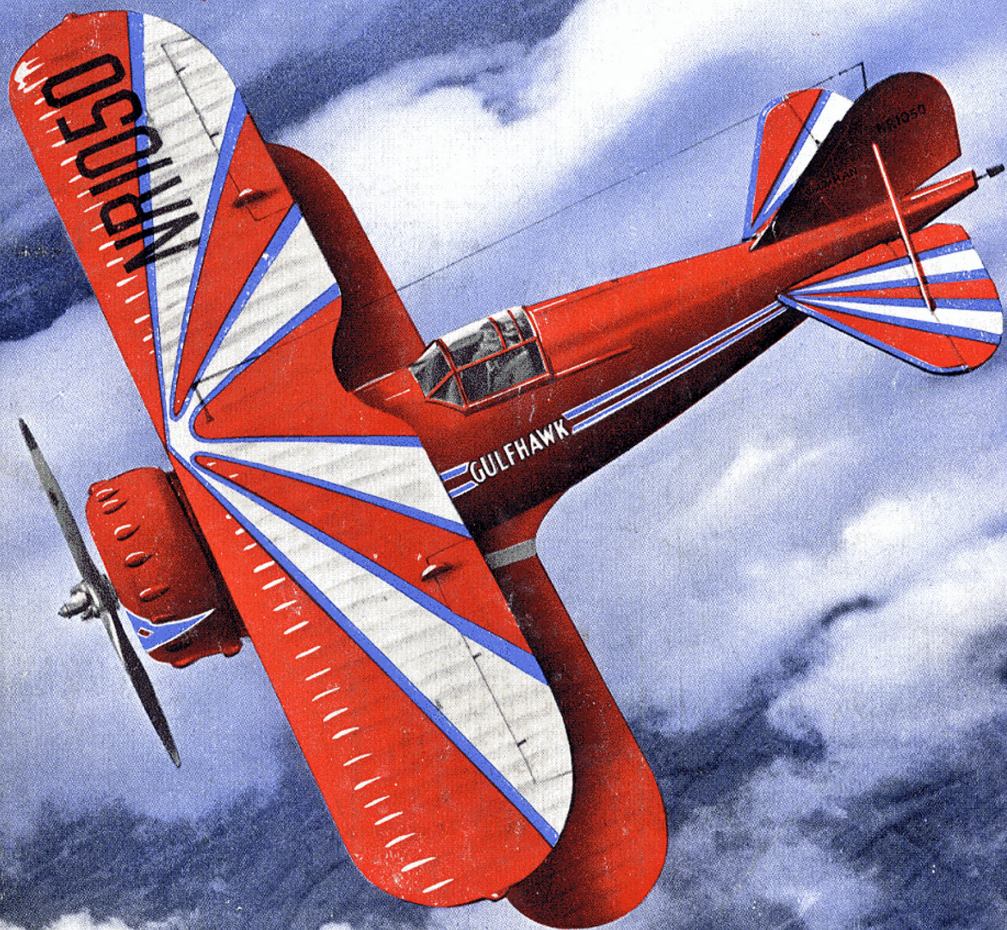


JUNE 1958

# AERO MODELLER



*Grumman 'GULFHAWK' Feature*

**1/6**

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Recent comments have suggested that British Engine Manufacturers have been resting on their laurels and we are therefore pleased to announce that a new and revolutionary Davies Charlton engine will be available in the near future. We have, in fact, been working on many projects during the past year. Some have fallen by the wayside, others are being brought to fruition like this new motor, which we fancy will cause a stir in the world of modelling when it is released.

To create interest we are giving aeromodellers everywhere the opportunity of forecasting the characteristics of this new motor and the chance of winning handsome prizes. We invite all aeromodellers to participate in a simple competition, which entails making an intelligent forecast as to the size, type, capacity, etc., of the next D/C motor, this to be written clearly on one side of a sheet of notepaper.

We are also interested in knowing what you aeromodellers want in the way of new engines as distinct from our new product, and ask that all entries be accompanied by a separate specification for what the entrant considers to be his ideal model aero engine. This should again be detailed on one side of a sheet of notepaper together with drawings if desired. Both papers should be posted to the address below marked "Competition" to arrive not later than July 31st, 1958. The prizes will be awarded to the entries which are nearest to the specification of the next D/C motor, and which are accompanied by the most worthwhile specification for a future engine.

Results will be given in the October "Aeromodeller", published September 15th, and the competition will be judged by Mr. E. H. Davies and the Editor of "Aeromodeller", whose decision will be final. Entry of the competition means automatic acceptance of the above decision.

Due to currency restrictions in some areas any successful overseas entries will be credited with goods to the value of the cash prizes listed, which will include priority delivery of our new motor.



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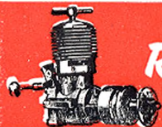
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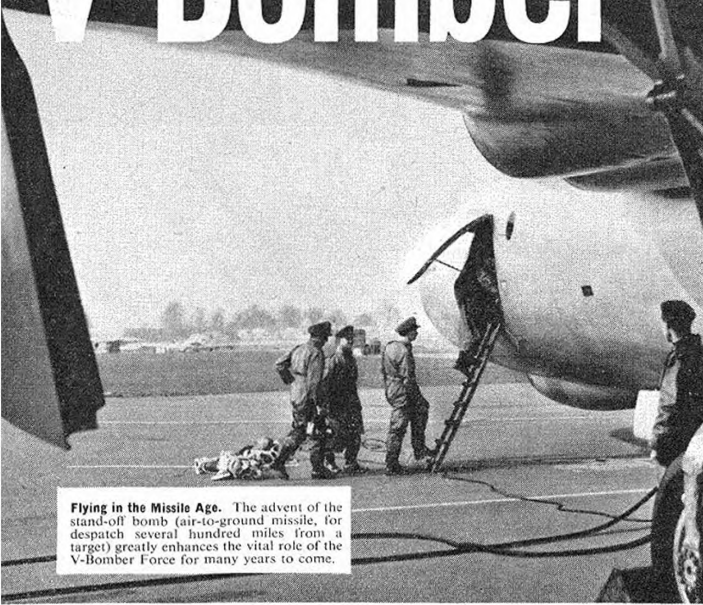
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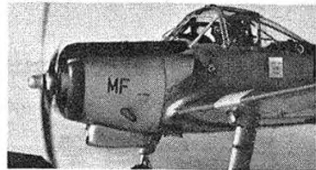
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creases in pay and allowances, effective from the 5th April, mean that a Flight Lieutenant of 25 can, with full allowances, earn more than £1,500 a year. If you are between 17½ and 26, if you have the General Certificate of Education, the Scottish Leaving Certificate, or their equivalent, then write, stating age and education, to the Air Ministry, Dept. (AM13), Adastral House, London, W.C.1. We will send you all you need to know.



