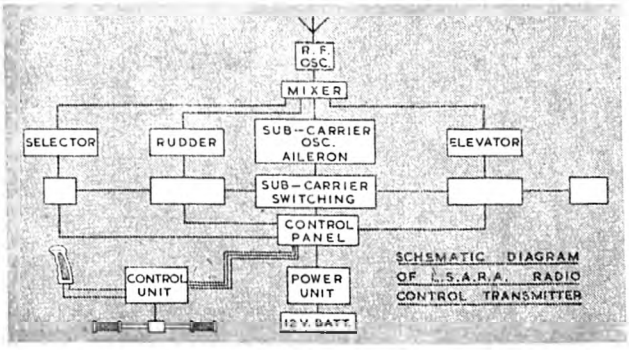
In a project of this kind, where the radio control of the model is not in itself an end but only the means to an end, the overriding requirements must be reliability even at the expense of large increases in weight.

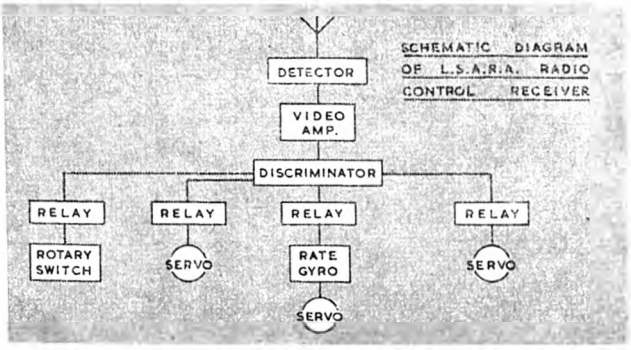
At an early stage in the work it was thought that the radio controlled model was an accomplished thing; after all Nikola Tesla had demonstrated a radio controlled boat at New York in 1898 and during the years between the wars several people had built and flown successful model aircraft, also there was the full scale Queen Bee on which a lot of useful work was done in the 1930's. However, on investigation it was found that all these were in reality only partly controlled, in that the surfaces moved in steps selected by a sequence switch, and were not moved proportionally by a pilot on the ground equipped with a conventional set of flying controls. In fact, it was not until the 1939 war, when the Germans required such a system for a Guided Missile, that a reliable form of proportional control was developed. In 1945–46 the Vultee Aircraft Corporation of America used a fully controlled model flying boat for spray pattern research and good agreement with full scale results was achieved

In the system adopted by the L.S.A.R.A. control position information is transmitted to the aircraft by means of a pulsed sub-carrier, in which the pulse to space ratio is proportional to the required control position, with a ratio of 1 : 1 being zero. As this is a time modulation, as long as the signal reaching the aircraft is more than a certain minimum, the correct information is received regardless of amplitude variations caused by range changes and battery drain. Once this information has been received in the aircraft, it must be sorted out from the other control signals which are arriving at the same time. This is done by a frequency conscious circuit known as the discriminator. It is then rectified and either smoothed, to provide a D.C. voltage proportional to control position, or as in the system to be used in the first aircraft, used to switch the servo motor directly at the pulse frequency to provide a rate proportional to demand.

At the time of writing the 465 Mc/s transmitter and power supplies have been built and partially tested and work is proceeding on the receiver and pilot's controls. A light-weight two channel 28 Mc/s set is also under construction and has reached a similar state.

Two aircraft are being built, R.C. No. 1, a 6 ft. 6 in. Ohlsson powered tailless which was shown partly completed at the 1948 Model Engineers' Exhibition, and R.C. No. 2 (which will be the first to fly) a 7 ft. 0 in. low winged "flying box car" fitted with a Contestor engine. Both these aircraft have 4 wheeled undercarts for maximum stability on the ground. R.C. 2 will be used as a test bed for all the variations of controls and servos, to say nothing of automatics, that we can devise.





A PREFACE to this feature was supplied in the Editorial of the March issue, when the Editor asked for news items and photographs from Overseas readers. The idea of a regular collection of interesting tit bits from all over the World, was born out of the satisfactory reception of the writings of the late lamented " Boffin ".

Thanks to the complete release of paper from control, it now becomes possible to use the letters, articles, newspaper cuttings and photographs sent in to us, and present a comprehensive selection of World Wide Model Aircraft activity.

After which preamble, the deed is suited to the word and—the Atomic Age Sprite alights in the first country on its travels.

Israel. A letter from N. Kadman-Kaufmann of Romea, Jerusalem, tells us that aeromodelling is very much alive in his country. It has been accepted as part of the training of some Air Force personnel and youth groups similar to our A.T.C. The activities of the Israel Aero Club are directed, primarily, at the boys and girls of school age, but the A.T.C. groups are all connected with this Club. A few standard training types are being built by all organised modellers in the country, the primary model being a 22 ins. span all balsa solid glider. The best time put up by this model in 1949 was 3 minutes. A 48 ins. span intermediate glider did 18 : 35.

At present both rubber and power models have appeared only in small numbers, some being flown by Dr. Sultan and Dr. Tobias Syne of Tel-Aviv, Mr. D. Schleissner of Rehovot and our correspondent. Mr. Kadman-Kaufmann, who is studying physics at the Jerusalem University, has been prevented from doing much modelling during the preceding two years by Air Force work. Our old friend Dr. Piatalli is fully occupied at present with full scale work. Israel is contemplating sending a team to this year's Wakefield.

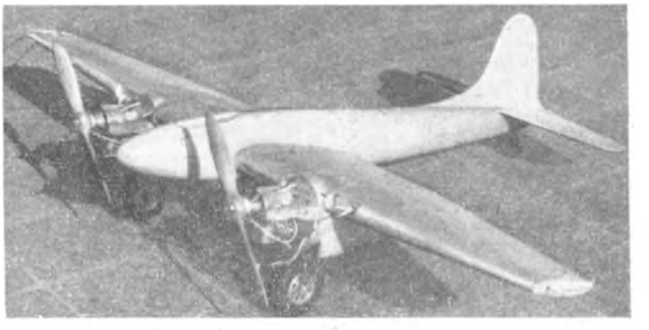
New Zealand. Ronald S. Freeman, Hon. Sec. of the Hutt Valley Aeromodellers, Wellington, sent us a copy of the " Balsa Butchers Bulletin " edited by " Tailskid " Peter Carter. This reports the Christmas activities and what with a Stunt contest, Supper and Pete Carter's magical act on one evening and another C/L meeting the following day flown in a strong wind, (we know something about that too), a good time seems to have been had by all. The usual unexpected happened on more than one occasion and the well known " Get off those—— lines " was the most unpopular phrase of the evening.

Club member Brian Roots has coined an apt phrase with application beyond Hutt Valley, " Everyone flying nothing at all, and very little of that ".

Ronald Freeman gives us news of the Nationals which were reported fully in the April Aeromodeller. He tells us that the free flight gassies in the same thermal with a hawk hovering above them was a sight well worth watching.

Top photo shows New Zealand correspondent, Ranald Freeman, with his Redhead Juggernaut jet model.

Dr. (Engineering) Tobias Syne, of Tel Aviv, one of Israel's Power modellers, poses a model with a small part of his country's wide open spaces as a background.



The twin-engined control line model above, right, is a scale " Naneu," long range fighter. Design and construction by " Aeronautica Argentina," span is 48 inches, power, two Ohlsson 60's. The model was built at the " Experimental Centre for Model Aircraft " in Buenos Aires.

Bottom photo is from the U.S.S.R. and shows M. Vasilchenko, right, a senior model aircraft instructor and World Record Holder, inspecting a model built by V. Yakovlev, left, holder of two Soviet indoor records in 1948 and 1949.

Control Line " pilot ", below, is Roux van der Merwe, Secretary of the Grahamstown M.A.C., South Africa. His American Stunt job is powered with the ever-popular Ohlsson 60, lapping at 55 to 60 m.p.h.

Australia. From New Zealand's nearest neighbour are some details of the Control Line speed record made by 22 year-old Alan Lim Joon. A draughtsman in the engineering drawing office of the Government's aircraft factory at Fishermens bend, Victoria, he will be remembered as a member of the 1949 Wakefield team. His class C speed record of 124 m.p.h. was obtained with a McCoy 49 powered 60 sq. ins. job of his own design. During his eight years of aeromodelling Alan Lim Joon has built hundreds of model aircraft, and his record breaker took him some 60 hours to construct. When putting up the speed of 124 m.p.h. in April last, he was breaking his own previous record of 116 m.p.h. (Photo Left).

Malaya. To aeromodellers in the Malayan States the following will no longer be news, as it consists of details of the first All Malayan Competition held at Kuala Lumpur, the Federal capital, in August last. We have been unable to present it before this, but feel that it is still of sufficient interest to merit inclusion.

The Selangor Modelcraft Society was in charge of the arrangements, and the report was sent in to us by Mr. G. S. Gill. Thirty-four competitors entered and flew or exhibited 64 models. The first and second in the Wakefield Class were taken by brothers Wong Mook Kin and Wong Shook Kin of the Penang club, with aggregates of 10 minutes 18·4 seconds and 6 minutes 50 seconds respectively. The latter brother lost his model o.o.s. on its second flight. Selangor held its own with H. G. Beverley's flight of the 5 minutes maximum time allowed (it flew o.o.s. in 11 minutes 30 seconds in the first round), nine year old Christopher Powell Evans being second with an aggregate of 3 minutes 37 seconds. Of the two competitors in the C.O.2 class Douglas Lee was the winner.

J. H. Gibbon of the R.A.F. won the free flight power. Heavy rain threatened to wash out the Control line event, but accompanied by the international trouble of awkward engines it was flown and won by Lim Chui Boo of Kuala Lumpur in one class, H. G. Beverley in another and the same competitor proved top man in the third and most advanced class also, which qualified him as the best stunt " pilot " of the day.

Our correspondent tells us that at that time stunt C/L was not very advanced in Malaya, loops and wing overs being about the best attained.

The Concours D'Elegance, judged by the public, was won by a Frog " Centurion " belonging to Dr. Fonseka and built by J. F. Giffening.

Penang won the Interstate championship with Selangor a close second and Singapore a very unlucky third.

Malta G. C. A letter and a photograph of his Frog " Star Dust " received from Joe Caruana of Sliema, brings us to the Mediterranean in one swift hop. He tells us that there are no aeromodelling clubs on the island, and that the hobby has not yet gained any great popularity. He is a member of a group of Air Scouts, about twelve in number, which was formed some three years ago. Flying space is very restricted and they fly only on Saturdays (weather permitting !) on a service aerodrome by kind permission of the authorities.

Finland. From the Finnish Aeronautical Association . . . to date preliminary entries for the Wakefield have been received from all over Europe as well as from America, South Africa and New Zealand. The Association look forward very much to the first International contest to be held in their country.

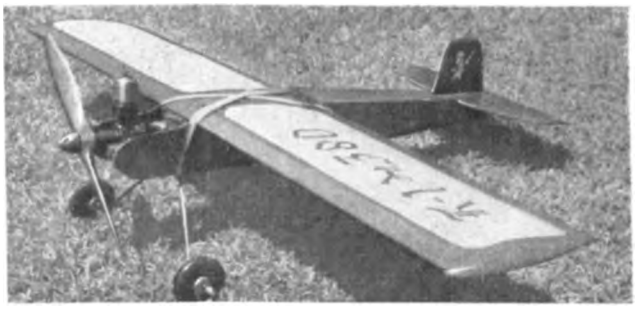
Sweden. Report on the annual Swedish winter contest sent in by Karl-Sul-Petterssen of Eskilstuna, is to hand this month. Run with the co-operation of the Royal Swedish Aero Club, it was held this year on a frozen lake at Siljan, on February 12th. There were 82 entries, 110 models in all,

Left, a part of the contestants and supporters at the First All Malayan Competition, photographed on the Racecourse at Kuala Lumpur, where the events were flown. Keen modellers will recognise many popular designs among the models present.

representing 30 clubs. Both the weather and the results were most satisfactory. Nordic A2 class, Wakefield rubber and Free Flight Power were flown, the former being won by Hans Alström of Britanyi. His total time for the three flights was 853 seconds. Briji Brijesson of Goteburg, top man of the Swedish Wakefield team last year, was the winner in that class, using the same model as he flew in the Wakefield. Free Flight Power was won by Kjill-Ake Anderssen, who was Swedish Power Champion in 1945. His winning model was powered with a "Komet" 2·5 c.c. diesel, a very popular Swedish engine, second place being taken by an E.D. Comp Special powered model. The winner's times in the Wakefield and Free Flight Power classes were respectively aggregates of 463 secs. and 599 secs. In the latter classs a motor run of 20 seconds was allowed.

France. Father Amiard, France's original Aeromodelling Ambassador, sent a report of the recent Congress of Aeromodellers held in Paris. Organised by the Aero Club de Lyon, it occasioned the meeting of all the clubs in the province, some 45 altogether. The main point of the meeting was the French aeromodelling was slipping backwards instead of progressing, and the investigation into the reasons for this should be carried out immediately. More propaganda about the model aircraft movement was proposed, in an endeavour to educate the public and illustrate that model aircraft are not toys. Contact should be made with the hundreds of independent modellers who work alone, cut off from clubs and who might, it was felt, lose interest in their hobby. The Congress proposed to try to form new small groups everywhere and to join these groups to the nearest Aero Club. Also proposed by the Congress was an annual meeting for the exchange of ideas and organisation of coming events. Other propositions were the creation of certificates for modellers, with details of their activities and successes, badges to be given for good modelling, and classification of competitors into Beginners and Experts. Rules for various classes for competition purposes were also drawn up.

Father Amiard continues with his tireless instruction of young modellers and, having lost some of his more experienced pupils, has to start again with beginners.

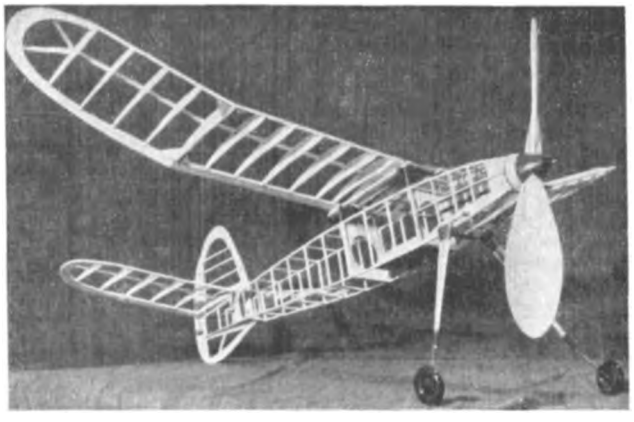


Top photo is from Hong Kong; it shows the Mills 2.4 powered Skybox, built by Kwok Chin, photograph by R. J. Wong. Powered with this motor, the builder tells us, the model does "the book."

A typical scene at a German meeting at Soltau, in the British zone, sent in by Hans Justus Meier. No details of the models or modellers, were given.

Shown right, is a reproduction of the Wakefield sticker, very attractively produced in pale blue, which graced the back of an envelope from the Finnish Aeronautical Association.

Left, is Joe Caruana's "Star Dust", the work of one of Malta's small aeromodelling contingent.



Bottom left, a group of Father Amiard's pupils and model aircraft students. Instruction through a standard glider would obviously be a successful method with beginners.

Very effective sailplane photo. from P. van der Dyk of Utrecht, on right, shows T. C. Knappstein of the Utrecht Club, with his six footer.

Holland. From Arnhem come a letter and photograph, being news of an unusual flying wing, by T. F. W. Hekking. He has named his wing "Zeis" and it is of about 9 ft. span (three metres). Among the successes to its credit it held the Dutch distance record of 7 kilometres for some time and still holds the Dutch tow-launch record with 13 minutes 38·3 seconds. A twin model, built by another member of our correspondent's club, was second in the International Tailless Meeting at Lyon, in 1948.

The photograph was taken by L. Beenker with a Kine Exactar, Tessar lens at f.5·6, exposure 1/200 sec., film Ilford H.P.3.

U.S.A. J. Stewart of Grand Prairie, Texas, sent over a batch of photographs and a copy of "Flying V News" which is published by Chance Vought Aircraft, Dallas. On page 3 of this four page news-sheet are two columns about model matters. These vary from 2 ins. span microfilm jobs with tethered flies for power, built by two of the Plant's Aerodynamicists, who also build "Wing flappers"—tiny aircraft with moving wings which fly without the assistance of insects —to rubber powered, jet propelled and radio control jobs. The reports are of the modelling doings of members of the Aircraft Plant and their families.

We were interested to learn from Jimmy Stewart's letter that, prompted by a letter in the "AEROMODELLER" of last October, he found that in Texas, Missouri and Kansas, model aircraft dealers have little time for taking part in Contests. He reckons that, in any case, members of a good active club can do better than the "Pros." in contest flying, and gives the Little Rock club, Arkansas, as a good example.

Bill Winter's latest news of the Radio control situation is that the Federal Communications Commission still refuses to grant licence free operation to model builders. A dead end seems to have been reached on all the available wave bands, although equipment has been developed for the 27 megacycle, the 52–54 megacycle and the 456 or Citizenship wave bands. It still remains necessary, therefore, to pass amateur licence examinations, in order to be able to fly R/C in the States and, as there is no special examination covering model aircraft, these include morse code which has no relationship to the needs of the R/C enthusiast.