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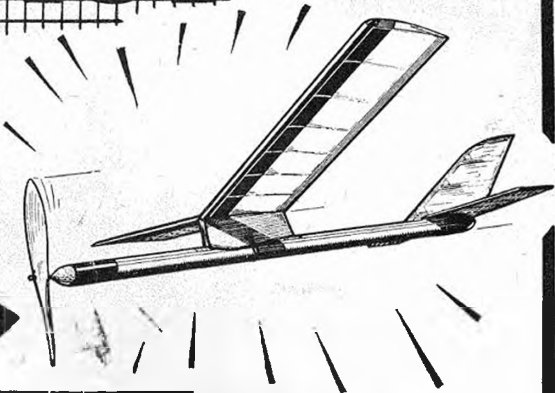
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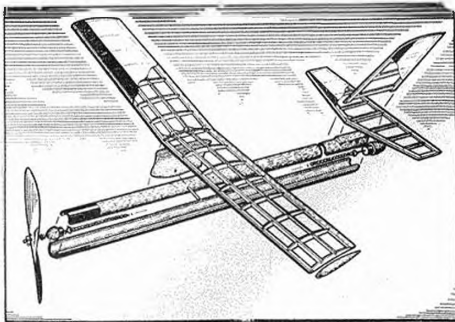
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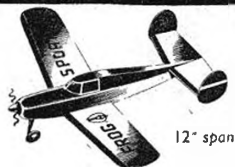
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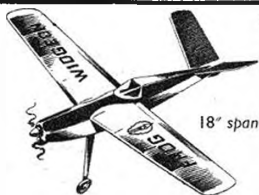
Simple beginner's models; balsa parts printed and cut to shape.



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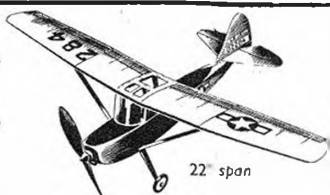
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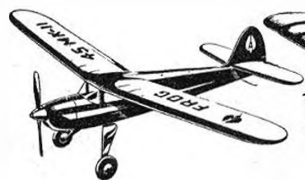
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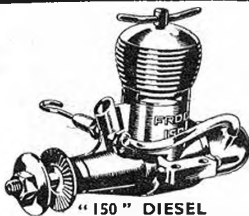
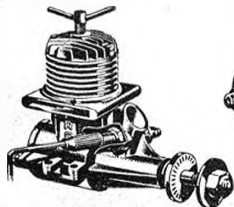
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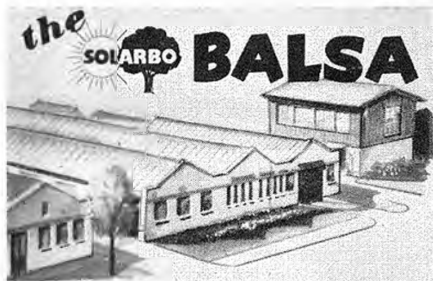
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# the SOLARBO Balsa STORY

One of a series of articles written by John Paterson, Managing Director of Solarbo Ltd.

## PART 13

describing how we operate

## OUR MODERN FACTORY

ENOUGH OF THE forests and the saw-mills and all the difficulties I have described. I invite you now to come with me and see just what we do in our factory. I won't try and be coy about it, but I will admit that I am proud of these works and the quality of the finished product that we turn out.

When I bought this business, after the war, I had a fixed idea as to how Balsawood should be worked and I have never altered my ideas.

I submit that there is no more variable raw material than Balsawood. Just let me set down all the ways in which it varies—

- Weight:** From say, 6 lbs. to 18 lbs. per cu. ft., that is as 1 is to 3 and in a plank it can easily, and often does, vary as 1 is to 13.
- Texture:** With any weight of Balsawood you can get a longer, tougher fibred Balsawood or a short grained, more brittle wood.
- Colour:** It varies from white to nearly brown in colour, not only piece by piece, but sometimes in an individual piece.
- Size:** This is one of its most expensive defects. Every piece of wood is a different size, and you virtually have to cut or make the size of Balsawood you require for every job.
- Grade Defects:** Its range of grade defects—mineral and fungus stain, wormholes, etc.—as I have described at considerable length, covers all the ordinary wood defects, only more so.

To my mind then, how can one possibly work Balsawood without having the most complete range of uses and so be able to use up every quality and size.

To that end, therefore, we have been working now for some 11 years in this plant. Well do we remember

our moving in February, 1947, in the middle of "Shinwell's power freeze", with an uncompleted factory and no heating!

The measure of our success is that I believe this to be the biggest single manufacturing unit in Balsawood in the world. We certainly produce a greater range of things in Balsawood, by far, than any other factory in the world.

Having said that, let me further say that we have not yet, by any means, arrived at the ultimate end.

We are now at the point where we take a very big quantity of fairly mixed grade Balsawood and what goes in at one end comes out at the other without anything being left over. What we have not yet done, is to reach the point where we can buy the whole production of the mills, including all their lower grade wood.

Until we do that, we cannot get full economy. There are signs, however, that on our utilisation we are accelerating and that certain new uses for Balsawood, which are now taking big quantities in America will in due course bring us to our objective.

As I have said elsewhere, the two big mills in Ecuador do the basic selection in their mills and if you buy their wood at their higher price, you do not get so many defects and your life is easier. But I maintain, that for the fullest economy the proper place to do this selection is in the manufacturing mill, where a selection *right through the piece of wood as it is cut* can be made.

May I repeat that on this basis we have built, probably, the largest business using Balsawood in the world and I, therefore, beg leave to presume that there is something in my argument. I hope you notice that I do not decry my competitors and that throughout my Balsa Story, I have tried to put other people and other methods into a true perspective in the picture. I can, indeed, but present to you a logical argument of the position and let you draw your own deductions.

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**HANDYMAN OUTFIT 11/9**

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and a useful Rawlplug and Screw Gauge. The Handyman Outfit at 11/9 provides the choice of No. 8 or 14 Rawlplugs with appropriate screws and a No. 14 Toolholder with No. 8 and 14 "jumpers" to fit. Also the Rawlplug and Screw gauge and instruction book.



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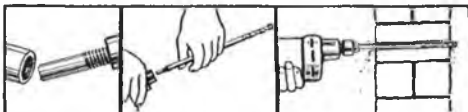
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# Satisfied Customers . . .

Dear Sir,

You may be interested to know of the performance of my "MINIMO" glider. On Saturday, May 17 at Epsom, it did a flight of 4½ minutes and a week later, May 24 at the same place, it flew out of sight and was fortunately returned the next day from Morden—a flight of approximately six miles. These are just two of the excellent flights I have had with the model.

D. J. T., Morden, Surrey.

Dear Sirs,

You may be interested in a flight made by one of your "POLARIS" glider models, which took place on Sunday, August 19 at Barbondale, n'r Sedburgh, Yorkshire. A much repaired Polaris model was launched by hand about half-way up a steep hill. The model flew steadily across the valley and then commenced to gain height, flying in large circles. Its progress was followed with the help of field glasses for about a quarter of an hour, when it disappeared from view almost straight overhead. It was last seen flying strongly and still gaining height at an estimated altitude of 5,000 ft.

P. S., Dent, Yorkshire.

Dear Sirs,

On Sunday, April 14, I was flying my Keil Kraft "INVADER" and launched by winch, the glider was timed 31½ minutes O.O.S. I have witnesses of the flight.

R. A. D., Hereford.

Dear Sir,

May I compliment you on your "ACHILLES" 24-in. duration kit. I bought one recently, and I was amazed at its low cost and simple building. I first flew it on the Chester race course and I have constantly had flights over 1 min., and in one flight the plane flew for 2 min. 3 secs. Its stability and steady flying are all that could be desired. My next kit shall be the "AJAX" and I hope it flies as well as the "ACHILLES".

W. E. M., Bebington, Yorks.

Almost every post contains a letter or a newspaper clipping with news of a record flight or competition win, from yet another "satisfied K.K. customer". Here are a few typical samples from our postbag.

Dear Sir,

On Sunday, September 2, near Huddersfield at 3.30 p.m. my Mills powered Keil Kraft "SLICKER" made a flight of 15 minutes on a 20-second engine run. I feel that this was an outstanding flight, even for a Slicker, and therefore worth while bringing to your notice.

D. L. B., Goole, Yorks.

Dear Sirs,

On Sunday, July 20, my Keil Kraft "COMPETITOR", on its second flight, and with 400 turns on the motor, was timed out of sight after 5 min. 30 secs. The flight was timed and witnessed by several persons.

P. N. C., Kingsbury, N.W.9.

Dear Sirs,

May I offer you congratulations on your really excellent model "AJAX"? At the school we have a number of various types of machines, but the Ajax wins every time! I myself have three of this make and for consistently good flying, I have never seen any machine to come up to it.

M. F., Birmingham 27.

Dear Sir,

I recently purchased a Keil Kraft "PHANTOM" control line model kit, and I am very pleased with the result. I find that the model is everything you claim for it. I am a beginner to C.L. flying, but I find the Phantom is an ideal trainer. The construction is extremely robust, as witness by the fact the model did a wing over and crashed nose first into terra firma (due to my inexperience), and all that came adrift was the detachable cowl.

C. G. B., Coventry.

Dear Sir,

I have made a Fairey Gannet, "Spitfire", S.E.5 and D.H.110 and I really think your kits are wonderful, because they are instructive and fun to make and they turn out very well.

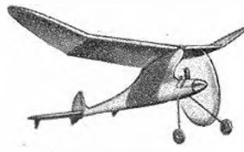
They also show that you go all out to please customers.

P. M., Sarraat, Herts.



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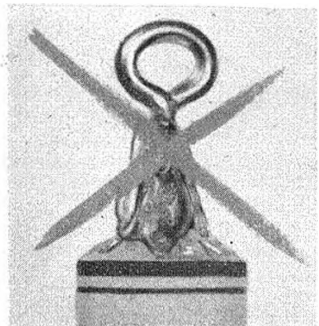
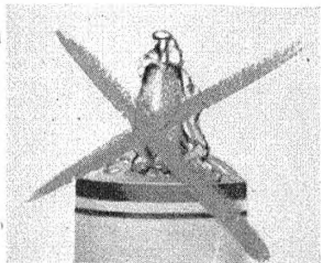




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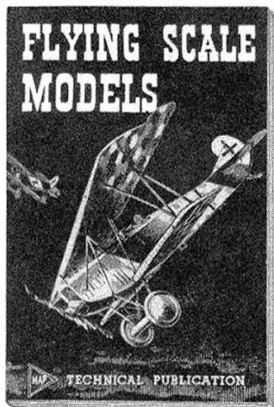
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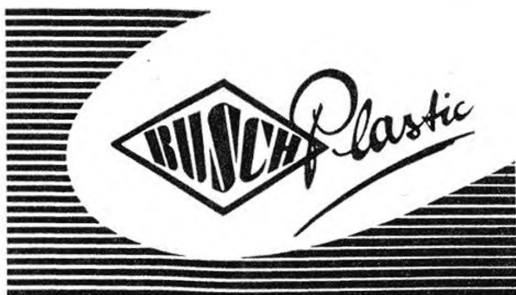
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We are pleased to announce that the well-known Busch German miniature plastic construction kits are now being manufactured in Great Britain. Exquisitely moulded with a wealth of detail the first four available are shown approximately full size in the accompanying illustrations. They are individually boxed with detailed instructions including transfers, and three complete series will eventually be available.

*SERIES A* covers Civil Aircraft, *SERIES B* the latest Warplanes, and *SERIES C* Warplanes of World War II. The models illustrated will be available in June with others to follow at an early date.

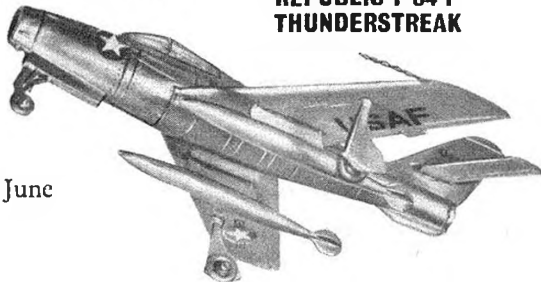
In view of the modest price and small scale, which is actually OO gauge loco size, modellers will be able to build a wonderful collection of these superb miniatures.



**MESSERSCHMITT  
ME 109 F**



**PIPER SUPER CUB**



**REPUBLIC F 84 F  
THUNDERSTREAK**

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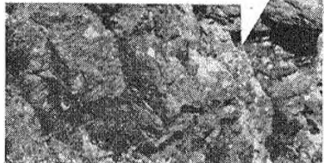
NAME.....

ADDRESS.....

AGE.....

*Applications for the Entry Examinations must be in by Sept. 16th, 1958.*

A&J JAM



VOLUME XXIII  
NUMBER 269  
JUNE 1958

Managing Editor - - - C. S. RUSHBROOKE  
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Assistant Editor - - - R. G. MOULTON

★

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## Publicising Aeromodelling.

WE ALL KNOW that aeromodelling stands supreme amongst the hobbies but the public do not, which makes the job of selling aeromodelling vital to the expansion of the movement.

Aeromodelling teaches its exponents to use their brains at the drawing board, it promotes considerable skill with the hands during construction of the airframe, and rewards the careful modeller with the satisfaction of seeing his own creation successfully airborne above the flying field. Even then it does not expend its usefulness, for the flying and retrieving of the model brings healthy exercise to young and old alike.

But it is as a sport for young people that aeromodelling has particular sales value, keeping their minds and fingers usefully occupied during the winter months, and providing an abundance of outdoor activity during the summer season. The Society of Model Aeronautical Engineers, through its Club Movement, stimulates the communal and competitive side of modelling, thus providing the sporting aspect so important to the movement as a whole.

One of the aims of the S.M.A.E. is to sell the hobby to the general public by every available means. For only by publicising aeromodelling to the maximum extent can it swell its ranks with new enthusiasts, and equally important, maintain the interest of existing junior members.

To this end, back in 1951, the Society ran the Festival Control Line Championships at Wembley Stadium which, although a success as a model meeting failed miserably to draw the public as the empty stands bore witness. How gratifying, therefore, that as a direct result of this early meeting Ken Brookes, the Society's enthusiastic Press Officer, arranged with the Wembley Stadium authorities a demonstration of control line flying during the Schoolboys International Soccer Match on Saturday, April 26th, which was an unqualified success.

Before a crowd of between 70,000 and 80,000 youngsters and their parents, members of the London Area S.M.A.E., operating from three circles, gave demonstrations of combat streamer cutting, stunt flying, team racing and balloon bursting. The latter item proved more difficult than many of the skilled fliers had envisaged, but was nevertheless well received by the spectators. With thirty minutes to complete the demonstration, which had to finish exactly to the minute as it preceded the soccer match, timing was a vital factor. As one team reached the four-minute mark of their allotted five-minute period, so the next team were starting their motors in readiness. It says much for the organisers that the programme finished a minute early, and to judge by the devastating roar of approval from the many thousands of young throats it would seem that the crowd were convinced that aeromodelling has great attractions. This was emphasised through the Stadium loudspeakers by Technical Secretary Henry J. Nicholls, who gave a lucid and interesting commentary throughout the flying.