To bring the modelling world closer together in a friendly spirit of competition, and to spread the latest knowledge and design trends from country to country, some of the American leaders in the movement would like to see more exchange contests between clubs in the U.S.A. and those in Great Britain and on the Continent. Also, with other modelling communities such as South Africa, Australia and New Zealand. By flying on the same day, clubs could exchange results by post for the final ranking of winners. As an example of what can be done by proxy flying, two Louisville, Kentucky, boys Claude Curry and Henry Dore, who sent models to the "Coup d'Hiver" Contest in Paris, took fourth, fifth and sixth positions. The models were flown by Jean Guillemard and Gabriel Martine and the two-man team gained the Challenge Inter-club award. It is understood that this is the first time that this award has left France. The special models built by the Kentucky boys for this contest were powered with 10 strands of 3/16 in. rubber 12 ins. long, turning a 12 ins. diameter prop. with a P/O ratio of 1·5 : 1. It is felt that a free flight power contest, equivalent to the Wakefield, is long overdue, for the Americans have no knowledge of any international competition in this class.

Canada. One time member of the Doncaster M.F.C., English emigrant to Canada George Alan Boyd is now secretary of the London Modelaires, London, Ontario. The "Models in Canada" article in the November 1949 "AEROMODELLER" caused a discussion in his club, as a result of which he has sent us "A more up-to-date idea of what is going on," in Ontario, at any rate. 1949 saw a big swing back to free flight, two clubs, indeed, concentrating on free flight contests only, catering for what was considered the majority. The Eaton club contest had difficulty in keeping two control line circles occupied, while the air was thick with free flight gas models; Jetex seemed to be creating considerable interest. Flying scale U-control models are still popular and quite a number of modellers have been attracted by the small gloplug engines, such as the O.K. cub. The photographs sent with this letter show that the trend is towards realistic models.

Argentine. Jetex has evidently caught on in a big way. The first units arrived in the country in January of last year and some of them were immediately taken up by the Model Aircraft Department of the Argentine Air Ministry. The Government Schools curriculum now includes Jetex for elementary instruction in the principles of jet propulsion.

A special Rally was organised by the Argentine Air Ministry for Jetex powered models exclusively, and this was held at Lerlo Aerodrome last July. There were 55 entries and a large crowd of spectators, and this only six months after the units became available.

The event was given wide publicity in the National Press, on the Newsreels and Radio and we were sent a cutting from the paper "Mundo Deportivo", which gave a full report with photographs. Further photographs were taken by Senor Juan Alegre and the details and the winners in the "100" and "200" classes and these photographs are also to hand. Unfortunately, the latter are not suitable for reproduction. Jetex "100" was won by Senorita E. Segovia and "200" by H. Gedge. Nine models were sent to compete in the I.C.I. Challenge Trophy, 1949, as reported in the November "AEROMODELLER"; they had beautiful glides but suffered because of poor power climbs.

We hope to be able to offer more up-to-date news from this country in the near future.

Space does not permit inclusion of all the items or photos in hand and we would draw the attention of intending contributors to the fact that, for good reproduction, a black and white glossy print of at least 6×4 ins. is essential.

The winner of the 1949 Italian Sailplane Contest, Macera of Leghorn. The model is of 10 feet span and has, for three years, taken first place in the principal Italian Contests.

TOWHOOKS

John Barker Debunks Offset Towhooks

A MISTAKEN idea has persisted in aeromodelling circles for many years that a towhook offset to one side of a glider fuselage will counteract the effect of rudder offset when the machine is on the towline.

This mistaken theory is, I suppose, due to looking at a plan view of the model, as in Fig. 1, where P the pull on the towline and D the drag, form a couple to turn the nose in the direction of the arrow T1. This couple is supposed to oppose the turn in direction T2, due to the rudder force F acting about the C.G.

Now consider Fig. 2 showing the glider being towed. In position 2(a), just as the glider is launched, the conditions as shown in Fig. 1 do exist to a certain extent, but this condition is momentary and the glider soon adopts a position similar to 2(b), and retains a position with similar forces acting throughout the tow. In this position the main forces acting on the glider are the resultant R of the lift and drag forces, and the opposing pull P on the towline, as shown.

Now again consider a view of the model in the direction of arrow V. This will appear as in Fig. 4. Here again the forces R and P are indicated, together with the turning force F of the fin tab. It is obvious that this fin force F will tend to turn the nose in the direction of arrow A, and the couple formed by R and P will tend to pull the left wing down in the direction of arrow B. These two forces both act to turn the model off the line to the left. This is of course the opposite effect to what is wanted.

It will be pointed out that many successful machines *do* fly with offset towhooks. The reason for this is that they possess a high degree of towline stability in any case, and also the turning moment between P and R is usually small, due to the narrowness of a glider fuselage.

They DO Work—both ways!

Says Ron Warring

WHAT happens with offset towhooks is this:—with the hook offset to one side a *forward* pull on the line yaws the model in the opposite direction, which is counteracted by rudder offset (for a circle in free flight) as in Mr. Barker's, Fig. 1. This yawing force is predominant as long as the line pull *is* markedly in a forward direction.

These conditions are maintained for the majority of the launching period—and not only during the initial stages, as Mr. Barker pre-supposes. His figure 2, for example, is not a complete diagram, as it omits both weight and (parasitic) drag forces. Furthermore there must be a resultant *forward* force to keep the glider going up. As shown in Fig. 2, the model would tend to fly *backwards*, especially as R, the resultant aerodynamic force, can never be perpendicular to the flight path, as drawn. Even balancing out P and R as drawn, if R were correctly directed the force P must be inclined farther forward. To balance out the (omitted) forces as well, *and* produce a resultant towing the model forwards, it must be inclined still farther forward.

For this reason, offset towhooks can be effective for the majority of the climb during a tow launch, but when the model come more nearly overhead and the force P is more nearly inclined to the direction shown, the yawing force induced by P *does* fall off appreciably and the tendency to roll about the point of application of P, *i.e.*, the offset towhook, takes over. If held on the line under these conditions the model may roll quite violently and spin around the line *in the direction of the offset hook*.

More usually, a model with the towhook on the left side of the fuselage, for example, with rudder offset to the left (to counteract the induced yaw) will tow up straight and then veer off to the left as it approaches the top of its climb. This variable reaction is one of the main drawbacks of the sytem and, although quite a number of really first rate glider fliers do still use offset hooks, auto-rudder devices (or their equivalent) are now much more favoured.

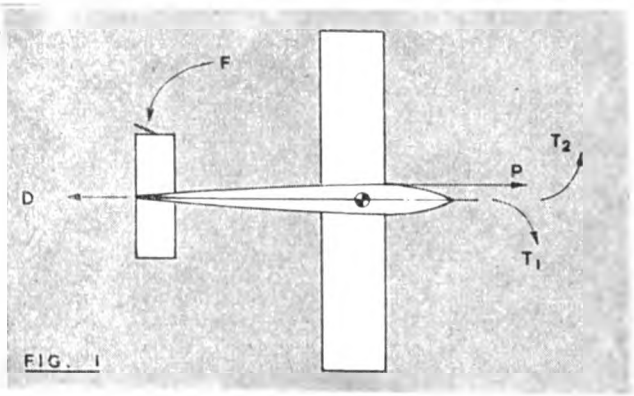


FIG. 1

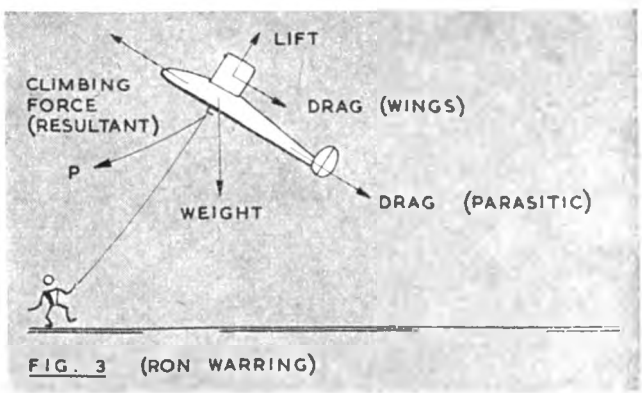


FIG. 3 (RON WARRING)

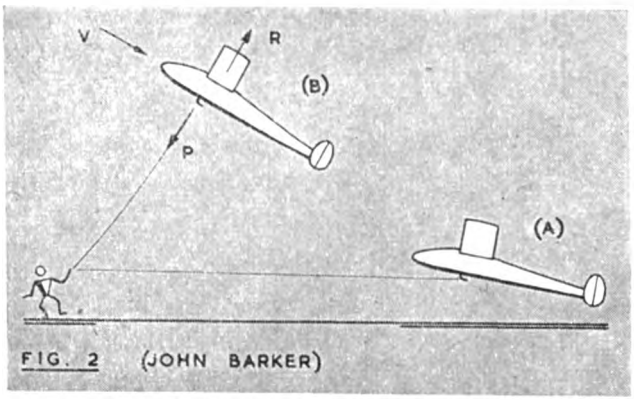


FIG. 2 (JOHN BARKER)

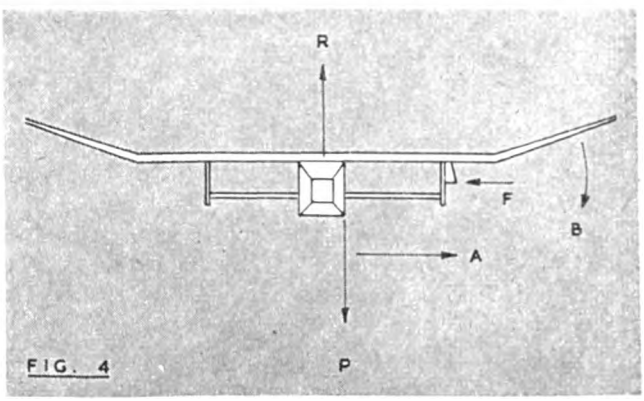
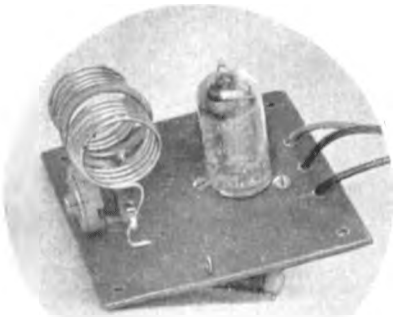
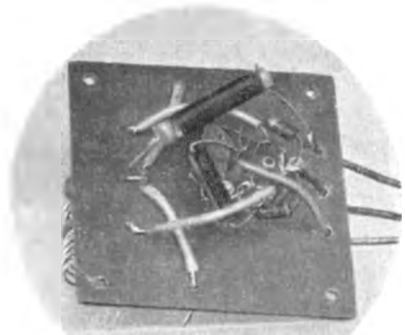


FIG. 4



RADIO CONTROL NOTES

By HOWARD BOYS



The transmitter shown left and right, is designed for home construction. It is well matched for operation with the receiver described in the next article.

LET us start this month with a bit of radio language. Take for instance the word condenser, or capacitor. Both words are used these days to describe the same thing, with capacitor gaining in popularity, for a small item of equipment that has " capacity ". It consists of two conductors spaced by some form of non-conductor usually called the di-electric, and is shown on a diagram as two parallel lines close together. See C3 and C4 in Fig. 1. If one of these lines has an arrow head, or an arrow sloping across, as C1 and C2 in Fig. 1, it means that the capacity is variable, and in this form it is often used for " tuning " a circuit. Capacity is measured in Farads, but we are usually concerned with fractions of a Farad, such as microfarads of pico-farads. Micro-farads is written mfd, and pico-farad pfd or pf, which is called " puff ". A hundred puffs equals ·0001 mfd. In the receiver circuit diagram in Fig. 1, C1 is 30 pf., C2 45 pf., C3 100 pf. and C4 ·01 mfd. Another item is the resistance, or resistor, and this is measured in ohms, the symbol being Ω. A kilo-ohm (kΩ) is a thousand ohms, and a meg Ω is a million ohms. In Fig. 1, R1 is 3·3 megohms. The zig-zag line represents a resistance, and if it has a sloping arrow through it, it means that the resistance is variable. This is also shown with a zig-zag line and an arrow touching it as at R2 in Fig. 1, the value in this case being 10,000 ohms, or 10k Ω. A variable resistance is sometimes called a potentiometer, but this is really a particular type of variable resistance in which both ends are used as well as the variable connection. Next on the list is the inductance, which is measured in Henrys or micro-henrys, or sometimes in milli-henrys. Inductances are shown at L1 and L2 in Fig. 1, and we do not often state the value, but say that L1 is 9 turns of 18 gauge wire 7/8 in. inside diameter and 1 in. long. L2 is 65 turns of 30 gauge wire wound on a ¼ in. diameter former 1¼ ins. long.

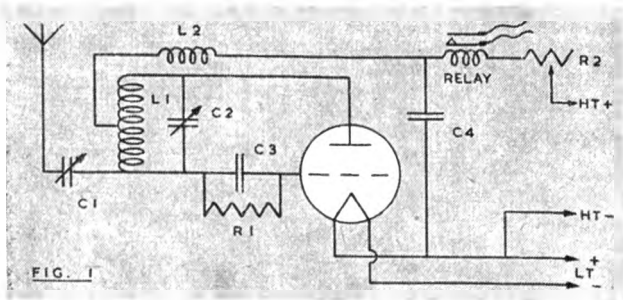


FIG. 1

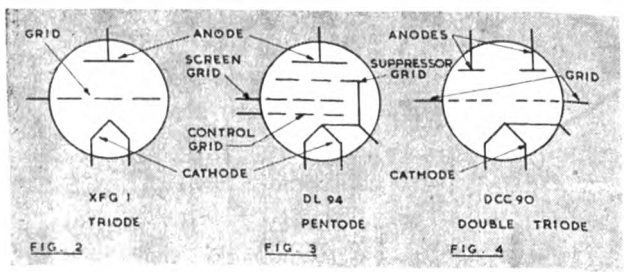


FIG. 2 FIG. 3 FIG. 4

Now for the purposes of these items. A condenser allows oscillating currents such as the transmitter sends out, to pass, but stops direct current such as that from a battery. A resistor offers resistance to both sorts of current, and an inductance will pass direct current, but stop oscillating current. The resistance of an inductance is called " impedance ". When an inductance and capacity are put together as L1. C2 in Fig. 1, they " tune " to a particular frequency so that they offer a very high impedance to that frequency, and it builds up to a voltage across the circuit. In Fig. 1 this voltage is applied to the valve through C3.

There are numerous types of valves, but those most likely to be encountered in model control are shown diagramatically in Figs. 2, 3 and 4. Fig. 2 shows a triode, which is one having three elements. When the cathode is heated and a positive voltage applied to the anode, a stream of electrons will flow from the cathode to the anode. This stream can be controlled

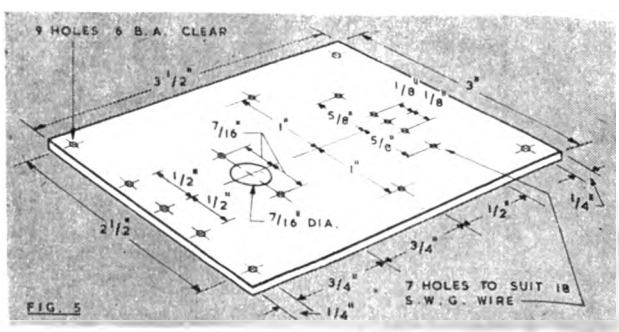


FIG. 5

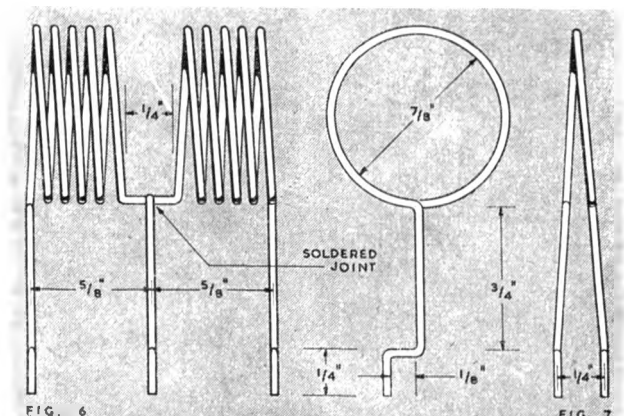


FIG. 6 FIG. 7

by a voltage on the grid. The pentode, Fig. 3, has two extra grids. The screen grid screens the control grid from the anode, and helps the electrons on their way, and the suppressor grid stops the electrons from knocking off further electrons from the anode. Fig. 4 is two triode valves in one " bottle " using the same cathode. The cathode in each of these valves is in the form of a filament, similar to that in an electric light bulb, and is heated by the low tension battery. The positive voltage on the anode comes from the high tension battery, and the voltage on the control grid comes from the received signal, or with a transmitter. it may be built up by the working of the valve itself.

We have said that electrons flow, but what are electrons ? Electrons form the negative parts of atoms. An atom consists of a proton which has positive charges on it, with electrons orbiting round, like stars round the sun. There is an electron for each positive charge on the proton. A flow of electricity is when electrons move from one atom to another. As soon as one electron leaves an atom, another takes its place from the next atom, and so on. The number of electrons travelling depends on the voltage applied to the circuit. The circuit has to be complete or the electrons cannot travel. The speed at which they travel is 300 million meters per second.

A new valve on the British market of interest to the radio control modeller is the Mullard DCC 90. This is the British equivalent to the well known American 3A5 which, as many enthusiasts will know, is the standard transmitter valve in America. Since it is used there for practically every transmitter, it needs no further introduction, so here are particulars of a home constructed transmitter using this valve.

A Transmitter for Home Construction.

This transmitter is a simple type and is referred to as " cross connected " because the anode of each half is connected across to the grid of the other part. If it is wired up correctly it cannot fail to work. There is no complicated or difficult tuning. It is tuned to the correct frequency by C1. The tuning should be checked from time to time.

First obtain a piece of paxolin or other insulating board 3½ ins. × 3 ins. × 1/16 in. and mark off and drill the holes as shown in Fig. 5. Next bolt the valve holder in place on the under side. The valve holder can be the paxolin type with the holes straight across. There is a cheaper paxolin type with the holes slanting but this type is not recommended as it does not grip the valve pins so well. Now make the tuning coil as shown in Fig. 6. It consists of ten turns of 18 s.w.g. tinned copper wire wound on a 7/8 in. diameter former, the former afterwards being removed. It is most easily made by winding on about 11 turns and then twisting the straight bit in the middle, and then bending the ends to suit. The centre leg is an extra piece soldered on. This coil is now fitted on top of the panel with the legs projecting through the three holes which will be found to fit, the bottom being bent under and pressed flat against the underneath side of the panel. The aerial link coil is made like Fig. 7, but before bending the cranked bottom part put on a piece of sleeving to go right round the top and part way down the legs. This coil is interleaved with the tuning coil, and fixed in the same way.

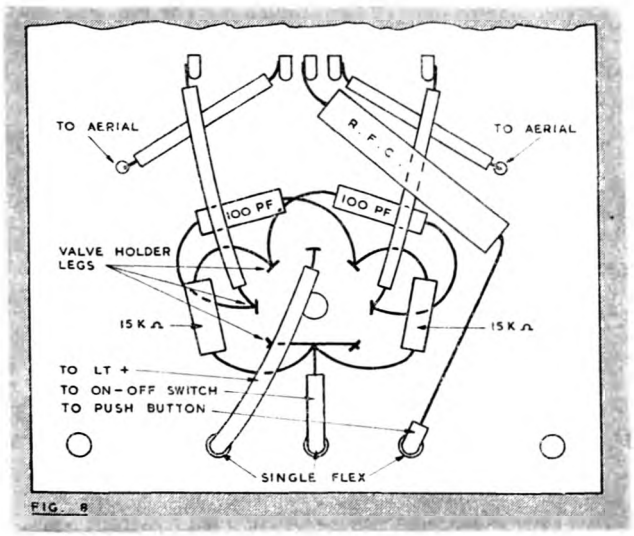


FIG. 8

The wiring is carried out according to the diagram Fig. 8. and the circuit diagram Fig. 9. First solder on the two 100 pf. condensers, and push them close to the panel but not to touch it, or each other. Put a strip of wire between the two bottom legs which are further apart than any of the others, and add the two 15k resistors. Next comes the two leads to the aerial, which are pieces of 18 s.w.g. wire with a piece of sleeving for protection, and the ends are just left poking through at this stage. Add the two leads from the ends of the tuning coil, which are also 18 s.w.g. with sleeves, and then the Radio Frequency Choke. This is made by winding 65 turns of thin insulated wire on a ¼ in. former of plastic rod or tube to a length of 1¼ in. The thin wire is soldered to pieces of thicker wire, wound a turn or two round each end, which is then used to connect up the choke and support it in place at the same time. A piece of red flex is soldered to the top valve leg to go to the positive side of the L.T. battery. A piece of black flex goes to the on-off switch from the centre of the two-strapped valve legs. From the on-off switch two leads are taken, one to the L.T.– and one to the H.T.-. A red flex lead is taken from the R.F.C. to one side of the push button, and from the other side of the pusb button a lead is taken to the H.T. plus. These two leads may be a piece of twin flex from the push button to the set, separated into singles at the set end. The set is completed by the addition of the tuning condenser, which is a 45 or 50 pf. trimmer connected across the two outside legs

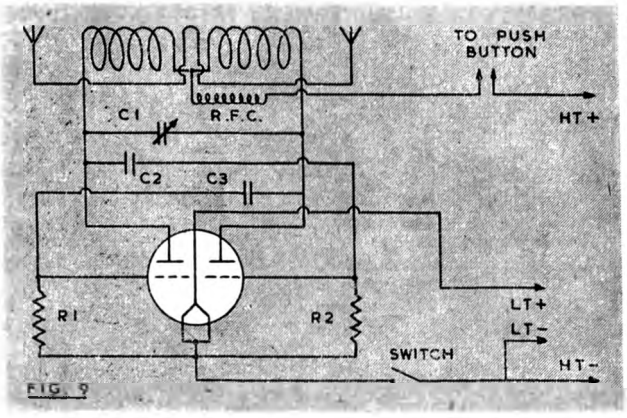


FIG. 9

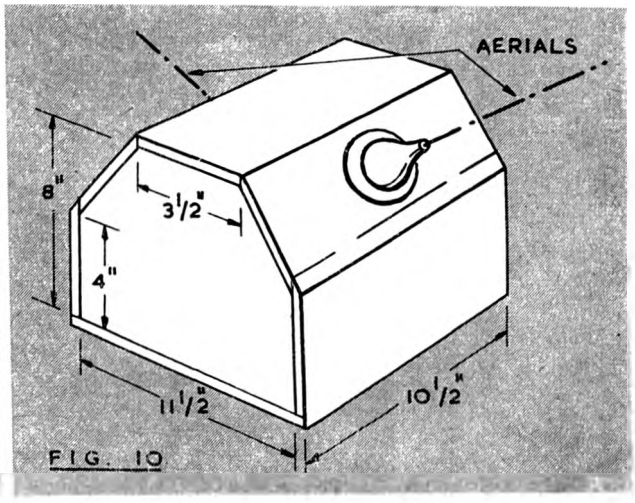
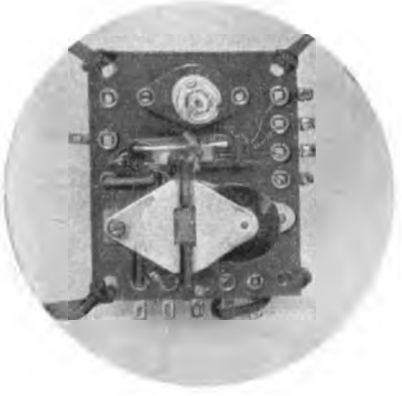


FIG. 10

of the tuning coil. One of the most convenient types is the ceramic disc pattern with screwdriver adjustment. A screwdriver of strong insulating material is needed for this job.

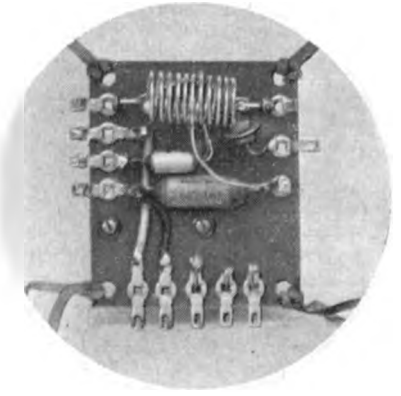
This transmitter can be put in any convenient box, wood or metal, and a single or double aerial used. Since it is not at all easy to think up a suitable box the writer offers his own idea which is shown in Fig. 10. In the writer's case, the bottom was made of plywood which happened to be at hand, though anything else would do. The rest of the box was made from pieces of orange boxes. A rubber whip aerial is fixed to each side as shown, and 8 ft. collapsible whip aerials are used. The transmitter panel is hung on ½ in. diameter plastic rods from the middle of the 3½ in. wide top, the rods being tapped 6 B.A. each end and are 3 ins. long. A piece of flex is taken from each connection on the transmitter panel, through the sloping side to a screw inside the aerial base. The on-off switch is fixed in the box top, and the lead to the push button taken through a hole in the top. There is plenty of room in the bottom for the batteries. For the L.T. battery, two U2 cells are connected in parallel. That is the bottoms connected together and taken to one lead, and the tops connected together and taken to another lead. The high tension battery used consists of two ex-government 90 volt batteries costing 5/- each, connected in series. That is the negative of one connected to the positive of the other, the leads being taken to the other ends of the batteries. The Mullard DCC90 valve is rated at 135 volts maximum whereas the two 90 volt batteries give 180 volts, which will shorten the life but puts up the power output. The shorter life is not thought serious as the valve only works while the push button is pressed.



AN X.F.G.1. RECEIVER

BY HENRY J. NICHOLLS

The advent of the X.F.G.1. sub-miniature gas triode manufactured by Messrs. Hivac has opened up new possibilities for amateurs wishing to build their own radio receivers. Here is a receiver of simple circuit suitable for the beginner which can be built at very low cost.



THIS new valve, which is correctly described as a grid controlled gas-filled triode, is similar to the American R.K.61or R.K.62, but has superior characteristics.

The characteristics of this type of valve are such that it enables a very much simpler circuit to be employed than with the normal evacuated triode or tetrode valve. With this extreme simplicity we have the advantage of greater sensitivity, a far better current change in the valve, and a greater range. This is due to the fact that the sensitivity of the receiver does not drop off as rapidly for decreasing transmitted signal strength, as does the more common super-regenerative circuit.

The author has tried this new valve in several circuits and it must be clearly understood that the one suggested in this article is by no means the ultimate in design for the X.F.G.1. It is suggested however, that the beginner to radio control would do well to stick to a simple circuit of this type, as the set is very easy to build and very easy to adjust, as long as the various points raised in the setting up and tuning are carefully followed.

The four lead-out wires from the base are long enough to enable connections to be made to them without the use of a valve holder, although a valve holder should be used if obtainable from your local stockist. Note that the connections to the valve are as follows ; the lead immediately under the red spot is anode, the second lead is filament, the third lead grid, and the fourth lead filament. See Fig. 3.

Voltage requirements of the valve are Filament 1·5 volts. Filament current 50 m.a.

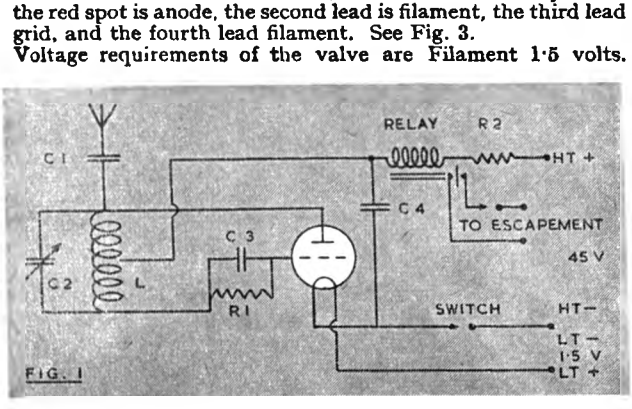


FIG. 1

The very economical filament current means that a single pen-cell, i.e., half of an Ever Ready 1915 battery can be used.

The anode voltage is 45 volts maximum, and the maximum permissible anode current is 2·5 ma. In the circuit given here the actual voltage on the anode under working conditions is under 40 volts, and the maximum anode current only 2 ma. Two Batrymax No. 122, 22½ volts in series may be used for H.T. weighing only 2½ ozs.

First of all, have a good look at the circuit diagram given in Fig. 1. If you have any knowledge of radio at all, you will recognise this as a straightforward, series-fed Hartley oscillator in which the anode load of the valve consists of the sensitive relay R in series with a fixed resistance r2.

The aerial is coupled to the tuned circuit LC2 through condenser C1. This should be a very small capacity of the order of 5 pf. The tuned circuit, consisting of the centre tapped inductance L and the tuning condenser C2 should have as high an L/C ratio as possible and the efficiency of the set depends to a large extent on this. The best value obtained experimentally so far, was with a coil consisting of 17 turns of ½ in. diameter, the actual capacity of C2 with the set tuned to 27 megacycles being only 7 or 8 pf. The grid coupling is through a normal grid leak and condenser R1 and C3. R1 can be from 3½ to 4½ megohms and C3 should be ·0001 mfd.

One of the characteristics of this circuit which was quickly noted when first trying it out was that the values in the anode circuit of R2 and C4 were important.

It would appear that the circuit works best when the total anode load, i.e., the resistance of the relay R plus R2 equals 5,000 or 5,500 ohms. You should therefore adjust the value of C2 so that together with your relay it gives this total value. For example, in the author's set with a modified Cossor relay, the relay resistance being 3,500 ohms, R2 has been made 2,000 ohms. C4 is 0·01 mfd.

The construction of the set is quite simple (Fig. 2) and should present no difficulty to anyone who is capable of wielding a soldering iron and piece of resin-cored flux. In the prototype set no valve holder has been used, the leads from the valve base being taken straight to four soldering tags on the paxolin base. This base is 2¾ × 2¼ ins., but, with a more compact relay

a very much smaller base could be used to advantage.

To construct the set start off by obtaining a piece of paxolin of the required size and drill holes as shown in the photograph, inserting soldering tags for the four valve leads, the aerial tag, the H.T. and L.T. leads, and the two working leads to the relay contacts.

Wind the tuning coil of 19 turns of 18 g. tinned copper wire on any round former of approximately $\frac{1}{2}$ in. diameter. Start off by mounting the valve, soldering the four leads to the four soldering tags as shown in the photographs and tie the valve down to the paxolin panel, through which two small holes should be drilled, with a piece of thread or a small elastic band. Next mount the relay and the tuning condenser. The upper panel is now completed. Connect the H.T. positive terminal through a 2,000 ohm. resistance (or the resistance appropriate to the value of your relay) to one terminal of the relay winding. Take the other lead from the relay winding to a spare soldering tag for connection later to the centre tapping of the coil. Now, on the lower panel connect the grid soldering tag to the grid leak and condenser and take the other lead from the grid leak and condenser combination to one of the terminals of the tuning condenser, which projects through the top panel. This point should also now be connected to one of the spare soldering tags which supports the low potential end of the tuning coil. Connect the aerial tag to one side of the aerial series condenser and the other end of that condenser to the unconnected side of the tuning condenser. This point is also now connected to the anode connection of the valve and should eventually also be connected to the high potential end of the tuning coil. Connect the 0·01 mff. condenser C4 from the L.T. negative tag connected to the valve to the spar tag to which you have already connected the relay. Note that this point will next be connected to the centre tapping of the tuning coil. Add the tuning coil as shown and connect the centre tapping to the common point between C4 and the relay.

It now only remains to connect the working contacts from the relay to the two tags provided for that purpose.

Examination of the drawings and the photographs provided should make the whole process perfectly clear.

Setting up this receiver is very simple and it is possible to get good results in a very short time.

Connect up the L.T. and H.T. inserting a milliameter in the H.T. positive lead and switch on. The current should not be more than 2·1 or 2·2 ma. at the most and if everything is in good order it will be exactly 2 ma. Now switch on and key your transmitter, and tune condenser C2 by means of a short tuning rod or tube, made from some insulating material, so as to avoid hand capacity effects, until you get a dip in anode current. If you cannot get this dip at all, even with the condenser screwed out to the full limit of its movement, it means that your tuning coil is a little too big and, at this stage, it will be necessary to cut a half a turn off either end and start the tuning process again. With the slightly reduced coil you should obtain your dip and it is important to note that the more the tuning condenser is screwed out, i.e., the lower the capacity of tuning condenser used, the better the results you will obtain. Final tuning should be carried out with the receiver at least 20 yards away from your transmitter and for these early checks it is a good idea to use the transmitter with the aerial disconnected, in order that the set is responding to a weak rather than to a strong signal.

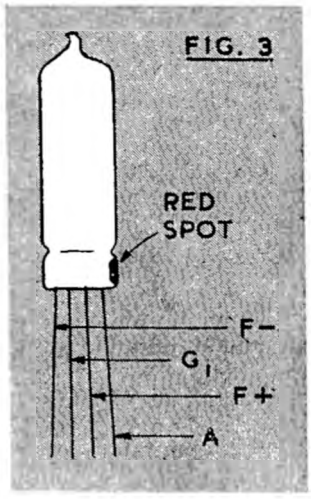


FIG. 3

The dip with accurate adjustment of C2 can be as much as from 2 ma. down to ·1 but a good average value with a non-critical setting is from 2 ma. down to ·2 or ·3. The range of the set in the field under these conditions will be at least half a mile at ground level, which is more than ample for average requirements.

A small refinement that can be added, for only a slight increase in weight, is to make R2 adjustable. This then enables you to re-adjust your standing current to 2 ma. as the H.T. voltage drops.

This is important when lightweight batteries such as Ever Ready B.122's are used, as their voltage is inclined to drop with continuous usage.

The relay itself is, of course, the heart and soul of any receiver as far as efficiency and reliability go, and excellent results can be obtained with ex-service type relays re-wound to a suitable resistance. The figures at which the relay should make and break should be around 1·5 to 1·7 ma. as this gives an ample margin of safety on both sides of the working currents.

If you are going to re-wind a services type relay should you aim at getting approximately 10,000 turns of 47 or 48 gauge wire on to the winding, this giving a resistance of approximately 4,000 ohms. in which case the series resistance R2 should be only 1,000 ohms.

The salient points to remember about this circuit are

1. C1 must be very small.
2. The tuned circuit must have the highest possible L/C ratio.
3. The anode load should total approximately 5,500 ohms.
4. The standing current should not exceed 2 ma.
5. Relay should make and break at approx. 1·5 to 1·7 ma.

Finally, this receiver will work in conjunction with any of the currently available transmitters which work on an unmodulated signal, including those whose circuits have been published in the "AEROMODELLER". The X.F.G.1 valve is obtainable from any model shop.