We congratulate all concerned with this worthwhile display, particularly the fliers who attended at their own expense and who have the satisfaction of knowing that the S.M.A.E.'s International Contest Fund is richer to the extent of a cheque for £100, which was the fee paid by Wembley Stadium.

Let us hope that this successful demonstration, which did a worthwhile job in selling aeromodelling, will encourage similar "sales talk" in other parts of the country.

On the cover .

RESPLENDENT in its magnificent orange, blue and white colour scheme, Al Williams's Grumman G-22 Gullhawk, displays itself for *Flight's* cameraman, during the visit to England in 1938. Al Williams demonstrated the famous G-22 Gullhawk in many countries throughout the world and today it is a prized exhibit at the Smithsonian Institute, Washington.

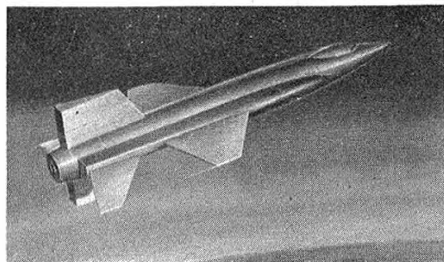


**Kloten doors**

Our heading this month shows the Swiss hangar doors at Kloten Airport, near Zurich, unique for their upward swinging motion. In foreground is one of the latest type Cessnas, sporting a natty line in wheel spats which might also look nice on the A.P.S. Cessna 172 model.

**Trailing edges**

Astronautics is for the future, and the larger American aircraft companies are investing fantastic sums of money in the establishment of huge plants specifically devoted to space flights. First of the half-aircraft, half-missile man carrying outer space vehicles in this new air age will be the North American X-15 as seen in the artist's representation below. Cleaver section airfoils, with particularly blunt edges for the vertical surfaces, will be a main feature of this amazing craft which will experience a temperature range from 300 degrees below zero to 1,000 degrees Fahrenheit. To counter such extreme heat, the entire plane is to have an external armour of nickel alloy, and to control it at unprecedented speeds, reaction jets of hydrogen peroxide in the nose and wing tips will orientate the X-15, although they will not be able to change the ballistic trajectory once it has been started on its



mission through space. Three pilots, and a large research staff have been training and working on the X-15 project for some time, making it the most involved design study ever undertaken in the U.S. Aircraft industry.

**British Nationals**

Whitsun holidays are now the traditional date for the annual Nationals, a grand centralised meeting for a galaxy of new models, fourteen contests and a spirit of camaraderie which make it the major event in the acromodellers' calendar. Once more we enjoy the greatly appreciated co-operation of the Officer Commanding

R.A.F. Station Waterbeach, five miles north of Cambridge, and we trust that everyone will respect the privilege of being able to use such a magnificent flying field for this occasion.

Cambridge is well served by rail and several trains run direct from Liverpool Street Station, London, to Waterbeach, with about a 10-minute walk to the airfield. By car, one can locate the airfield alongside the A.10 route, and by bus from Cambridge, one can use the 109, at half-hourly intervals on Saturday, every hour on Sunday, from the Drummer Street Bus Station in Cambridge.

Admission to the airfield will be by Official Programme, and Car Parking fee of 2s. 6d. with reduced rates for Motor-Cycles. Contests will start at 9.30 on each day, concluding at 6 p.m. on Sunday and 5 p.m. on Monday, and the usual camping facilities will be available at the rate of 2s. 6d. per tent. One introduction this year is a regulation prohibiting the running of engines between the hours of 9 p.m. and 8.30 a.m.—See you there!

**Missile menace**

A number of serious accidents in the U.S.A. resulting from inexperienced experiment with explosives for model missiles, has led to a directive from Dr. Walter Good, president of the Academy of Model Aeronautics. "Boys should be encouraged", Doc Good says, "under competent supervision and tutorage". The Rocketry craze which is sweeping across the States has led to the Army Dept. in Washington studying means of assisting amateur groups to stimulate interest and reduce the accident hazard. Expert advisers, including the famed Dr. Werner von Braun, will make information available to science teachers whose students are working on rocket projects, and the Redstone Arsenal in Alabama is to handle inquiries on the handling and ignition procedures.

We wonder, if under the usual two-year acceptance lag in Britain for U.S. crazes, whether the same problems will arise here during 1960?



### Philatelic commemoration

A new W. German stamp celebrates the Centenary of Diesel engines, so named after their inventor, Rudolf Diesel of Munich. On April 18th, 1858, Diesel operated the first-ever compression ignition engine and so established a system of internal combustion that has developed the most powerful (for ships) and most economic (for taxis) engines in the world. Although our little two-stroke units differ from their full-size counterparts in not having fuel injection, they perpetuate Diesel's name to honour a great inventor.

### Imitation—sincerest form of flattery

Doug McHard's extensive researches which provided first-ever authentic Junkers 87 details in our September '57 issue have provided the May editions of the U.S.A. model press with some sets of drawings which do him great honour for their acceptance of his authority on the subject.

### N.E. "Jim" Walker †

Portland's ball of fire, the man who invented control line flying and whose genius fostered the great American model industry, died on March 12. In recent years Jim had been obliged to take things more easily, and a long spell in hospital had kept him from the modelling headlines; but only the day before his passing he was tossing his A-J gliders, controlling his Firebee and amusing visitors to the California Hobby Show with his Ceiling Walkers. He died a showman, the greatest showman the modelling world has ever known.

Responsible for more "firsts" in the hobby than any other individual, Jim's greatest contribution was his introduction of two line bellcrank control almost twenty years ago. He formed the American-Junior Co. to produce prefabricated ready-to-fly gliders, and millions of these colour-decorated A-J gliders have been sold throughout the world. His rubber-driven Pursuit ready-to-fly models, the folding wing Interceptor cataglider, and the Firebaby control-line sportster, each of classic simplicity and masterpieces of prefabrication down to the lowest possible price, have in turn introduced more people to aeromodelling in the U.S.A. than any other model series. The Ceiling Walker indoor helicopter was not only amazing for its performance "straight out of the box", but it introduced new methods of steam-treating balsa for light props. Everywhere that Jim travelled, he distributed his

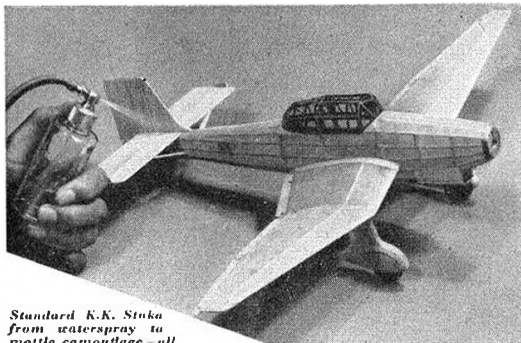
samples freely and no U.S. Nats was complete without a shower of A-J products buzzing the banquet.