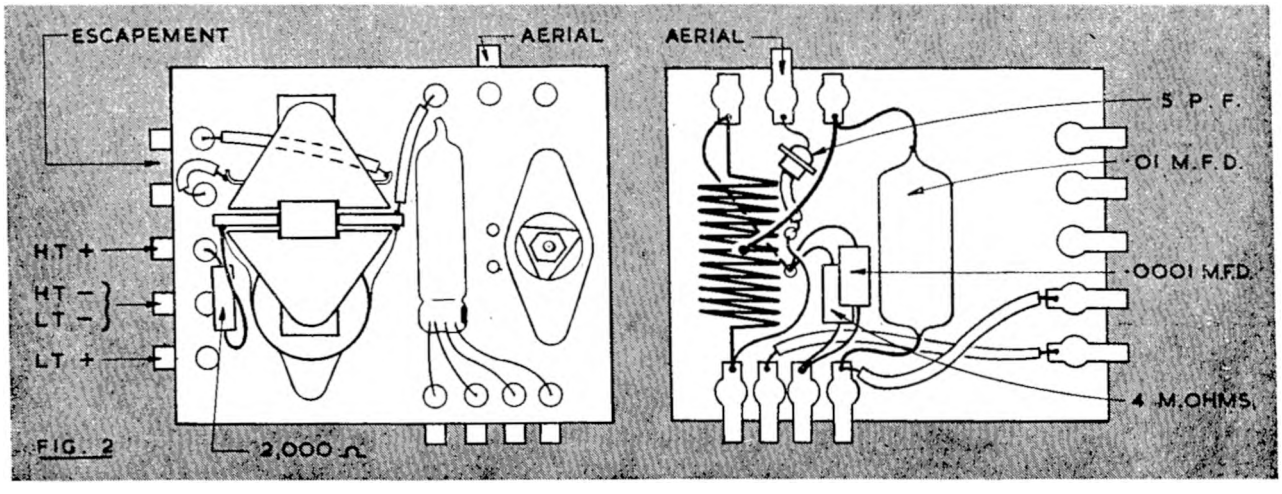
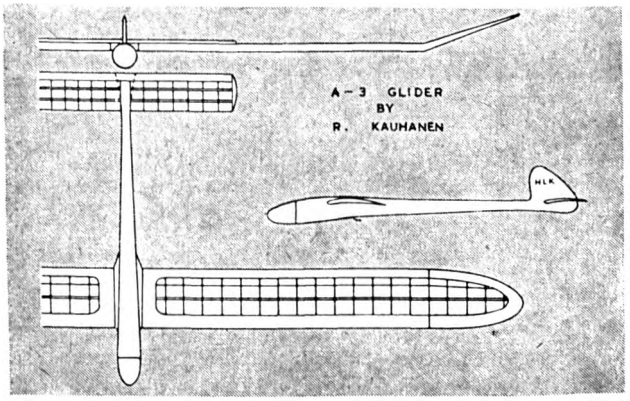


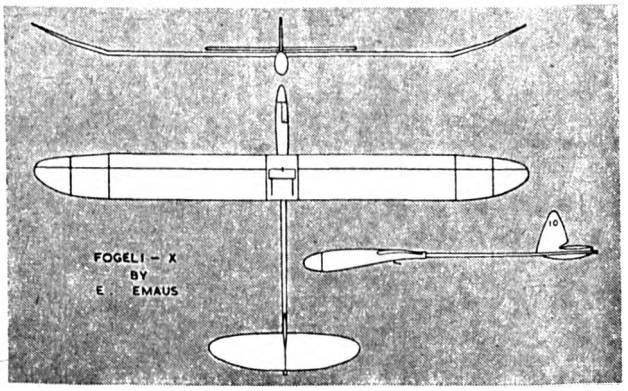
FIG. 2

FINNISH MODEL GLIDERS

BY THE 1949 WAKEFIELD WINNER ARNE ELLILA

Top, shows the Finnish glider team entered in the 1949 Inter-Scandinavian contests. Above, Leo Santala with his Stunt IX A2 glider.





WHEN present-day Finnish model aircraft are described, gliders are the only category that can possibly be mentioned. More than ten years have elapsed since the last delivery of balsa arrived in the country, and therefore native materials, exclusively, had to be resorted to. It is very difficult to use these materials—pine ribs and birch plywood—for any high performance models except gliders.

In order to understand the Finnish gliders fully, it is first necessary to examine the present rules. Gliders are divided into three classes according to their total horizontal area (wing area plus the tailplane area).

These classes are :—

Class	*Area*	*Weight limit*
A–1	Max. 18 sq. dm.	None
A–2	32 to 34 sq. dm.	Min. 410 gms. (FAI)
A–3	Min. 40 sq. dm.	(FAI)

It is worth mentioning that these rules are common to all the Scandinavian countries, who annually arrange Championship Contests, between themselves, with A–2 gliders.

In their outward features the Finnish gliders differ from the British type mainly in that the aspect ratio of our gliders is considerably higher, owing to the fact that the deciding factor is the wing area instead of the span. The aerofoils in use are thin but comparatively concave, rendering flight slow and making the model rather sensitive as to directional stability.

At the beginning of this decade the trend towards a peculiarly Finnish type of glider became apparent. These models were called " sniffers " as the nose was usually more or less drooping, and therefore the planes bore a distinct resemblance to a sniffing dog. They were very slow fliers and altered their direction very easily : in most cases their front fuselage formed a pod and the rear fuselage consisted of only a pine rib. Our present generation of gliders are a linear development of the " sniffers ".

Even structually the Finnish gliders differ from their British counterparts, although this is a natural consequence of the different kind of material used. As most of the British model gliders are built of balsa, we shall not go into structural details here.

Items of equipment do not vary much from those used in Britain. Dethermalisers are widely used, although they are not of particular importance, as contests are usually arranged in the evenings when the thermals are dying out. Under these conditions the properties of the models are shown more fairly, and sheer luck has less to do with the outcome. When I had an opportunity of seeing British gliders, my attention was caught by the towhooks. I did not see a single movable towhook, although this is an indispensable item in every Finnish glider, as the plane can be accurately trimmed for towing by moving the hook fore and aft. There are also fittings which put the plane into a predetermined turn after a release. Usually the builders have, however, solved this problem by other means, and this fitting is, therefore, relatively rare.

There are also minor differences apparent in towing equipment. Finns use, almost without exception, thin piano wire which causes negligible drag. At the glider end of the wire a small parachute is fitted ; this slows down the falling wire and therefore facilitates its rewinding on to the reel before it touches the ground, thus preventing fouling.

As mentioned, glider contests are usually held in the evenings. The best gliders achieve, in these conditions, times up to four and five minutes. Usually the average of three successive flights is calculated and decides the result, and thus the contest requires great skill, with chance and luck playing a minor part. There is a time limit of six minutes per flight in all contests.

The planes presented here are typical Finnish gliders which have met with considerable success at home and in the other Scandinavian countries. A proved example is the glider built and flown by Leo Santala (see photograph) who was placed second with this model in last summer's Scandinavian Contest in Helsinki. This was held in the evening, with the last take-offs taking place at 10 o'clock and the result, 624·1 sec., was the average of three flights. Last winter he once flew this glider over a frozen lake, when six consecutive flights were timed at 4 min. 20 sec. almost to the second.

ESPECIALLY FOR THE BEGINNER

PART V. BY
REV. F. CALLON

A group of the Author's protégés at Upholland College, Wigan.

NOW at last we are really getting into the flying season. Perhaps it's your first. From now on there is a sporting chance of one of those warm, sunny afternoons with the merest suggestion of a breeze, when you can send up a model and sit down to time it, knowing that it's bound to land within a hundred yards or so—unless it gets into a thermal! "Thermal," by the way, is the name given to a rising current of air. Warm air always tends to go up, so in sunny weather when any part of the ground gets hot—usually a dark-coloured patch of soil or parched grass which absorbs the sun's heat—the air over it also becomes warm and starts to rise. If you manage to get your model circling round in one of these rising columns of warm air you will be surprised at the length of time it will stay up. Sometimes it will be a case of "lost o.o.s.". Gulls are great thermal spotters. If ever you see a crowd of gulls gliding round and round in fairly tight circles, you can be sure that they have found a thermal. A small glider of mine once shared a thermal with some gulls, and being much lighter than they were, and having a bigger wing area, it rose much faster and eventually disappeared!

Diagonal Braces and Gussets.

Before we start on the actual flying of models I want to pass on to you a couple of hints on the above subjects. They come from a Mr. Warburton, a reader from Manchester, who showed his interest in the series in a practical way by sending them along.

Both diagonal braces and gussets add immensely to the strength of a framework by counteracting the "concertina" tendency which any extra strain might bring. If you were to make a small rectangle out of ⅛ in. square strip balsa, pulled the top towards you and pushed the bottom away from you, it would soon look more like a parallelogram than a rectangle. But try the same thing after adding a diagonal brace, and you won't be able to budge it until you have actually pulled the joints apart. But to make the most of this aid to strength, the brace must be cut to fit snugly into the two opposite corners. First clear away any surplus balsa cement that may have lodged in each corner. Then lay the cross-brace over the frame and make the cuts at the correct angles immediately over the position in which it is to go. (Fig. 1.)

Gussets are really just like small diagonal braces; the bigger they are, the more strength they will add, but here of course we must not forget the extra weight which is being added. In the case of gussets, it is not necessary to clear away the extra cement from the corner of the joint. Instead we can clear away the corner of the gusset itself. (Fig. 2.) Always try a gusset for a good fit before cementing it in position. It is not easy to cut an exact right angle—or any other exact angle—first time; in most cases it will be necessary to correct the first attempt with a blade or sandpaper.

Lining Up a Model.

Last month we had finished covering and doping our model. So now we can take it straight out for a flight? Not on your life!

The first thing to do is to check up for warps in the lifting surfaces—wing and tailplane. Hold the wing leading edge towards you with the centre line dead opposite to your eye. (Yes, of course you shut the other one!) Now very carefully lower the trailing edge until you can just see it about an eighth of an inch below the L.E. at the centre line. Without moving your head or the wing, glance to the left and right. If you can see an eighth of an inch of T.E. all the way along to the tip (or to the next dihedral joint, if it is a polyhedral wing), then there are no warps. But if the amount of T.E. visible increases or decreases on either side, then a warp is present.

To remove warps, all you need is a warm fire. One of those electric fires with a polished reflector is ideal because it sends out a beam of heat, but don't buy one specially as any fire will do! Hold the wing so that the heat plays over its upper or lower surface, and twist it slightly in the opposite way to that in which it is warped. A few seconds is generally sufficient. As the covering gets warm, you will feel it slacken and give a little. That is the time to remove the wing from the heat. Hold it in the same twisted position for a few more seconds while it cools, and then see if there is any warp left. If it has not quite gone, repeat the process.

When you are quite satisfied that there are no warps in the wing or tailplane, fasten them in position on the fuselage with rubber bands. Then hold the model with the nose towards you, and check up whether they are quite level and symmetrical, and make sure that the fin is at right angles to the tailplane. If there are any errors here, now is the time to correct them. A lop-sided wing or tailplane can be levelled up by cementing a thin strip of balsa along the lower side of the wing or T.P. mount. The exact thickness of this strip will of

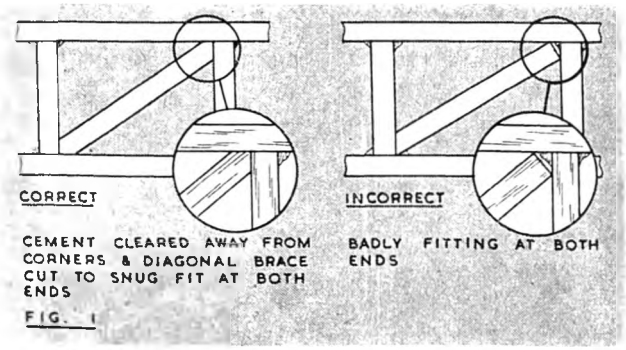


FIG. 1

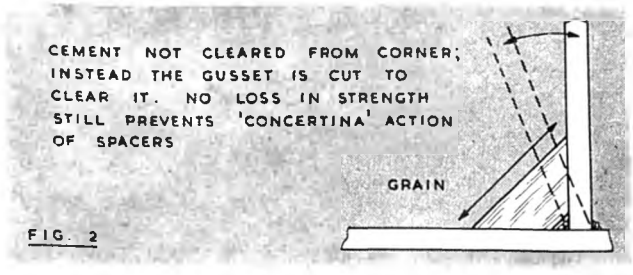


FIG. 2

course depend on how much one side of the unit is lower than the other.

Fixing the Centre of Gravity.

When you are quite saisfied that the model is correctly lined up, hold it with a finger and thumb on either side of the fuselage and see where it balances. This balancing point is called the centre of gravity—C. of G. for short. If you have not yet added any weight to the nose of the plane, the C. of G. will probably be about an inch from the trailing edge towards the tail. Generally speaking, the C. of G. should be under the thickest part of the wing section, so we will have to move it forward. This is done simply by adding weight in the weight box at the nose. Small pieces of lead, or ordinary lead air-gun slugs are used for this. Add the weight a little at a time, and keep trying the model for balance. As more weight is added, the C. of G. moves nearer to the nose. As soon as it reaches a point under the thickest part of the aerofoil section, stop adding weight and squirt a little cement over the pieces of lead in the weight box to stop them sliding about. This is as near as we can go to finding the C. of G. for the present; its *exact* position can only be found by actually gliding the model.

One final word of advice before we go into action. Make quite sure that the wing and tailplane are held in position *firmly*. If you are using thin rubber bands, you will probably need four for the wing and two for the tailplane—possibly more. A good way of testing whether the wing is firm enough is to rock the model briskly from side to side; if the wing lifts away from its mounting first on one side, then on the other, this means that it is not being held firmly enough, so more rubber bands will have to be added.

Hand Launching.

This model of yours has taken quite a long time to build. You have needed a lot of patience for all the cutting out, cementing, sanding, covering, damping and doping. It has all been leading up to what you are going to do next—flying the model. Don't waste the care you have taken so far by carelessness at this final and most important. stage. You may need more patience during the next half hour than ever you needed during the construction.

If you are satisfied with the appearance of your model, and if it is correctly lined up and balanced, then it is capable of flying. But that does not mean that it is ready to fly straight away the first time you take it out. Far from it. It must be carefully tested in order to discover what minor changes or adjustments have to be made. This is called " trimming " the model for flight.

When testing a glider, always bring some spare lead shot, a tube of cement, and a few pieces of scrap balsa sheet—1/16th inch thick. A large hall such as a gymnasium is an ideal place. Failing this, choose a day when there is little or no wind and a place where there is soft grass underfoot. And here is a very important flying rule: model planes must always be launched INTO whatever wind there is. So hold your model by the fuselage, a little behind the centre of gravity position and about as high as your shoulder, and push it gently forward into the wind. Don't throw it forward like a dart, or it will swoop upwards, stop, drop its nose, and swoop down. This is called " stalling ", and must be avoided at all costs. Don't launch it upwards (see Fig. 3), or the result will be the same—a stall (see Fig. 4). The only way to hand-launch a model is to push it forward on a *level* keel—or very slightly downwards—at its normal flying speed. With a small, light model this will be about the same as a fast walking speed. (See Fig. 5.) The result should be a long smooth glide of from 30 to 60 feet, but it will most probably result in something quite different! Alright: I said you would need patience!

A bad hand-launch—far too high into the air, and it appears to be too fast as well. What happened can be seen in the next figure.

Fig. 3.

Well, what went wrong? Probably one of the following things happened.

(*a*) It stalled, *i.e.*, it travelled along in a series of little swoops, as though it was riding over a number of invisible waves. Or perhaps there was just one big wave, after which it went *zonk* into the ground!

The reason for this is either that you launched it too fast, or more probably that there is not enough weight in the nose. Try a slower launch. If the same thing happens again, add more weight in the weight-box, a little at a time, launching the model after each addition, until you have a long, slow glide that is not quite stalling. That will be the correct weight when the wind is as it is at the moment. On days when there is more wind, more weight will have to be added.

(*b*) It sank down to the ground almost immediately. (See Fig. 6.)

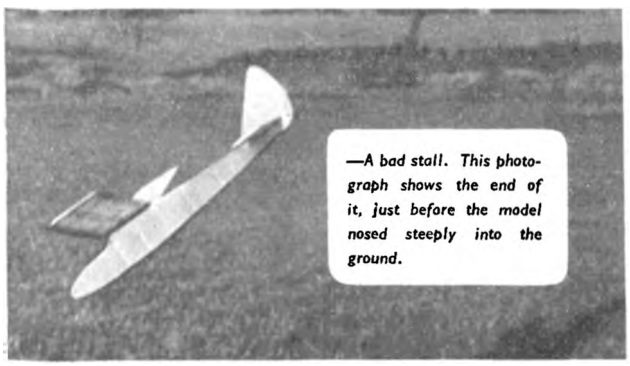
This means that you launched it too gently altogether, or that there is too much weight in the nose First, try launching it a little faster. If it still sinks rather quickly and only goes about twenty feet, then you will have to remove some weight from the weight-box. If the lead shot has been cemented in place, you will have to use a penknife to do this. Take out a little at a time, with another hand-launch after each operation, until you have got a long, smooth, slow glide.

(*c*) It went level for a few yards, then gave a slight stall and suddenly swung away and down either to right or left.

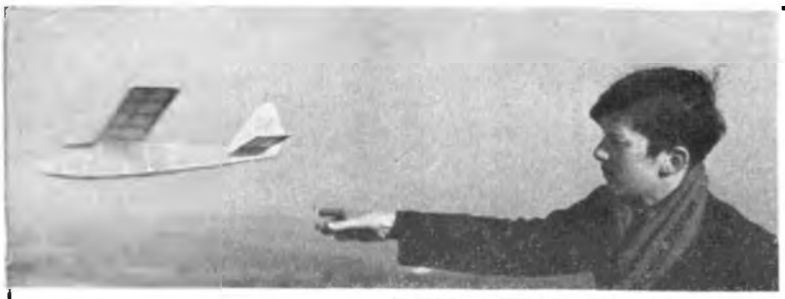
These are bad symptoms, unless you can account for them by a sudden gust of wind, and they will probably need a major operation. The most probable cause is a warped wing or tailplane. If you find that this is the case, the only thing to do is to remove it in front of a fire. If there are no warps, then you have probably made a mistake in measuring the dihedral and built in a lot too much or too little. Check up on this from the plan, and if necessary remove the covering at the dihedral joints, cut through the wing, and re-cement at the correct angle. Mind you, in nine cases out of ten the cause will be warps.

When you have got a good level glide every time, adjust the fin or the trim-tab to give a very slight turn either to

Fig. 4.



—A bad stall. This photograph shows the end of it, just before the model nosed steeply into the ground.



This is what happens when the model is launched at too slow a speed : it sinks down to the ground almost immediately after what is really a small stall. Much the same thing happens if the nose of the model is a lot too heavy. *Fig. 6.*

Fig. 5.
A good hand-launch — the model a Mercury Magpie, is pushed gently forward at its true flying speed, shoulder high and on a level keel.

right or left. And now you are ready for a tow-line launch.

The Tow-Line.

For light gliders up to 40 ins. wingspan I have found that the best tow-line thread is ordinary strong white cotton. Never use black, or you will spend most of your time looking for it in the grass. To the end of the line is tied a small ring of thin wire. Twelve inches from it tie a little bunch of tissue-paper. Then comes the rest of the cotton; altogether you will want about a hundred yards.

The wire ring is slipped over one of the tow-hooks underneath the glider (see Fig. 7), and the model held with the nose pointing upwards and into the wind. The launcher holds the other end of the line, and when the model is released he takes it into the air like a kite on the line. If there is little or no wind, he will have to walk or even run. in order to keep the model rising into the air. When it is high enough, he slackens his pull on the line, the little bunch of tissue-paper swings back under the glider and pulls the ring off the tow-hook, and the model is left gliding free in the air.

Launching by Tow-Line.

The above gives you the theory. In practice things may not be quite so straightforward at first. But one thing is certain : it is a waste of time to attempt to tow a model up unless it glides well from hand-launches. Presuming that this is the case, then the following things may happen when the model is on the line :

(*a*) It climbs smoothly and steadily upwards until it hangs hovering overhead.

The only thing to do here is to launch the model, drop the tow-line, run to the nearest piece of wood, and touch it, preferably with the fingers crossed !

(*b*) The model just floats about, refusing to climb.

Remedy : Attach the line to the next hook further back. If there isn't one, take the model home and build one in or preferably two, one about ¾ in. behind the other.

(*c*) The model rises, but swings about dangerously from side to side.

This is called " hunting ". It can often be remedied by using a tow-hook which is further back. It may be that there is too much wind for the model, or due to warps or too much dihedral. It can sometimes be remedied by adding a little more fin area—1/16th sheet cemented to the trailing edge of the fin.

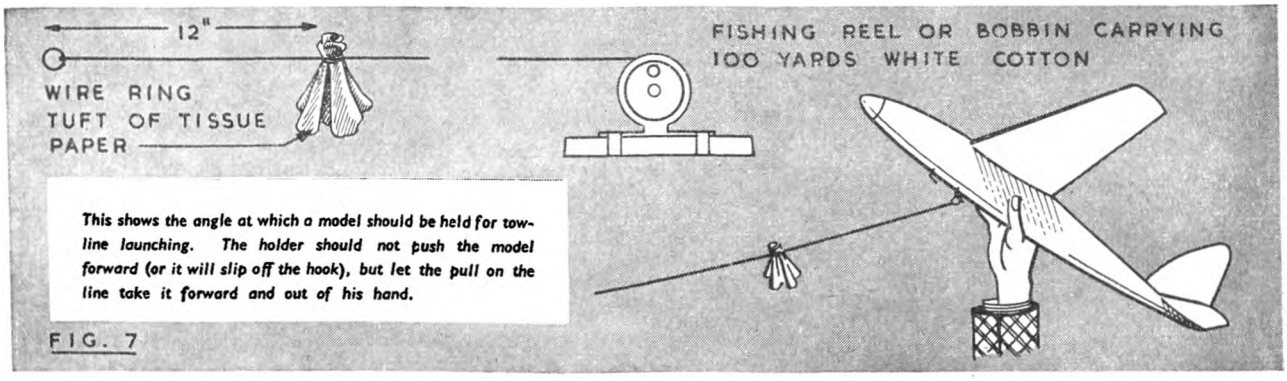
(*d*) The model rises very steeply, and swings off to right or left.

Generally caused by the tow-hook being too far back, or possibly to too much turn on the trim tab, or even too much area in the fin itself—though this is most unlikely unless the model is privately designed.

Final Tips.

A certain amount of swinging about on the line is nothing to worry about, as long as the model gradually continues to climb. But if you pull on the line when the glider is turning to one side or the other, the turn will probably become worse. So only give full tension when she's climbing properly, and if you see her swinging or starting to swing over to one side, slacken the line just a little by slowing up (if you were running) or stopping (if you were walking) until she has righted herself again.

And finally, never use too short a tow-line. A hundred feet—that's about one and a half cricket pitches—is the shortest you should use when trying out a glider.



This shows the angle at which a model should be held for tow-line launching. The holder should not push the model forward (or it will slip off the hook), but let the pull on the line take it forward and out of his hand.

FIG. 7

"OH, what a beautiful morning, oh, what a beautiful day . . . !" The sun is shining, the birds are singing, flowers are popping up, the sky is full of power jobs and rubber jobs and sailplanes ; in fact, Spring is here. Wonderful what a difference it makes, doesn't it ?

Even your scribe feels that Spring is in the air ; he was holding a Wakefield when the rubber broke ! However, regardless, here is another selection from the Gadgets' Box . . . and the Best of Luck !

G. Ginns of Wyken, Coventry, sent in a two gear version of contra rotating props for rubber powered models. This has several advantages over previous methods, for, requiring only two gears, the construction is simplified and the weight will be lower, as will the loss of power through friction. As less power will be required to obtain the desired results, there will be a saving of weight on rubber. Alternatively, the same amount of rubber will deliver more power to the propellors.

It will be seen from the drawing that the front prop. is on a direct drive from the rubber, its shaft passing through that of the back prop. The latter is driven, via the gearing, by the lower skein and the motors will require adjustment for balanced r.p.m. and equal length of motor run. Alternative free wheels of the self-setting type, incorporated in a spinner, could be used. The diameter of the gear wheels depends on individual requirements, being governed by the type of model and the revs. required.

Item No. 2 has saved the fingers of B. W. Mann of Hove, Sussex, when making throttle adjustments with the engine running (painful memories, power modellers !). The method can be used on most engines with the carburettor in front, and is particularly desirable when the main bearing housing is short. The necessary modifications are evident in the drawing and the minimum of work and materials are required.

There have been elevator horns of dural, of wire, of paxolin, and still they come. R. Richmond, Fallings Park, Wolverhampton, uses split-pins on his C.L. models, and Drawing No. 3 shows the method of bending. The width of the gap depends on the thickness of wood used for the elevator. The push-pull rod fits in the ready made loop on the split-pin and a silk or linen patch top and bottom, and liberal application of cement, will make a strong job of the installation. Split-pins are obtainable in various sizes, so the most suitable can be used for any particular model.

No. 4 has been used by Willis A. Robinson of Kilmarnock, Scotland, for more than a year and has proved to be a most satisfactory fuel funnel. It started life as an inexpensive bicycle oil can, from which the bottom was cut and the resulting rough edges smoothed off.

To make a really neat job, the nozzle projecting inside the can should be removed, either by lowering the whole nozzle and re-soldering, or with a countersink. A piece of fine copper mesh attached at this point then supplies a built-in filter. Due to its shape the funnel can be tipped at an acute angle for filling, without spilling, and the addition of a length of soft plastic tubing on the nozzle will allow the fuel to be shut off (by nipping the tubing) and avoid overflows.

A useful general purpose idea comes from F. Fernandez, Tottenham, London, N.15. Small hooks for rubber band attachments are not the easiest things to shape neatly from wire, but a dress hook is three parts of the way there. Modeller Fernandez completed the job by straightening out the centre spring wire, while the scissor-like end was held in a vice. The straightened wire was cut to suitable length (according to the thickness of the wood to which it will be attached) or it could be pushed right through the wood and bent over. Cement is applied wherever the metal and wood touch, and the result is a firm fixing which will stand any strain normally put on rubber bands. Samples sent in for our inspection stood up to reasonable tests and the hooks are not inclined to cut the rubber. If extra strength is required, the cemented patch idea could well be applied in this case. Your Scribe intends to use four of these hooks to suspend a radio receiver, anyhow, and very neat they will look, too.

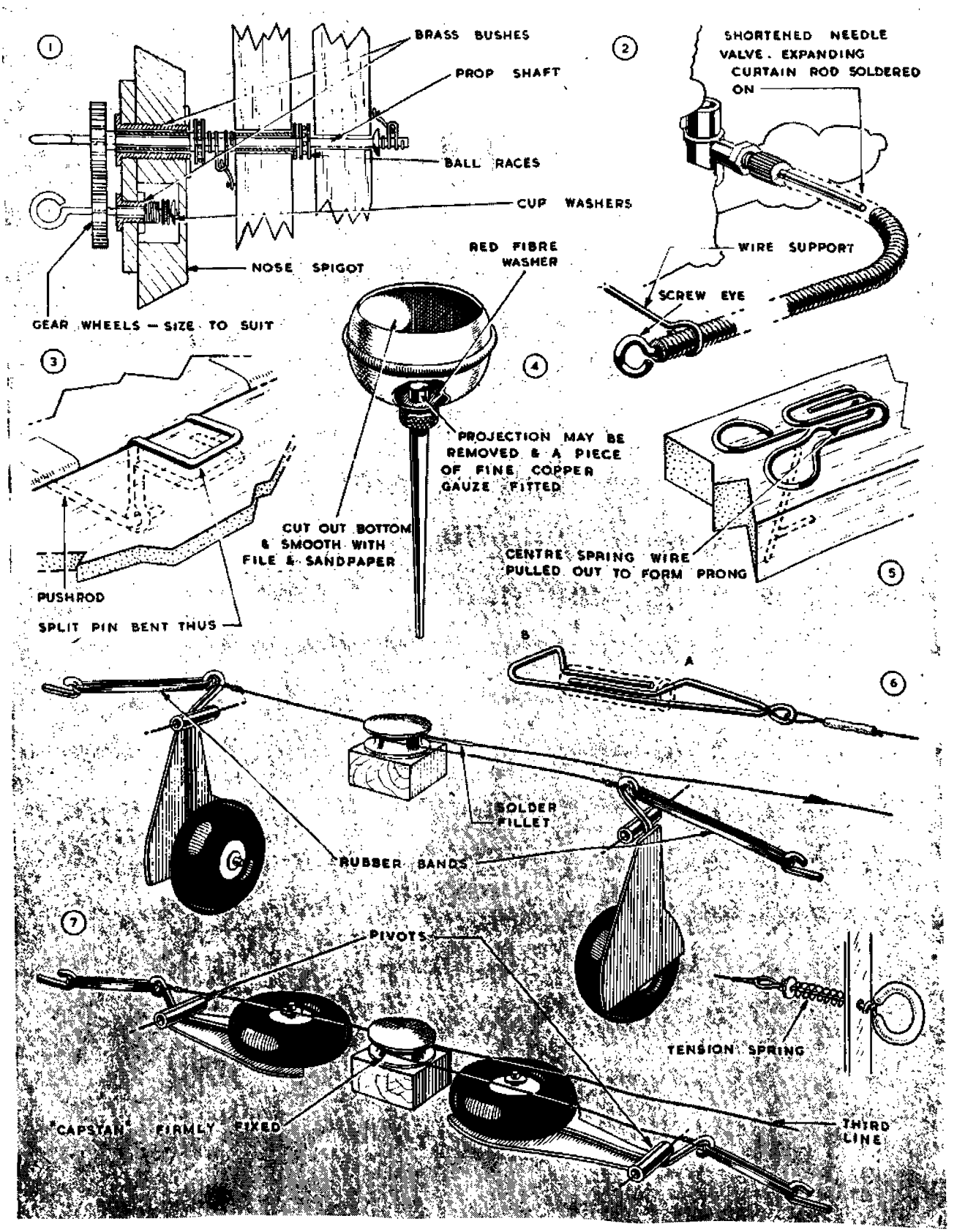
The best Control Line clip we have yet seen was sent along by R. Cooke of Rotherham ; a very ingenious piece of wire bending, indeed. The one we handled was made from 20 s.w.g. steel wire and the finished shape can be seen in the drawing. Apart from the wire, only a short piece of aluminium tubing is required (this particular one was cut from a ball-pen refill), or the same length of expanding curtain rod. The clip cannot be opened once the tube is in place, however great a pull is put on it. Our clip was tested until it broke, and we would suggest that for models powered with engines of more than 2 c.c. a heavier wire than 20 s.w.g. should be used.

The order in which the bends are made is important ; the small loop comes first, followed by the angle at " A ", after which the tube is slipped on and pushed back to the loop, over both legs, out of the way. The three bends forming end " B " are now made, after which the end is cut off. The relative length of each part can be seen in the sketch. To close clip after attachment to lead-outs, push tube past " A ", so that both ends come inside it. To reopen, for removal of lines, depress " A " and push tube back to loop. It is much less complicated to do than it is to read . . . which is just as well !

The drawings comprising No. 7, illustrate a retractable undercarriage for Scale Controliners, which should be readily applicable to Team Racers (Right up to the minute, you see. What service !). It has been installed in a Hawker " Tempest " by J. Longstaffe of Westcliff- on-Sea, and with slight modifications, could be used in a wide variety of models.

Operation is through a third line which is pulled to lower the wheels ; they are held in the retracted position by the tension of rubber bands. That is the basic principle and reference to the drawings will show that the third line has an extra end which passes around a " capstan " to a hook at the top of the inside leg. The true end of the line goes to the corresponding hook on the other leg. Rubber bands from these hooks are attached to two others which are fixed to suitable points in the wing or fuselage. The strength of the rubber will have to be found by experiment, as it must be sufficient to retract the undercart and hold it up, while the " pilot " must be able to pull it down, with the third line, without undue strain. The attachment of the third line to the control handle is by wire trigger, lightly spring-loaded, placed in a convenient position for the insertion of one finger. In operation the " pilot " would hold the undercart down from the handle end, while an assistant starts the engine and releases the model, after which tension is released and the wheels go up. As the end of the flight approaches, the line is pulled to lower the wheels which are held down while the model lands. A spike on the bottom of the handle and a ratchet device on the trigger should make it possible for the " pilot to leave the handle in the ground, with sufficient tension on to keep the wheels down while the model is stationary, but that is only an idea on the part of Yours Truly.

At which point, the cover goes back on the typewriter, the files are closed for the time being and Consus grabs the fuel bottle, the bag of tricks, his latest model and a large tube of cement and bids you farewell till the next time. Get in lots of flying, you types !


1
BRASS BUSHES
PROP SHAFT
BALL RACES
CUP WASHERS
NOSE SPIGOT
GEAR WHEELS — SIZE TO SUIT
2
SHORTENED NEEDLE VALVE. EXPANDING CURTAIN ROD SOLDERED ON
WIRE SUPPORT
SCREW EYE
3
PUSHROD
SPLIT PIN BENT THUS
4
RED FIBRE WASHER
PROJECTION MAY BE REMOVED & A PIECE OF FINE COPPER GAUZE FITTED
CUT OUT BOTTOM & SMOOTH WITH FILE & SANDPAPER
5
CENTRE SPRING WIRE PULLED OUT TO FORM PRONG
6
B
A
SOLDER FILLET
RUBBER BANDS
7
PIVOTS
TENSION SPRING
"CAPSTAN" FIRMLY FIXED
THIRD LINE

FORMERS & FILLETS

BY BILL FOSHAG

A simple, foolproof method of producing perfect curves for streamline fuselages and wing root fillets

TAKE note of this page, for when you next decide to design a streamlined glider or Wakefield you'll find this American idea an easy aid to good looking curves.

Assuming you have drawn the side profile of your fuselage and located exact positions for each former, your next job is to draw the former shapes so that the contour is smooth from nose to tail. With elliptical section formers it is not easy to plot with accuracy each separate shape, nor does the average aeromod care to devote so much time in planning his model. Yet by this simple method, even if the first main former is sketched free-hand, then all the other formers will automatically blend to correct shapes.