Whilst the backbone of Jim's business was founded on the ready-to-fly's, his creation of "U-Control" led to the Fireball, first of the pre-carved balsa fuselage kit designs, and a model which could still hold its own today with that wonderful combination of an Arden '19. The Fireball introduced monocoque, sparless wings and the balloon tank. It taught more people how to fly aerobatics than any other design of the period, and introduced new stunts for Jim's inspiring repertoire. He could fly three at once, one in each hand and another on his "Man from Mars" helmet, controlling the speed of all the models for formation flying by means of insulated wires and relay switched two-speed Ardens or Ohlsson's. With such control he could perform incredible manoeuvres, most outstanding of which was the "Sabre Dance" with a Fireball which would helicopter in vertical flight, and slowly descend to burst a balloon with a tail pin then fly off at full speed to "do the book". Speed control was Jim's pet fad. In recent years he entered the motor market with the '065 Firecracker, first to use exhaust restrictor and choke control. He placed it in the hands of thousands with a wonderfully simple pneumatic airline actuator that never ceases to thrill with its range of control. And speaking of range—who has not heard of the U-Keely handle? This introduced the multi-strand cable, and an ingenious means of storing or paying-out up to 100 ft. of line, plus motor control if desired. When he took up radio control, his enthusiasm took him straight to the top. He devised Pozzipo, a multi control servo system years ahead of its time, and which hit the news headlines time and time again whenever Jim demonstrated his fabulous R/C Lawnmower. This mower alone could be the sole subject of a story book of Jim Walker achievement.

Then came the pressure tank regulator, salvation for the fuel surge problems associated with U-Control and R/C, and in the Firebee and Firecat he introduced two pre-fab kits which stand alone in their high standard and clever design features.

He was all for modelling. Recently he wrote to the U.S.A. model press protesting that the U.S. Nats should be restricted due to increasing entries, and put forward the sensible view that the hobby dealers should seek the opportunity to officiate and solve the admin problem. Time will prove him right.

He was also a very generous man. In 1951 when the A.M.A. had met with the usual response in appealing for Wakefield team transport to Finland, Jim wrote out a cheque for 5,000 dollars and saved the situation. It was not for publicity, for he gained none; it was a symbol of his unique spirit which will forever be perpetuated by the Jim Walker U.S. National Stunt Championship Trophy, and we sincerely hope, by another memorial fund which has been opened in America.

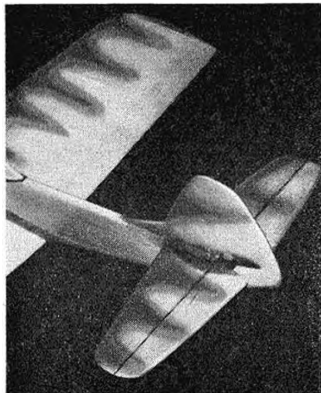


Standard K.K. Stuka from waterspray to mottle camouflage—all by Celspray

NOW THAT COLOUR decoration for models is achieving greater popularity, our thoughts turn to the professional type of sprayed finish and how this attractive effect can be applied with the average aeromodeller's kitchen table workshop facilities. We have seen motor cycles which have been completely spray finished with no more than a standard "Celspray" unit operated by a car footpump—the effect was almost equal to that of a professional spray-shop. If this effect can be obtained on a motor cycle, certainly we ought to be able to obtain first-class finish on any model.

Inexpensive and extremely simple, the bulb-operated Celspray unit is ideal for small areas on the popular size of 1/8 scale free flight model or team racers, etc. For larger areas we recommend (for the sake of your arm muscles!) that the footpump and D.E. bulb attachment be used. This D.E. bulb forms a most successful compensator between the pump and the gun, so eliminating the pulsating effect on the strokes of the pump, giving continuous spray flow.

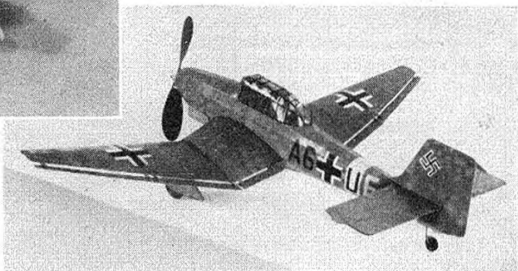
Photos on these pages show the stages in spray finishing of the World War II German camouflage scheme on a standard Keil Kraft Ju.87 Stuka dive bomber. As we proceed through the stages of spray finishing it becomes more and more obvious that the keynote to success in spray painting is cleanliness in one's work. The Celspray



Left: "Flame" effect on a stunt model with bright yellow scallops over the silver base colour and red superimposed over yellow. Right: Best means of application is with a car foot-pump and Celspray D. E. compensating bulb which eliminates spray pulsations

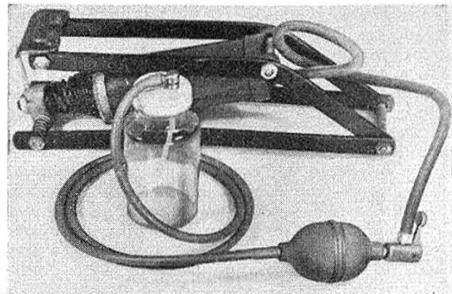
# SPRAY that model

Colour decoration made easy  
with a simple spraygun



is a simple unit but it must be kept clean, using soft wire to keep the passages in the nozzle for air and dope feed free from blockage.

Running through the general procedure, it is advised that the area over which the model is to be sprayed, whether it be kitchen table or garage floor, should be covered with old newspaper, in the first case to prevent undesirable decoration, and in the second place to prevent dust being raised to fall again on the freshly-sprayed wet surface. Always have ventilation in the room, for after all, you are going to spray atomised cellulose which in industry is generally regarded as requiring a mouth mask. Do not spray when the atmosphere is damp or with the temperature below 60° (in the latter case one can add special anti-chill retarders but these are not generally available in the local model shop and are in any case specialist additives). The first sign of humidity in one's doping is, of course, that of milky whiteness in the surface, meaning that water has been absorbed and trapped in the cellulose causing "blushing". Celspray units can, of course, be used for water spraying and clear dope application, but the good old fashioned brush system cannot be beaten for first-coat clear doping tissue on a model.





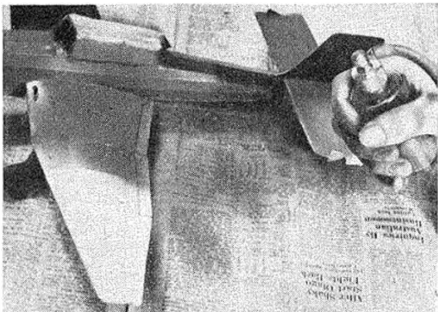


If we are to spray a fairly large area on the model, use newspaper to cover the other areas which are not required to be painted and stick down the edge with adhesive tape. This allows one to be more liberal in the application of the dope and saves time. A tip is to obtain drafting tape as obtainable from most stationers, which does not pull tissue when removed as does the more common cellulose adhesive tape. It does, however, need careful rubbing down at the edge to prevent paint from creeping under the edge. Our next stage will be to prepare the colour dope and the standard formula for thinning down is to add equal parts of thinners of the same manufacture as the dope reducing the viscosity to that of water. Check the effect of the spray on a test surface to see if the coverage in colour and effect is satisfactory. If too thick, that is to say requiring more thinners, the effect will be "orange peel". If too thin, the dope will obviously run on the surface and more pigmented dope should be added. Always shake the container well before use and before inserting the spraying head into the bottle.