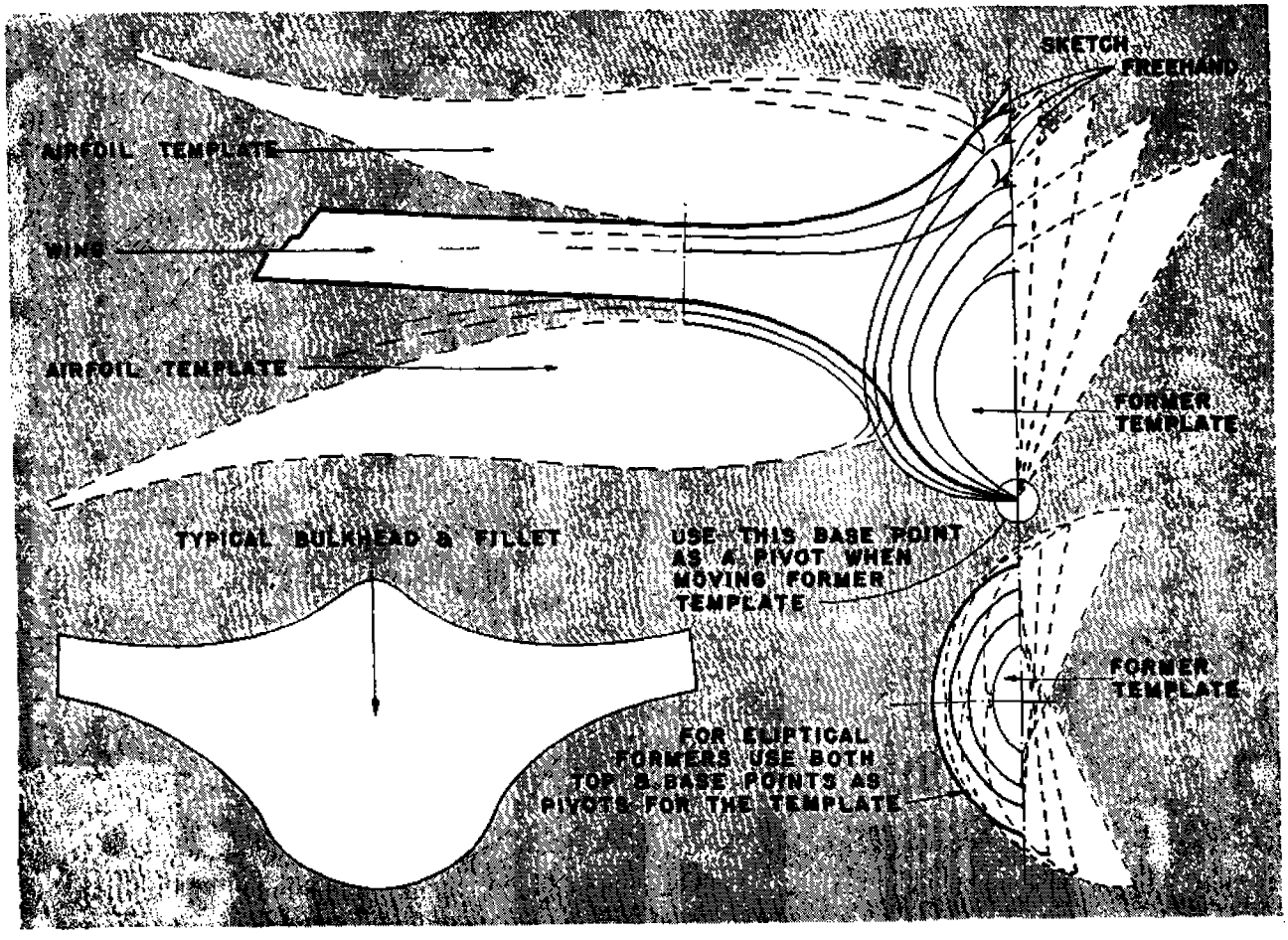
Begin by drawing a vertical centre-line and mark off the exact height of the deepest former. Now draw the shape of one half of this main former. If you decide to use a pear shaped section as is popular with the majority of streamline sailplanes, the development of the rest of the formers will be simpler.

Trace the one-half former on to stiff card, plywood or celluloid. Measure the height of each former and using the extreme base of the main former as a common point, mark off the height of each of the formers PLUS BETWEEN ¼ in. and ½ in. DEPENDING ON THE FORMER DEPTH, this being an allowance for a radius top (see diagram). Now, using the prepared template as a master curve and radiating it from the common point at the base you can easily draw the formers and with a final free-hand radius at the top you will have saved hours in producing a developed set of pear-shaped formers.

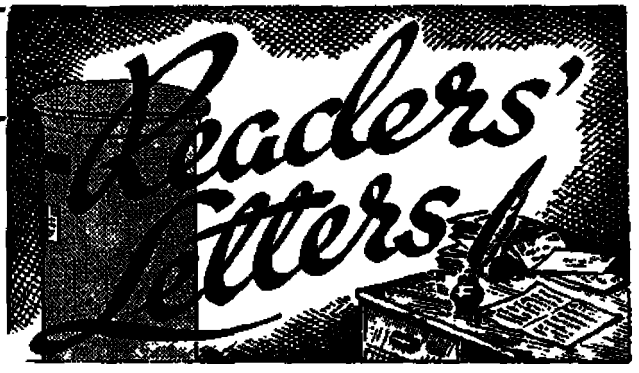
Other shapes, for example eliptical shapes which are symmetrical above and below a lateral centre line, must be drawn in a slightly different way.

Draw a vertical centre line and across it at right angles draw a lateral centre line. Then draw the deepest main former symmetrically about the intersection of the centre lines and make a template for one-half. Now mark off the accurate depth of each former on the vertical centre line equally above and below the intersection. From a plan view of the fuselage find the accurate width of each former and mark off on the horizontal centre line as before. Don't forget that you will have to identify each mark on the horizontal line with the two on the vertical line. To avoid confusion it may be best to construct two sets of centre lines and divide the formers forward and aft of the main template. Instead of using the whole length of the template to construct the formers as with pear shapes, use only quarter sections of the template and use BOTH top and bottom extremities of the formers as pivot points. Odd radius joints may be sketched free-hand to complete former contours where the curves do not completely match.

Equally useful is the idea of using a rib template as a French Curve where streamlining fillets at the wing/fuselage junction are desired. If the wing thickness at former stations can be calculated, and these thicknesses drawn at the correct position at the side of the former, it is simple to use the rib section templates to develop a perfect series of blending fillet curves.



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



DEAR SIR,

Although I have tried to resist writing about Mr. Haisman's ideas on the subject of changing the Wakefield Rules, I find that it keeps annoying me and hope to get it out of my system by putting my objections before you.

First of all, the present rules hit upon the happy medium in that they just happen to be about equally well filled by several types of model, ranging from streamlined low-drag ones with rather low weights of rubber, to the other extreme of box-like lightly built affairs which rely on their heavy rubber motors for performance. There is just not enough total weight to make the streamlined form "compulsory" in the sense that it is very much better than the other type, yet the box type must be built fairly heavy to handle the heavy rubber motors, so that we avoid extremes in that direction. The success lately attained by semi-streamlined models falling between the two extremes underlines this point.

Secondly, the present rules allow popularity in that it is possible to build a simple model and obtain very good flights, so that newcomers to the class find their models doing three minutes after only a short apprenticeship. There is no stagnation in a class of model which brings into being such diverse types as were shown in your September, 1949, issue, and there is plenty of scope in investigating the merits of pylon types, in developing really light folding propellers, and retracting undercarriages, all without adding to weight, to give an interesting time to the beginner when he passes out of the first stages.

In contrast, the new rules as advocated by Mr. Haisman of 12 ounces weight and only 3 ounces of rubber, would make one general style of model "compulsory", in that only very low drag models with retracting undercarriages could compete. The best L/D ratio I ever obtained with a Wakefield, having folding propeller, retracting undercarriage and a parasol wing of very good form, was 8, for a structural weight of 6 ounces, so that there would still be 3 ounces of weight to use up, which is rather likely to lead to crude structures, to my mind.

Another point is, that the rules advocated would not attract new followers. Models of the types needed are not easy to build and the likely performance, according to my slide rule, would be 130 seconds or so, in good trim, and probably nearer 100 in the hands of less experienced people, in view of the known fact that very streamlined models are less stable and less easy to trim than high drag types.

In view of these points I suggest that any changes towards the types of rule favoured by Mr. Haisman would only lead to the Wakefield becoming less popular, remembering that in these days with new forms of model activity coming along every year, there would be much stronger counter attractions than in the past, so that the return which a man would receive would be much less performance for much more work and more skill. The present strong point of the Wakefield is that it is the best of the rubber powered models from the point of view of performance, and this is the type which one would associate with the right to International class. The award of an International trophy will never make an unpopular type of contest popular, as witness the state of the Bowden Trophy which does not have as many entries as a good club competition.

I suggest then that the best thing to do about the Wakefield rules is to leave them alone, not to change them because some men are no longer keen on the type, or because the streamlined type of model, which was so very greatly overvalued for years, has suffered an eclipse. There will be plenty of other men willing to take up the event if the old hands wish to leave it, and no doubt they will find some better ways of stretching performance to yet higher limits.

Do you really fancy the job of explaining a new set of rules to the entire world, and do you think they would like the idea of this proposed alteration?

Stewarton M.A.C. ROBERT BURNS.

DEAR SIR,

As an overseas reader of AEROMODELLER I should like to take this opportunity to compliment you on your fine magazine. I find your articles and plans all very interesting and the ideas I have taken from Gadget Review are legion.

The occasion for writing this was brought about by a letter that appeared on your pages from one R. A. Anderson in reference to a picture of the Model of the Month that showed not only an excellent job of model building but one of the most beautiful girls I have ever seen. Believe me, two more like that and me for the next plane to England. That picture made my eyes light up like a pinball machine. All this, reader Anderson, despite the fact that I am a truly ardent modeller. I will gladly send Mr. Anderson several fine snapshots of models for a few of Miss Southgate. While I should not like to appear in the position of dictating to a magazine which really belongs to the English modeller, I would suggest that a few more such pictures (maybe full page, suitable for framing?) would not be amiss.

New Jersey, U.S.A. HOWARD D. SCHMIDT.

DEAR SIR,

Mr. Haisman in his letter published in your February issue has surely overlooked two most important points in his criticism of the present Wakefield Competition rules. Mr. Haisman says:

(*a*) "The Wakefield specification no longer provides a sufficient challenge to designing ability and ingenuity."

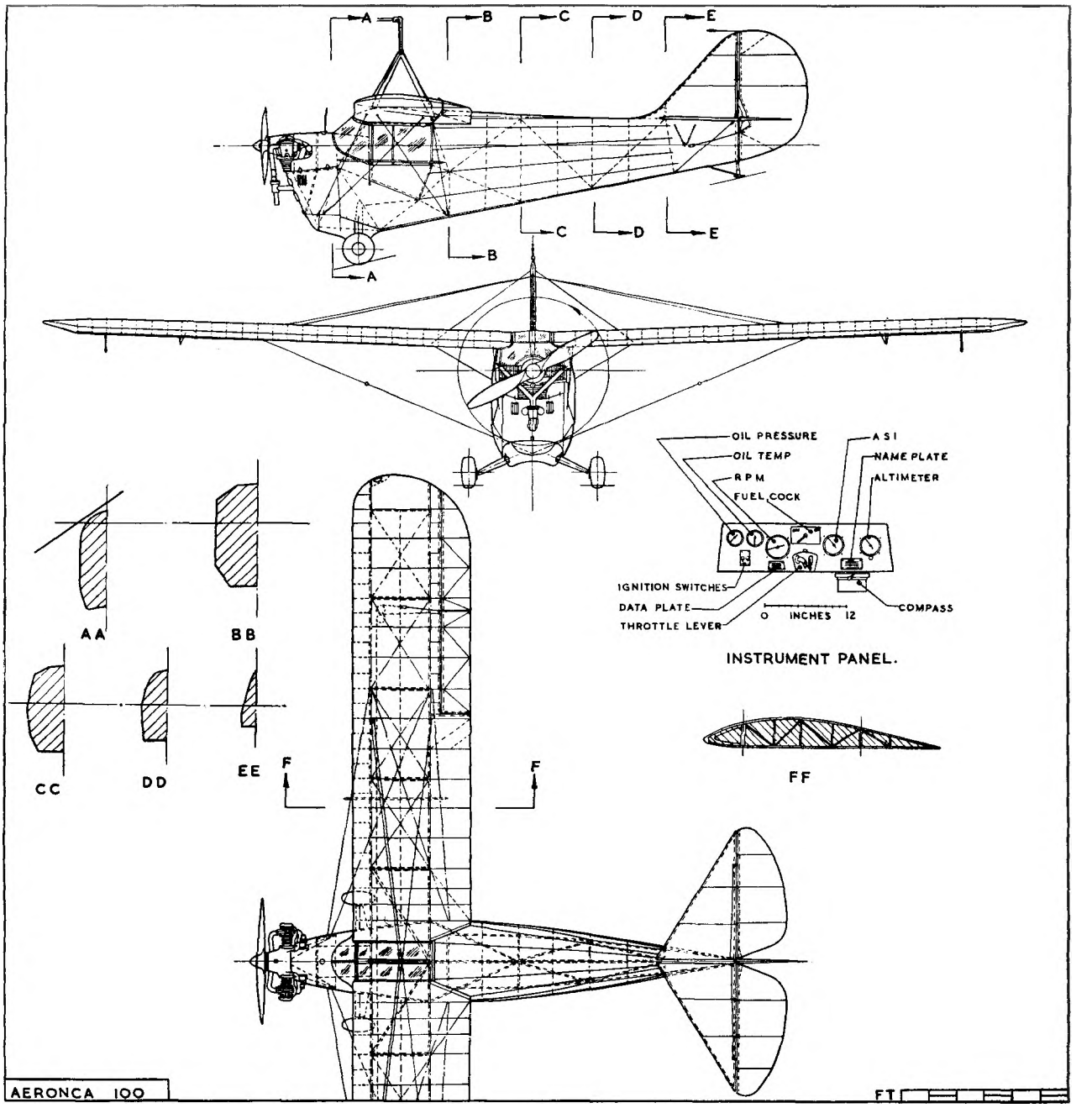
If he will take the trouble to examine the very excellent photographs and specifications of some of the models entered in the actual Wakefield Competition as published in the September 1949, issue of the AEROMODELLER, he will find this statement of his amply refuted. Having myself had the opportunity of examining every model during the processing, I can assure Mr. Haisman that in no other type of model at present being built is there such a tremendous variety of design, nor such an amazing display of originality and ingenuity. Mr. Haisman goes on to say:

(*b*) "Modern Wakefields closely approach the ultimate in the design of rubber-driven models, consistent with the amount of rubber which may conveniently be handled."

Yet, at the Wakefield Trials held on June 2nd, 1949, at Fairlop under absolutely perfect flying conditions, only one modeller, Chesterton, achieved three possible maximum flights. Admittedly of the first six who afterwards constituted the British team all bar one achieved two five-minute flights out of his three. But until the day a Wakefield Contest has to be decided by a fly-off between two competitors both gaining maximum possible marks, we must surely admit that Wakefield design has not reached the limit.

There is, of course, a great deal to be said for Mr. Haisman's suggestion of some limiting of the motor weight in future Wakefield specifications, and I agree with him that this would make the Contest just that little bit more difficult and therefore more interesting. But the time is not yet ripe and 1951 should be the time to consider this, not 1950.

H. J. NICHOLLS,
Technical Secretary, S.M.A.E.


A
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A S I
NAME PLATE
ALTIMETER
IGNITION SWITCHES
DATA PLATE
THROTTLE LEVER
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COMPASS
INSTRUMENT PANEL.
AA
BB
CC
DD
EE
FF
AERONCA 100
FT


G-AEVS

AIRCRAFT DESCRIBED

No. 31

BY E. J. RIDING

THE AERONCA 100

OF the various types of light aircraft flying to-day, the Aeronca is still the only practical two-seater aircraft fitted with an engine of less than fifty horsepower.

The name Aeronca was derived from the initials of the manufacturing firm—The Aeronautical Corporation of America, and an early model—a Type C.2, was introduced into this country as far back as 1930.

In the Autumn of that year, G–ABHE was supplied to Col. Ormonde Darby. It was a single-seater with an open cockpit and fitted with a 25 h.p. engine. Five years later, Light Aircraft Ltd., of Hanworth Airpark, Middlesex, took over the manufacturing rights of the Model C.3 side-by-side enclosed two-seater, and two Canadian-built specimens—registered G–ADSO and G–ADSP made by the Murray Aeronautical Corporation were demonstrated in public for the first time in September, 1935.

A factory was opened at Peterborough in the same year, and arrangements were made with J. A. Prestwich & Co. to build an engine of the same design as the original ones fitted in the C.3's, but with dual ignition and one or two minor modifications which would bring it into line with British C of A requirements. Very soon the firm started to receive orders from overseas, and it is said that a large South African order depended upon whether a machine could be flown straight out to Johannesburg irrespective of weather conditions. Undaunted by the thought of the distance involved, David Llewellyn left Hanworth on February 7th, 1936, and 23 days later landed at Rand Airport, Johannesburg. The distance of 10,000 miles was accomplished in 120 flying hours, the cost of petrol and oil being only £26. Later on another machine was delivered by air to Madrid, and during the succeeding twelve months fourteen further C.3's were erected at Peterborough, given a validation of their American Certificates of Airworthiness and marketed at £395 ready to fly away.

In September, 1936, the first all-British built C.3—designated the Type 100, was built at Peterborough. It was followed at regular intervals by sixteen further production aircraft, of which G–AESP, G–AEVS, G–AEVT, G–AEWU, and G–AEXD are flying at the present time. Further examples of both models, i.e., G–ADSO at Romney, G–ADYS at Woburn, G–AETG at Kidlington, and G–AEFU at Slough, should be flying again shortly.

The main differences between the C.3 and Type 100 lay in the substitution of the English-built J.A.P. engine, and the fitting of wooden ailerons with fabric covering instead of the all-metal ones on the American machine. Certain other modifications of a minor nature involving the local strengthening of the fuselage structure were carried out in order to make the machine conform to British C of A requirements. For some reason or other, G–AEVS, shown in our photographs, although bearing the British constructor's No. AB.114, has an American engine and metal ailerons.

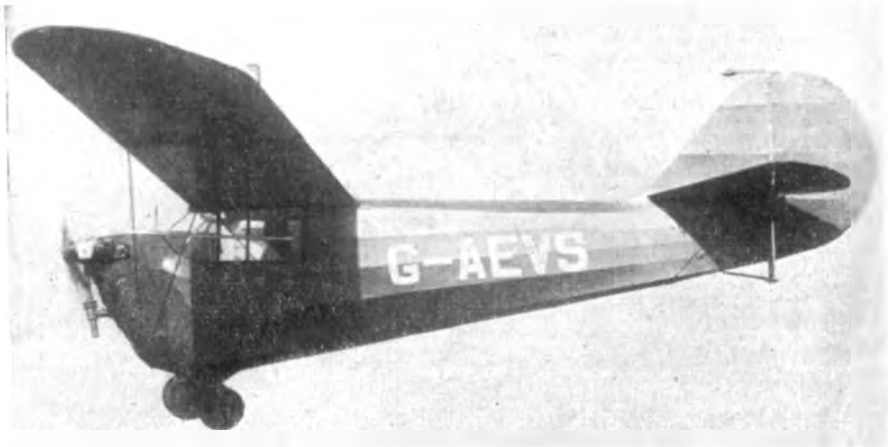
Construction: The fuselage consists of three steel tubular longerons arranged in such a way that one acts as a sort of backbone, and the other two as normal bottom longerons. A complicated system of triangulated welded steel tubular cross struts provide a very rigid basic structure. Plywood formers and spruce stringers clipped to the steel tubular cross struts carry the fabric covering. **Wings:** Consist of two solid spruce main-spars, built up ribs with fabric covering and braced internally with steel piano wire. The tailplane, rudder and elevators are all made from small gauge welded steel tube with fabric covering. The main fuel tank of 7½ gallons capacity is situated aft of the engine bulkhead. The undercarriage consists of two semi-cantilever axles, shocks being absorbed by two telescopic oleo pneumatic struts located inside the fuselage. The engine is a twin cylinder, aircooled, horizontally opposed J.A.P. unit, developing 38 h.p. at 2,400 r.p.m.

Colour: G–AEVS—dark blue-black all over with aluminium letters on the fuselage and wings.

Specifications:

Span: 36 ft. 0 in. Length: 20 ft. 0 in. Height: 8 ft. 6 in. Wing Area: 142 sq. ft. Tare Weight: 569 lbs. Max. Loaded Weight: 1,020 lbs. Max. Speed: 95 m.p.h. Cruising Speed: 87 m.p.h. Landing Speed: 33 m.p.h. Ceiling: 12,000 ft. Range at Cruising Speed: 305 miles.

1/36th scale reproductions of the G.A. drawing may be obtained, price 1/- from A.P.S. Copies of the photograghs from Eaton Bray at the usual prices.



THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

Wakefield Fund. Following a poor response to the 1949 appeal, the Society has introduced a full scale Draw in an effort to raise sufficient funds to enable British Teams to participate in the 1950 Wakefield Contest, and the International Glider meeting in Sweden. Reference to the contributions list for 1949 stresses the very poor showing by the majority of clubs, for from a total of just over £320 collected, more than two thirds was donated from five sources, only one of these being a club. It is to be hoped that the new system will prove more successful, for most people love a gamble!

British National Records. Since the last list appeared in these columns, the following records have been ratified :—

POWER, CLASS C			
F. A. Chatwin (Birmingham)	3 : 12·5	Ratified	11/12/1949
C/LINE SPEED, CLASS III			
J. G. Carter (Croydon)	89·1 m.p.h.	,,	11/12/1949
C/LINE SPEED, CLASS VII			
R. V. Steveni (Guildford)	133·3 m.p.h.	,,	11/12/1949
INDOOR, TAILLESS H.L.			
R. Booch (Manchester)	1 : 17·4	,,	15/1/1950
INDOOR, R.T.P. SPEED			
A. F. Young (Brent & Chiswick)	37·75 m.p.h.	,,	15/1/1950
C/LINE SPEED, CLASS VI			
N. G. Taylor (Wimbledon)	111·1 m.p.h.	,,	15/1/1950
C/LINE SPEED, CLASS IV			
D. R. Powell (East London)	97·3 m.p.h.	,,	5/3/1950
POWER, FLYING SCALE			
W. T. Tinker (Ewell)	1 : 36·5	,,	5/3/1950
LIGHTWEIGHT GLIDER T.L.			
W. J. Callender (Hayes)	7 : 41	,,	5/3/1950
INDOOR, TAILLESS R.O.G.			
M. R. Thomas (Oldham)	0 : 37	,,	5/3/1950
M. R. Thomas (Oldham)	1 : 24·5	,,	5/3/1950
INDOOR, TAILLESS H.L.			
M. R. Thomas (Oldham)	1 : 25·8	,,	5/3/1950

Record Applications. The following applications for British National Records will be tabled for ratification at a Council meeting on April 22nd, 1950 :—

INDOOR, TAILLESS R.O.G.	M. R. Thomas (Oldham)	1 : 46·2
INDOOR, HELICOPTER R.O.G.	S. A. Ward (Wolves)	2 : 00
INDOOR, FUSELAGE R.O.G.	R. T. Parham (Worcester)	6 : 42
INDOOR, FUSELAGE H.L.	R. T. Parham (Worcester)	6 : 55
INDOOR, R.T.P. SPEED	T. A. Jolley (Warrington)	42·83 m.p.h.
OUTDOOR, LIGHTWEIGHT GLIDER H.L.	M. L. Hanson (Solihull)	10 : 30

Merit Certificates. Merit Certificates have been awarded to the following :—

No.	CLASS B	No.	
162	Howard, J. A. (North Kent)	274	Ricks, A. (Willesden)
262	Done, J. R. (Merseyside)	269	Bennett, D. (Whitefield)
267	Woodhouse, R. (Whitefield)		
No.	**CLASS A**	**No.**	
227	Clarke, F. (Bolton)	336	Askew, R. (Higher Crumpsall)
228	Shuffle, A. G. (Reading)		
229	Balding, A. G. (Grimsby)	339	Ashton, P. J. (Rochdale)
330	Witt, D. C. (Peterborough)	340	Melling, R. J. (Wallasey)
331	Cave, D. (Chester)	341	Howarth, D. (Congleton)
332	Turner, R. G. (Wallasey)	342	Horsley, P. (Mersey)
333	Ashcombe, J. W. T. (North Kent)	343	Foster, B. J. S. (Mersey)
334	Preston, R. (West Yorks)	344	Carrington, E. C. (Prestwich)
335	Moffatt, K. R. (Burnley Skyrangers)	345	Wetherby, C. (West Yorks)
336	Bostock, T. B. (Burnley Skyrangers)	346	Tootell, W. (Chorley)
337	Ellison, I. (Burnley Skyrangers)	347	Nixon, F. (Chorley)
		348	Dawe, G. (Chorley)
		349	Picton, L. (Wigan)
		350	Hepworth, J. (West Yorks)

Royal Aero Club Delegate. Mr. B. Metcalfe having other committments, his place is now filled by Mr. D. S. Swallham. Tribute was paid to Mr. Metcalfe's great assistance during a difficult period, his sound advice being at all times an asset to Council discussions.

Model Specification — Flying Scale Records. The Council states that applications for Flying Scale records will only be entertained where the model is true to scale in dimensions and appearance, with the exception of the airscrew.

Engine Checks. In all future applications for British records in power sections, both free flight and control-line, engines must be submitted for capacity check purposes by the Technical Secretary. All such engines will be impounded by officials at the meeting.

F.A.I. Loading and Merit Certificates. With the introduction of a new category of Lightweight Records, machines used for class A and B Merit Certificate attempts are no longer required to conform to F.A.I. loading factors. The "C" class certificate remains as before, this being to International standards.

CLASSIFIED ADVERTISEMENTS

PRESS DATE for July issue—May 9th, 1950.

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Mills Mk. 1 as new, £3 or nearest. Anderton, Seven Stars Inn, Eccleston, St. Helens, Lancs.

"A.T.C." and "Air Reserve Gazettes," October, 1941–June, 1947. 7 missing. 36 copies AEROMODELLER, August, 1943–January, 1949. £2. Paskell, 24, Elsden Road, Tottenham.

Absolute clean AEROMODELLERS, 1943/49, inclusive, £2. 10s. 0d. 44 "A.T.C. Gazettes," 1943/45, 1946/47, 15/-. "A.F.P.," Vols. I–VII, perfect, £5. 5s. 0d. Holderness, 32, Elthorne Rd., Uxbridge.

McCoy Sportsman Junior, £3. 5s. 0d. Ohlsson 29, £4. Drones, £4 each. Madewell 49, £4. 5s. 0d. E.D. Infant, 35/-. Yulon, £3. 17s. 6d. 10 c.c. Micron, £3. Frog 100, 17/6. Bacon, 110, Kingsthorpe Grove, Northampton.

Cossor Radio Control Transmitter, Receiver complete with batteries, as new, £10. What offer for Stentor 6 c.c. and Mills 1·3. Blackwood, 49, Shortland Road, Shortlands, Bromley, Kent.

"Aircraft of the Fighting Powers," Vols. 1 to 7. Good condition. Offers. Box No. 274.

Bench run only, Amco ·87 Mk. II with prop., £2. 10s. 0d. Frog 180 with V.P. prop., £2. Bolton, 44, Merewood Avenue, Headington, Oxford.

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Cossor Radio Control gear for sale. New, unused, £9 complete or will separate. Contester 10 c.c. motor, perfect, £5. 10s. 0d. P. Oram, 8, Onslow Street, Guildford, Surrey.

Bowden Contest 63 in. silk-covered wing and tail, airwheels, fitted Vulture 5 c.c. with extension shaft, suitable R/C, £6. 15s. 0d. E.D. II extension shaft, 35/-. E.D. III extra glo-head and plug, £2. 10s. 0d. Whippet, 10/-. AEROMODELLERS, 1944/48, 10/- per annum. "Model Aircraft," 1949, 7/6. "Practical Mechanics," 1945/49, 10/- per annum. E.D. Bee, £1. Also other items. Scott, 13, Teviotdale Place, Edinburgh, 4.

AEROMODELLERS, Dec., 1943—Sept., 1949, 5 bound vols., 10 loose, nearest £4. Marsh, 149, Hall Lane, Walsall Wood, Staffs.

Ohlsson 23 rotary valve, glo-plug, brand new, run 10 minutes. £6 or offers. Powell, 66, Brunswick Street, Leamington Spa, Warwickshire.

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EXCHANGE

"K" Vulture 5 c.c. complete with diesel and glo-plug heads, condition good, exchange for Elfin 2·49 in similar condition. Box. No. 275.

(continued on page 325.)

CLUB NEWS

BY CLUBMAN

Will Club Secretaries please note that with the bringing forward of our press date Club Reports must arrive not later than the 10th of the month, i.e. 10th of May for the July issue.

HOW many of you have still to get your tickets for the great Wakefield Draw? Remember, the closing date is the 31st May, and the draw on the 10th June will decide the lucky winners. Even if you are not attracted by a trip to Finland or Sweden, the many other prizes are of such value that it is worth anybody's shilling to have a try, apart from the knowledge that you are supporting a very worthwhile cause. Those of you unable to obtain a ticket locally can send in to me, and ticket/s will be sent by return of post. So, don't dally any longer, but send in right away and swell the fund that will enable a full British team to have a go at getting the famous Cup back to this country.

There is a slight possibility of participation in this year's American P.A.A. event, and enquiries are going ahead with the home agents for Pan American World Airways to find out just what chances there are in sending one or more British contestants to America for this interesting event. The contest takes place during the American Nationals, and requires a power model incorporating dummy "passengers" weighing 8 ounces each. As the advert. states: "Here's all there is to it; P.A.A. Load Event calls for a free-flight, rise-off-ground, gas-powered model, which carries a specified pay load in a specified manner". Sponsored by Pan American "as a challenge to you to build model planes of more realistic character and to fly them in a more practical demonstration of true aviation value", this contest has that little something that makes all the difference in comparison with an out-and-out duration event with its consequent "freak" type of model and flight characteristics, and is a type of contest we could well consider including in our own National programme.

For those interested in developing this type of model and/or contest, the following brief rules give the necessary gen: Two classes of model are eligible, Class A and Class B. Class A models have to carry one dummy passenger, and Class B two. Dummy occupants shall be composed of a body at least 3×3×1 in. surmounted by a "head" at least 1×1×1 in., made of any materials with each occupant weighing at least 8 ounces. Except for balance purposes the weights shall not be essential to the operation of the model, and must be contained in an upright position relative to normal flight, facing forward. The dummies must be placed within an enclosed compartment providing visibility through transparent areas at least 1 in. high to the front and to both sides of the heads of the occupants. The dummy/s must be readily removable from the compartment for checking purposes. Well, there it is, and if any of you have a go at this type of flying, I shall be pleased to learn of your results for passing on to others.

Travelling up to Manchester a few weeks ago I had the pleasure of assisting in judging the model aircraft section at the 2nd **NORTHERN MODELS EXHIBITION**, held again in the Corn Exchange (see last month's "Club News" for other activities at this venue). This year's show of aircraft was a great improvement on the previous affair, and the hand of the **NORTH-WESTERN AREA** committee was very evident. The one criticism I would make is the continuance of the system of splitting up the entry among a number of tables around the hall. This made judging somewhat tedious, but more so in my opinion was the fact that visitors got their model aircraft in small doses, and in a hall of that size the opportunity of a grand display was lost.

Veteran R. F. L. Gosling proved top man with his beautifully constructed Tern II, a 7 ft. span sailplane that was the forerunner of the "Nordic Tern". An unfinished version of the Nordic was also on show, and nearly took the Championship prize—the AEROMODELLER Cup. These machines made very interesting comparison with a couple of very early vintage A-frame models Gosling had on show, though it was evident that even in those days Bob was well on the way to his well-known constructional excellence.

Many of the junior models were extremely good, particularly in the rubber-powered section. One criticism is true of all—except Gosling. When will modellers realise that an average job of construction cannot be hidden under dozens of coats of high-gloss dope! It only makes blemishes all the more noticeable. Class winners were:—

Power	R. Duncan (Cheadle Hulme)	"Firecracker"
Rubber (Senior)	T. Whalley (Whitefield)	Wakefield
" (Junior)	R. Duncan (Cheadle Hulme)	"Korda"
Flying Scale	F. W. Ward (Ashton)	Sopwith Pup
Gliders (Senior)	R. F. L. Gosling (Liverpool)	Tern II
" (Junior)	M. O'Donnell (Whitefield)	"Mielnir Mk. 6"
C/Line	C. B. Jackson (Ashton)	"Merlin"
Solid Scale	Miss J. M. Knowles (Sale)	"Heinkel H.E.40"

Special mention should be made of the loan section of scale models put on by Mr. Parrish of Ashton—it was lucky for the others he was not competing in the other sections, his work being outstandingly good.

The **SOUTHERN AREA** have recently acquired a fine trophy for inter-club competition, the annual winners being decided by a complicated points system. 1949 winners proved to be Southampton M.A.C., and the trophy was duly presented at the recent Area A.G.M. by Mr. B. Welch.

Contest venues fixed by the **NORTH-EASTERN AREA** for the season's Area events are 16th April and 9th July, Newcastle Town Moor, and for 14th May, Shotton or Newcastle. The venue for the last meeting in September has yet to be agreed.

Similar announcement from the **EAST ANGLIAN AREA** gives Willinggale Aerodrome for the first two meetings, and Ipswich Airport for 9th July.

The **WESTERN AREA** having apparently come up against some snags in recent months, Mr. Houlberg and myself travelled down to Bath some weeks back in order to assist the existing "caretaker" committee to get matters straightened out. I am happy to relate that a large gathering was unanimous in continuing the Area affairs, and a committee elected on the spot are in full swing. It was a pleasure to get down there and meet so many people who so far have been names only, and it is to be hoped that closer contacts of this nature can be made in the future, for it is so much easier to put a point of view forward in person, and eliminates so much misunderstanding.

MIDLAND AREA semi-centralised events are scheduled for Walsall Airport in April, Anstey Aerodrome (near Coventry) in May, and a full control-line day at Dudley in July. Venue for the September meeting is not yet settled, but it is hoped to make this a full scale Rally in view of the open type of contests in the programme.

Trustee members of the old T.M.A.C. have presented the **LONDON AREA** with a fine silver trophy for annual competition. There is a possibility of a special train being booked for the London contingent for this year's Nationals at York.

The **LANCASTER & MORECAMBE M.A.C.** announce a mistake in the date published for their Rally. This will take place on the 9th July and not the 16th as previously reported. (Incidentally, the Morecambe & Heysham club has now amalgamated with the L. & M. group.)