Never take the spray unit too close to the surface; about 9 in. is a good average distance in our experience, and do not try to cover the whole job in one coat. Many thin coats are the secret of the very high finish on Concour d'Elegance models. A tip when spraying a wing is to work across the chord from leading to trailing edge in continuous motion overlapping at each application across rib bays.

When one coat has been applied to, say, a wing surface, look through the tissue if possible after spraying, to detect uneven effect and to rectify same on the subsequent coat. One should always spray the lighter colours first and finish off with a very thin coat for good gloss finish about 70 per cent. thinners to about 30 per cent. dope; but one must beware of runs which will mar an otherwise good surface. Keep a separate bottle for each colour, you will find that the Celspray units fit some commercial cellulose dope and thinner glass jars and the spray head then becomes more universal whilst the duty of "washing-up" the standard screw top container is avoided. One could also modify the standard screw top containers for those which do not fit Celspray heads so that the brass head component can be fitted simply by drilling a hole through the metal cap of your stock jar. After completing any spray job, flush the gun with thinners immediately after use as it is rather difficult to clean when the paint or dope has had an opportunity of hardening.

As will be seen in the accompanying photos, novel camouflage effects can be obtained with the aid of stencils. For the German camouflage one need only take a piece of stiff paper or card and cut a series of holes. This mottle stencil is then held vertically (to avoid dripping on the



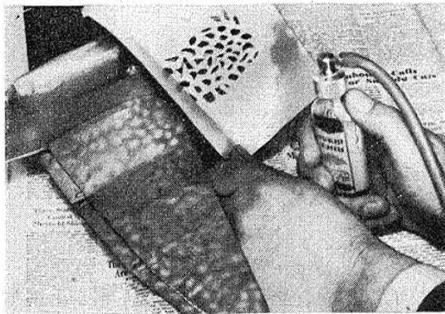
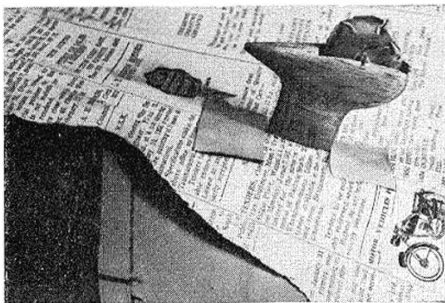
*Scotch-Buy drafting tape is ideal for masking cabins, etc., prior to spraying base colour seen at right working chordwise over wing*

subject being sprayed) about 1 in. from the surface to be treated. One can try out the results of different distances between spray gun, stencil and surface, to obtain a variety of effects.

Beside camouflage one can also add novelties such as fiery flame leading edges by first whisking a bright yellow base colour back from the leading edge over the ribs and then applying a second orange or vermilion over the yellow, but not completely covering so that the "flames" become more realistic.

The possibilities are endless.

*Mask all unwanted area carefully before spraying using newspaper as seen below. Bottom: For a mottle effect, a simple card stencil gives excellent results*



A 21" SPAN G/L STUNT MODEL FOR A.P.S. POWER GROUP B-C-G-15 - 1CC

# CHESHIRE KITTEN



DESIGNED BY  
**WA Pollard**  
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THE AEROMODELLER PLANS SERVICE

39, CLARENDON RD., WATFORD, HERTS

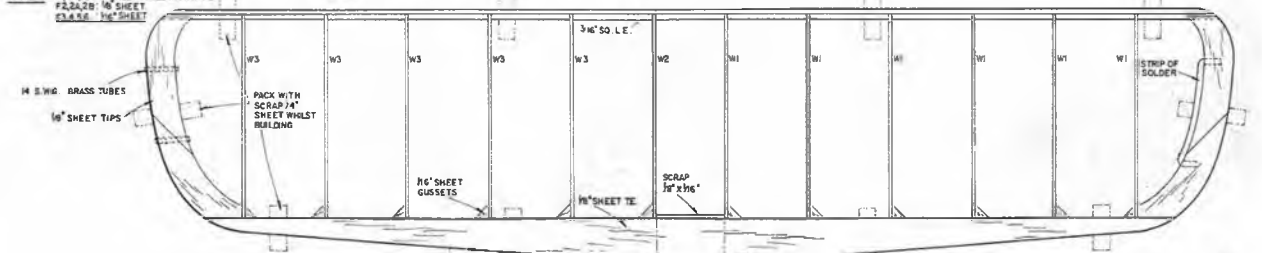
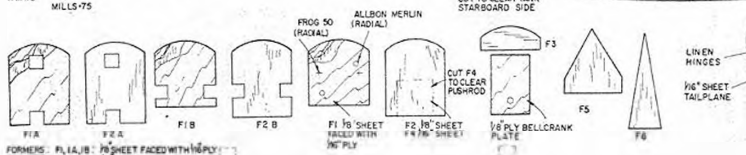
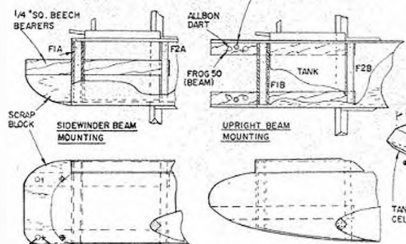
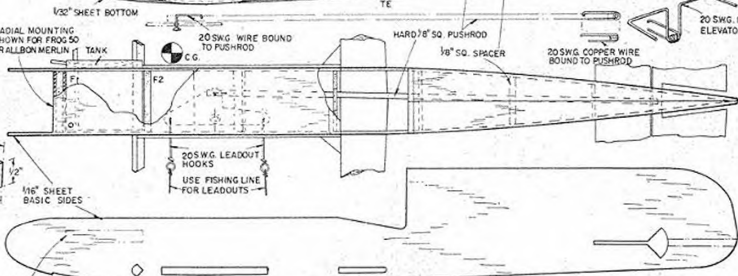
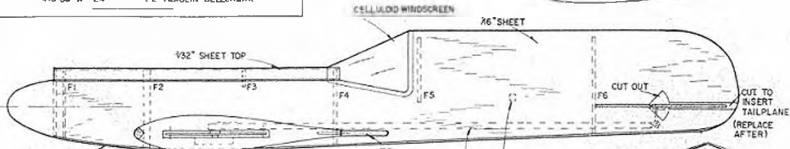
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

BARE WEIGHT (LESS MOTOR) - 1.34 GZ.

COVER WHOLE MODEL WITH LIGHTWEIGHT  
MODELSHAN AND GIVE COATS CLEAR COVE

### MATERIALS REQUIRED

- |                                 |                          |
|---------------------------------|--------------------------|
| 1 SHEET OF 1/32" x 3' x 36" MED | 3' x 3' OF 1/8" PLY      |
| 1 " " " 1/16" x 3' x 36" "      | 6' OF 1/4" SO BEECH      |
| 1 " " " 1/8" x 2' x 36" "       | 12" OF 20 SWG BRASS WIRE |
| 1 STRIP 1/8" SO x 12" HARD      | 2" - 14 - BRASS TUBE     |
| 1 " " " 3/16" SO x 24" "        | 2" HEXALIN BELLCRANK     |



PUBLISHED AEROMODELLER JUNE 1958

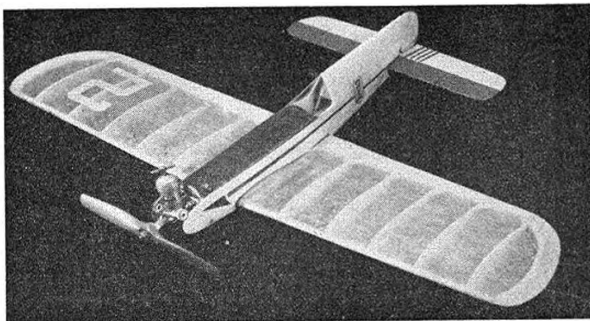
CL 693

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AERO  
MODELLER

**A model that  
will really stunt  
with only  
 $\frac{1}{2}$  cc. power!!**

— by W. A. Pollard



# Cheshire Kitten

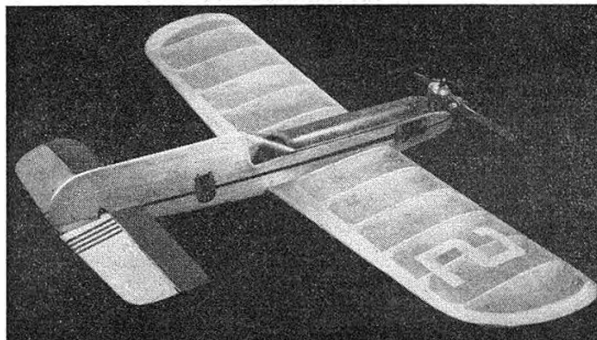
LOOKING FOR A MODEL that genuinely stunts on 0.5 c.c.? Cheshire Kitten is the answer. To prove his point, W. A. Pollard sent the actual prototype to the Editorial Offices for examination and tests and we confirm that even with the most soggy of thread lines, it will loop, bunt and figure-eight to your heart's content. If the wind does take it away out of control now and again, it is so light ( $1\frac{1}{4}$  oz. plus engine) that it is virtually crash proof.

Details are shown on the drawing for five different engine mountings, covering all the popular types and the actual prototype was equipped with a Frog 50. With an A.M.10 we might suggest 35 ft. of .008-in. piano wire, but for most other engines 20 ft.-25 ft. of the Keil Kraft Terylene line will give satisfactory performance.

Construction follows the sequence of making the wing, incorporating the two fuselage sides, installing the controls and joining the sides with the formers, then fitting the tail surfaces. Start by cutting out the wing ribs, all being to the same external contour, but W.2 must have a slot for the

bellcrank movement and W.3 ribs in the port wing have holes for the leadout threads. Now cut out the fuselage sides and slide them over the leading and trailing edges to the centre position. Pack up the outline (the T.E. need not be tapered in thickness and only requires a radius edge) with scrap  $\frac{1}{4}$ -in. sheet. This compensates for the symmetrical wing section and ribs should now be attached using  $\frac{1}{16}$  gussets for additional strength. Fit the bellcrank on its  $\frac{1}{8}$  ply mount in the centre section and attach the leadout threads passing through the port side of the wing and the push-rod between the fuselage sides. Select straight grained balsa for the tail surfaces to obviate possibility of warps and make sure that the 20 gauge wire horn and elevator link are firmly attached. The tail is fitted to the fuselage after positioning all the formers, engine bearers and tank, then the fuselage bottom is covered with  $\frac{1}{32}$  sheet prior to covering the whole model with lightweight Modelspan.

One should be able to make the entire framework in a few hours and complete the whole job in three evenings. Why not try .8 c.c. Combat in your club?



*Prototype had dihedral for appearance, and it also helps to protect the undersurface of the tissue-covered wing in a belly landing on concrete. Sparless wing is of ample strength to withstand head-on prangs, for the airframe weight, with celluloid tank is a mere 1 1/4 ounces! Frog 50 power and 6 x 4 in. plastic prop enabled us to perform consecutive horizontal eights.*



## By Denis Illsley

### Introduction

To those who have not yet experienced the trials and tribulations of this fascinating branch of our hobby it is hoped that the following article may prove enlightening. Aeromodelling can have few more rewarding sights than a model gracefully soaring under control against a background of hills and dales. From the first moment that the sailplane climbs on an even keel straight from one's hand you can be sure of an interesting and hectic time to come. Doubts constantly assail one's mind, will the wind hold? will it become too strong? is the rubber motor fatiguing? are the batteries O.K.? and the final problem, how can I get it down?

The above experiences can be had by all who live within reach of fairly hilly terrain, the only requirements are careful workmanship and attention to detail.

### Flying Sites

It has been our finding that a slope of at least 40° is required coupled with a minimum height of about 80 feet. Using such a slope, Don Bailey has made several flights around the ten-minute mark, quite a while, as those who have a go will soon find out.

The drawback to such a small slope is that usable lift only extends to about 1½ times the crest height above the adjacent valley and perhaps the same distance in front of the crest. Consequently one never has much of a height reserve to experiment with and constant keying is needed to hold the model in the small lift area. Ideally a ridge of 500 feet on height with a slope of about 50° is required. Under suitable wind conditions one can then keep the model between 700 and 1,000 feet above crest height at an angle of about 45° upwind of the crest. Such has, of course, been explained before by this journal in the article on vane steering.

Soaring on slopes higher than 500 feet is not recommended. The trouble in this case is that the model will tend to climb higher than 1,000 feet above crest level. With this start any thermal assistance carries the model up to a great height before one fully appreciates what is

# RADIO CONTROL SLOPE SOARING

*When this article was first commissioned the Editor only knew Denis Illsley by repute. As holder of the British R/C Glider record in 1957 with a time of 2 hrs. 23 mins. 19 secs., and with considerable experience in the fine art of slope soaring he was obviously the right man for a feature of this kind. Since this article was received we have had the opportunity of seeing Denis in action on Ivinghoe Beacon during the St. Albans meeting, when his knowledge and experience of slope soaring was practically demonstrated with a winning flight of 7 mins. 33 secs. under near gale conditions.*



happening. It is very disturbing to have the model circling under control at about 1,500 feet without being able to get it down.

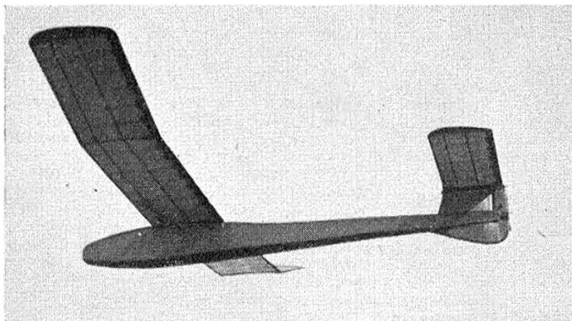
More will be said on the art of flying the model in a later chapter but it may be opportune to make two further comments here. Flying should not be attempted when the wind is more than about 15° off the perpendicular to the slope. With greater skew angles than this the wind would appear to be diverted along the slope rather than over it. Whatever the reason, lift decreases greatly with larger oblique angles than about 15°. The second comment is that flying should not be attempted from a conical hill. Even on that section facing the wind, conditions are very turbulent due to the main air current tending to split, and being diverted round the flanks of the hill.