Facilities in the **PRESTWICK M.A.C.** are enough to make your mouth water! Two large hangars at Prestwick Airport are available all the year round for C/L work; Heathfield (R.N.) Aerodrome is in use all the year round for free-flight purposes; a large hall is used for r.t.p. from September to May; and a fully equipped workshop. Club fees are £1. 1s. 0d. for seniors, and 10/6 juniors, which are inclusive of Insurance and Affiliation fee to the S.M.A.E. And some think it too much!! They should thank their lucky stars, for there are many clubs with even higher subs. who have nothing like the facilities that this club enjoys.

The **RUISLIP M.A.C.**, having recently been strengthened by several members from the now disbanded Harrow M.A.C., is well represented in all branches of the hobby. Much activity is taking place in readiness for the Brighton control-line meeting, and J. Clarke has set up a new club speed record of 94·2 m.p.h. with his Elfin 2·49 powered machine. Attempts to fly Lionel Gay's Juggernaut speedster have again been unsuccessful—the jet will start quite easily in the back garden (with an "after burner") but is baulky on the flying field. There's a moral there somewhere!

I am asked to point out that the forthcoming North Hants. Rally (30th April) is organised by the combined Alton, Basingstoke and Odiham Clubs. The C/L Speed competition previously announced has been withdrawn. (Mention of this part of the country brings to mind the fine exhibition staged by the **ALTON M.A.C.**, which I was able to inspect on my way through to Bath. A very good collection of models was on view, and r.t.p. flying with Jetex and tiny diesel-powered jobs held the interest of a large crowd. One very fine piece of work was a model of the A.P.S. "Eros", which I believe won the championship.)

Due to lack of support, the **WIMBLEDON & D.M.A.C.** has disbanded, but I note the formation of a new club in this district, but apparently limited to power models. Could be that other types have taken a nose-dive in Wimbledon, but it's a pity in my estimation; any club should cater for all classes of models.

A recently introduced system in the **YORK M.A.S.** seems to be producing results. A small management committee seems to have things well under control, and the general interest of the junior section augers well for the future. As the press sec. states: "when juniors start nibbling at R/C and even build a 'Sunspot' 10-footer, then anything can happen!"

A very worthwhile scheme seems to be finding more support these days. This is the general raising of club fees, and the club takes on responsibility of insuring and affiliating the members. **MERSEY M.F.C.** are now working in this manner, and it is a system I can commend all round, as far too many individuals are careless in such important matters as Insurance, a defalcation that could seriously affect the club as a whole. In an effort to raise club funds, a sweep will be run on all non-competition flying days, all types of model competing on a handicap basis, power counting full time recorded, rubber 80 per cent. and gliders 60 per cent. Half the proceeds go to the winner, the other half to the club.

Following affiliation to the S.M.A.E., **SUNDERLAND & D.M.A.C.** now have the use of R.A.F. Airfield, Usworth. Free flight is allowed after the daily work of the section is ended, and a hangar is available for indoor C/L flying at weekends. The loss of the club field last year broke up organised club flying, but it is hoped that now the boys will be able to get together again. They are now looking forward to some pleasant flying this summer—free at last from the usual small boys and large dogs!

REGENTS PARK M.F.C. have instituted a "Model of the Month" competition. Club members bring along their pet models—new or old—which are judged by non-entrants in the first place, models then having to make qualifying flights of a reasonable duration; two circuits for C/L jobs.

At a club dinner staged by the **SPALDING & D.M.A.C.** in February, contest winners were presented with various prizes in the various modelling sections. A. C. Willcox (now secretary) won the power section for a total time of 10 : 27, breaking the club record with one of the flights which totalled 8 : 31. G. Gilliat won the rubber section for the second year in succession with a total of 3 : 06, while J. R. Mann was top glider wallah with 4 : 45. Best of the juniors was R. S. Culpin.

The Cannock Chase boys have changed their title, and are now known as the **OUTLAWS (Cannock) M.A.C.** Though interest has mainly centred on controlining up to now, several entries are expected for free flight events this year. M. Jarvis has clocked 91·4 m.p.h. with his Eta 29 powered original, and at least two members are trying their hands at R/C.

At an Extraordinary General Meeting of the **NORTH KENT M.A.S.**, held on 10th February, some of the senior members announced their resignation from the club to found a new club. It is a pity to see this happening in such an old and well established group as North Kent, but is apparently the usual outcome of the sharply divided requirements of the comp. and non-comp. minded sections of a club. I had the pleasure of visiting Kent to give a film show to this club recently, and spent quite a jolly evening with some eighty people present.

The Gloucester section of the Gloucester & Cheltenham M.A.C. have formed their own local club under the title of **GLEVUM M.A.C.**, Glevum being the old Roman name for the city. Mr. J. S. Bishop, the chairman, has since been elected Area Delegate for the Western Area and will take his place on the Council at their next meeting.

FIVE TOWNS M.A.C. members have started serious test flying with Wakefields and other types, Nordic gliders receiving special attention. G. Roberts has been getting good results with one of the latter type, though being used to lightweights he finds it difficult to get up to the minimum weight! Spin dizzies Ron Buck and Frank Snow have been trying out two in a circle, but find it adds up to the wrong number!

The last two of the **BLACKHEATH M.F.C.** inter-team contests went to J. W. Gaunt, who won the r.t.p. section, and D. Hewett who came in first in the power ratio event, held in very gusty weather. On the same day N. Oliver recorded 95 m.p.h. with an Eta 29 powered speed job. The autogiro boys having a certain amount of success, are beginning to become painfully aware of "g". Comment is being made on the popularity of table tennis amongst the members of the Blackheath Model FLYING Club!

PORTSMOUTH D.M.A.C. announce the date of their Fifth Southern Counties Rally, which will be held at R.A.F. Station, Thorney Island on 17th September. They feel that a number of contestants missed last year's event by reason of the name, but the Island is quite a large place covering over 5 square miles of territory. Flights of between eight and nine minutes last year were accomplished, and still landed on the island. The Bournemouth club have awarded the Control-line Trophy to this meeting.

Last month has seen a lot of activity in the **LOUGHBOROUGH COLLEGE M.A.C.**, many new contest machines making their appearance, mostly diamond pylon Wakefields, in which the club has specialised. Best to date was Geoff Salt's "Montarn IV" which won the Midland Area Rally in 1949, and still turns in excellent times. It held the club record for 15 minutes o.o.s. until a few days ago, when Roy Chesterton achieved 26 minutes on a test flight with his new Evans "Clipper", landing within the aerodrome! R/C has received a lot of attention, and many models are performing successfully, whilst Dave Sharp's A/2 glider is proving worthwhile on test.

A very successful dance staged by the **ILFORD & D.M.A.C.** was graced by the presence of the Mayor and Mayoress of the town, who will be remembered from last year's Nationals at Fairlop. Junior member Malcolm Bridgeman later had a field day, for he not only won the club glider comp. against all-comers but raised the club glider record with a time of 16 : 08·5. Pity there was only one watch on the job, or this could have been claimed as a new British record in the lightweight glider class.

Following a visit to Hounslow Heath on 12th March, many members of the **WILLESDEN CLUB** were inspired with R/C possibilities, having seen W. Tansley's R/C "Bowden Contest" powered with an Olhsson 23. The model incorporates a Cossor receiver with home-made transmitter and actuator, working rudder only. After four hours' trouble shooting, he made two flights under full control. The club is very much alive, and meets in the Lower Hall of Dudden Hill School every Tuesday at 7 p.m.

Something new in lightweights appeared recently in the **CROYDON & D.M.A.C.** in the shape of Jack North's latest creation. Model is the usual parasol slabsider, but has 300 sq. ins. of wing area, and any Wakefield looks lost beside it. The massive two-bladed folding prop. takes it up in a near vertical climb—the only snag being that after winding

up all that rubber he just hasn't strength left to run after the model! Jim Carter has installed a Maraget 29 in a new pod and boom speed design, and has already clocked speeds of 109 and 115 m.p.h.

The **SWINDON M.A.C.** are staging a novelty slope soaring contest on 7th May on the Wiltshire Downs above Broad Hinton by Hackpen Hill. Operations will commence at 11 a.m., and all types of model are eligible. Light refreshments will be available, and all clubs interested are asked to contact the club secretary, R. H. Smith, 107, York Road, Swindon, for road maps and full details. (S.A.E. please.)

The annual Rally of the **BOLTON M.A.S.** will take place at Affetride on 6th August, main contest being for the Greenhalgh Trophy for team rubber.

Highest flight times of the past month in the **WHITEFIELD M.A.C.** were 19 : 15 and 7 : 00, both o.o.s.; models belonging to J. O'Donnell and A. Cropper. The latter's model was returned in a very battered condition after being flown (?) by the finders!

The **BRISTOL & WEST M.A.C.** are progressing well with their indoor meetings, which have been well attended. The use of Lulsgate Aerodrome has been secured, plus a building on the drome as a clubroom. It is hoped to resume meetings on Durdham Downs as soon as the lighter evenings appear, when informal comps. will be held if sufficient numbers turn up.

The **FORESTERS (Nottingham) M.A.C.** put out a very chatty club magazine that should be invaluable to the members. Club records are as follows :—

Power	J. Howard	15-1 ratio
Glider	O. Ward	7 : 25
Rubber	D. Ward	7 : 43
Wakefield	O. Fox	5 : 00

The **NORTHERN HEIGHTS M.F.C.** recently participated in an exhibition in connection with the film "12 o'clock High", this forming part of the club's publicity drive. Organisation activities are full speed ahead for the annual Gala, which takes place at Langley on 2nd July.

Following the decision to make a film of club activities, members of the **PHOENIX M.F.C.** have been seen smartening themselves up, with clean shoes, etc.! C/L flying is still No. 1 with these chaps, but the strain is beginning to tell, and no doubt free-flight will be more alive this summer.

Though, as the press sec. of the **AINTREE M.A.C.** says, the club records are not much to write home about, a fortnight ago Roy Godfrey got an unofficial flight of four and a half hours on a five-second engine run. The "Banshee" used was 3·5 Amco powered. Ron Walker has a twin-engined Frog-powered "Welkin"—the two engines sounding almost like the real thing. For the rest of the club, the tendency is free-flight power and gliders. Rubber breaks out occasionally like measles, but control-lining has died a natural death.

The **WORKSOP AEROMODELLERS** organised a rally on the 26th March at Scofton Airfield, which was blessed with almost perfect weather and proved a great success. The only grouse heard was from a speed modeller who thought his speed model was going faster than the timekeepers (and everybody else) did. Ten clubs competed in the four events, and many free-flighters were lost in spite of dethermalisers. In the C/L events a jet job did several laps in flames, and a McCoy 60 speed model picked up at least 10 m.p.h. after it shed its cowling. Full results were :—

Power Ratio	D. Noble	(Foresters)	21·56-1
	Howard	(Foresters)	12·57
	Hatch	(Sheffield)	12·62
Rubber/Glider	Parsons	(Sheffield)	6 : 05
	Oldfield	(Foresters)	6 : 00
	Cooke	(Rotherham)	5 : 25
C/L Stunt	Cooke	(Rotherham)	290 points
	Russell	(Worksop)	209 "
	Dutton	(Rotherham)	233 "
Speed Handicap	Russell	(Worksop)	121·5 m.p.h. (79·6% Jet)
	Banks	(Rotherham)	81 (88% " IIIA)
	Miss McCann	(Worksop)	45 (85%-½)

In first-class weather (for that part of the country!) the **EDINBURGH M.F.C.** entertained members of the Blackhall club to a meeting on the home ground, Edinburgh winning all the free-flight events, but being trounced in C/L. Results were :—

Glider	R. Jackson	(Edinburgh)	3 : 21
	K. Coates	(Edinburgh)	3 : 11·3
	I. Watson	(Edinburgh)	1 : 17·4
Rubber	K. Coates	(Edinburgh)	8 : 36·7
	R. Jackson	(Edinburgh)	4 : 47·5
	R. H. Robertson	(Blackhall)	3 : 28
Power	I. Watson	(Edinburgh)	1 : 59
	J. Norbury	(Edinburgh)	1 : 40·6
	Tunstill	(Blackhall)	: 59
Stunt	C. Dummer	(Blackhall)	300 points
	I. Watson	(Edinburgh)	94 "
	A. Joyce	(Edinburgh)	37 "

Ian C. McKenzie of "Cloveiley", Sanderstead Road, Sanderstead, Surrey, is interested in getting a club going, and asks anyone interested in the Sanderstead-Purley Oaks area to contact him. Also, A. P. Servis of 32, Fifth Avenue, Manor Park, London, E.12, wishes to reform the old East Ham & D.M.F.C. Any helpers are requested to get in touch with him at once.

This month's Tall Story goes to D. C. Smith of Loughborough College for the following: "Phil Joyce was flying his R/C model, filled the tank and set it off, only to find that the set was out of tune, and no control was obtained. 'Ooozlam' set off for Leicester climbing and flying dead straight at about 40 m.p.h. Just as he decided it had gone for good, the H.T. must have come unconnected, for it suddenly went into a tight right-hand spin, gathering speed until a few feet off the deck. Then—without warning the aircraft pulled out and landed! The H.T. must have touched momentarily, and reversed the rudder at exactly the right moment. Incidentally, the machine must be very tough, since the runway came off second best when on another occasion it tried to plough it up!"

Well, that's it for this month, so cheerio, and hey-ho for the competition season. Where's that fine weather!!

The CLUBMAN.

NEW CLUBS.

OUTLAWS (Cannock) M.A.C. (Formerly Cannock Chase M.A.C.)
D. Durling, 64, Allport Road, Cannock, Staffs.

CHRISTCHURCH M.A.S.
J. L. Barnes, Holmhurst, Hinton Wood Avenue, Highcliffe, Hants.

RYDE & DISTRICT M.F.C.
D. Cox, Flat R, 65, Park Road, Ryde, Isle of Wight.

WIMBLEDON POWER CLUB.
N. G. Taylor, 145, Kingston Road, London, S.W.19.

MARTLESHAM HEATH M.A.C.
F/Sgt. T. C. Hiorns, No. 25 (B) Married Quarters, R.A.F. Station, Martlesham Heath, Nr. Woodbridge, Suffolk.

DE HAVILLAND GYPSIES.
G. J. Sweetapple, 9, Lennard Road, Bromley, Kent.

DEREHAM & D.M.A.C.
J. Grimwood, 2, Lavengro Houses, Norwich Road, Dereham, Norfolk.

KENTISH NOMADS M.F.C.
A. R. Parker, 3, Eversley Avenue, Barnehurst, Kent.

STAPLEFORD & D.M.A.C.
N. A. Slack, 10, Portland Crescent, Stapleford, Nottingham.

TIBSHELF AERO CLUB.
W. H. Draycott, 1, Heathfield Terrace, Tibshelf, Derbys.

SECRETARIAL CHANGES.

NORTH KENT M.A.S.
C. Bridger, 2, Westwood Lane, Welling, Kent.

SPALDING & D.M.A.C.
A. C. Willcox, 8, Rotten Row, Pinchbeck, Spalding, Lincs.

CHESTER M.A.S.
G. F. Tomlinson, 9, Milton Street, Chester.

COLCHESTER M.F.C.
R. Mills, 56, Dilbridge Road, Colchester, Essex.

SALFORD M.A.C.
N. Middlemiss, 65, Cholmondeley Road, Salford 6, Lancs.

BOSTON D.A.C.
S. C. Marshall, 3, Skirbeck Road, Boston, Lincs.

CHELTENHAM M.A.C.
H. Organ, 26, Bath Street, Cheltenham, Glos.

REGENT'S PARK M.F.C.
H. Bradley, 22, Freegrove Road, Holloway, N.7.

GLASGOW BARNSTORMERS M.F.C.
I. McConchrane, 95, Great Western Street, Glasgow, C.4.

PORTSMOUTH BRANCH R.Ae.S.
A. Sutton, 495, Commercial Road, Mile End, Portsmouth.

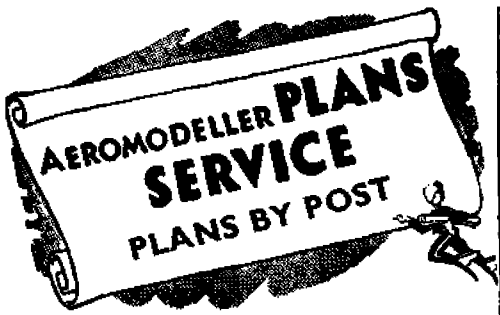
WORTHING M.F.C.
R. Pearson, 9, Terrenges Avenue, Tarring, West Worthing, Sussex.

LANCASTER & MORECAMBE M.A.C. (Incorporating former Morecame & Heysham M.A.C.)
E. Tyson, 47, Granville Road, Lancaster.

NEATH & D.M.A.C.
P. Williams, 10, Addison Road, Penceoral, Neath, Glam.

SUNDERLAND & D.M.A.C.
G. Jackson, 21, Osvald Terrace South, Castletown, Sunderland, Co. Durham.

PRESTON & D.M.A.C.
I. C. Taig, 2, Garden Walk, Ashton, Preston, Lancs.



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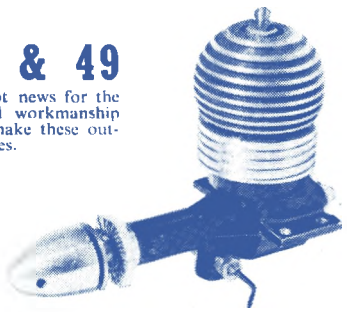

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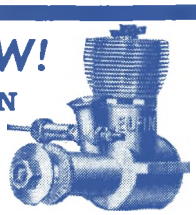

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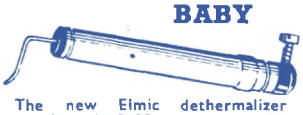

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