### Type of Model

In the main it is intended to deal here with models having rudder control alone. We have only had experience so far with uni-control models and consequently cannot speak with authority upon the more advanced types. There is no doubt that dawn to dusk flights will be more probable with sailplanes having elevator control in addition to the normal rudder movement. Do not by any means, however, be put off by this as flights of up to two hours have been effected by models having rudder only control and normal commercial equipment.

Would-be modellers who really want prolonged soaring should realise at the outset that a slope soarer is a specialised glider. It is a great mistake to put radio equipment into a normal sailplane and expect to make long flights. This type of model lacks penetration and will at best only make flights of a few minutes' duration. What is required is an efficient gliding machine that will fly at speeds approximately to 30 m.p.h. This is explained as follows: the normal warm day upon which long flights will be made usually starts with a morning wind velocity of approximately 5-10 m.p.h. By midday this will have

Heading photos show Denis Hlsley with his transmitter concentrating on the model during his winning flight at Ivinghoe. Ray Monks is caught launching the 5½-lb. model some 2/3rds of the way down the slope. Span is 7 ft., wing loading 18 ounces per square foot and the airfoil section N.A.C.A. 6109. A long rubber escapement motor runs the full length of the fuselage giving approximately 4,000 turns, sufficient for 20 hours flying at the rate of 200 signals per hour. On right is Ray Monks' slope soarer again snatched in action during the St. Albans meeting, where it took second place for the Birmingham boys with a time of 2 mins. 50 secs. Below, at the same meeting, Dave McQue launches for fellow Bloctley clubmate, Dick Keeble. Model uses crystal superhet receiver designed by Dave, but low aspect ratio designs do not seem to lend themselves to successful hill soaring.



rises to about 20 m.p.h. Additional penetration must then be at hand to forge ahead through gusts which will approach 30 m.p.h. It is faulty reasoning to build a light model to soar on calmish days as these do not occur very often. In addition you will find that the wind often falls right away and consequently all lift disappears.

There are three possible ways of achieving the optimum air speed of about 30 m.p.h. The first, possibly the best for beginners, is as follows: Use a flat bottomed wing section, 10 per cent. thick, with a wing loading of about 15 oz./sq. ft. This loading enables adequate batteries to be carried without having to land a more heavily loaded model on a ridge possibly only a few feet wide. The second method, for those who wish to have a go at the World Record, is to use an airfoil similar to N.A.C.A. 4409 with a loading of 18-20 oz./sq. ft. This enables really large batteries to be carried which easily last for 16 hours. The snag which arises here is that we have a thin wing supporting a heavy fuselage. This inherent weakness can be overcome as will be described in the chapter on Model Design. Thirdly, we can use a wing loading exceeding 20 oz./sq. ft. with a thicker wing such as N.A.C.A. 6412. This enables a stronger wing to be used than in the second alternative. You will appreciate that with such loadings any error in the estimation of the model weight may quite conceivably cause the total maximum surface loading to exceed 20 oz./sq. ft. The model does not then come within the official description of a model aircraft.

Before passing on to detailed consideration of the design of the model it would perhaps be opportune to have a few words on the size of glider required. For sheer beauty of flight the larger the model the better. Sailplanes approaching maximum F.A.I. size ride out with hardly a tremor gusts which would cause a 6-foot span model to deviate appreciably from its normal flight path. These larger models are also more efficient with subsequent lower sinking speeds.

Against these advantages must be weighed the fact that they are costly in both time and money. Also they are more prone to damage in a heavy landing and take some carrying about.

At the other extreme we have the model of approximately 5 ft. 6 in. span. This type can be built without disturbing unduly the rest of the family watching "Telly" and can be carried upstairs without dislodging various ornaments on the way. It is capable of providing flights of sufficient duration to match the endurance of one pilot but must be watched with more care in flight. This is because of its aptitude for being diverted from straight flight by gusts.

I personally am leaning towards the concept of a model about 7 feet in span and weighing 5-5½ lb.

### Design of Model

The paramount consideration in the design is that we must produce a model capable of withstanding shock loads produced by hitting a large unsympathetic hill at high speed. We also have heavy batteries which must be securely fixed in place and a receiver which must be protected.

Probably the best construction for the fuselage is the sheeted box. For models up to 3 lb. in weight  $\frac{3}{16}$ -in. sq. longerons covered with  $\frac{3}{16}$ -in. sheet should be used. Splitting of the sheet is prevented by having all longerons strutted in Warren Girder fashion. Models up to 6 lb. in weight are best built with the fuselage constructed from  $\frac{1}{2}$ -in. longerons covered with  $\frac{1}{4}$ -in. sheet and maximum size-weight jobs with  $\frac{1}{2}$ -in. sq. longerons covered with  $\frac{1}{4}$ -in. sheet.

With careful manipulation all radio gear can be made completely detachable using a maximum of two hatch covers. One of these covers will almost certainly be on the top of the fuselage immediately behind the nose block. This cover should be rebated in snugly between the longerons. In a heavy landing the nose section is then prevented from twisting unduly and the fear of



failure from shear is reduced.

The nose section is, of course, weak as a result of this opening. Consequently the front bulkheads, preferably from  $\frac{1}{4}$ -in. sheet should be spaced not more than 34-in. apart. The batteries then fit into the front two openings, the receiver in the third and the actuator in the fourth. It is not recommended that the nose section be too sharply tapered since a heavy landing may drive the batteries forward and split the fuselage through wedge action.

Many of the radio models one sees on a flying field are shocking examples of the art of aeromodelling. Bits and pieces protrude everywhere with great detriment to the sinking speed. With a little thought one can easily arrange that the switches, shorting plug and potentiometer screw are totally enclosed. Only the aerial should show, still a festering sore to free flight eyes. Bob Copland's current British Record Holder, although multi-control, is a beautifully clean model constructed in a manner which one would expect from such a flier.

The wings of the model have already been referred to and these will now be considered in detail. As a generalisation they should be between one-sixth and one-fifth of the all-up weight. If at all possible they should be in one piece to obviate the inherent central weakness of two-piece wings. When a mistake has been made in the landing approach one often finds the model landing parallel to the ridge but further down the hill. Consequently in a straight dihedralled wing the wingtip catches first and causes a nasty somersault. Logically it would appear that polyhedral should be used but this type are weak at the centre section. In my opinion flat centred wings with tip dihedral are probably the best.

I would advise that the wings be constructed with a boxed J.E. using 3-in. wide sheet top and bottom. It is imperative that the back of the box be panelled in between ribs or all the virtues of great strength and resistance to warping are lost. Use  $\frac{1}{16}$ -in. sheet on gliders up to 3 lb. in weight and  $\frac{3}{32}$ -in. sheet on models up to 6 lb. in weight. With the very large models use in addition either an I or channel section further aft which is about 1 in. x  $\frac{1}{4}$  in flanges and  $\frac{1}{8}$ -in. web. Bracing is, of course, a possibility but it detracts from the appearance and throws torsional stress upon the wing unless properly located.

Tailplanes are not much of a problem but they should never pass through the fuselage. A hillside landing causing the tip to catch results often in a smashed rear fuselage. The best position is probably on top of a fully sheeted fin a la Bethwaite.

### Radio Gear

I should like to point out from the very start that my knowledge of radio is practically nil. Consequently the method used in testing of battery capacity is to tune transmitter and receiver in the morning and leave both switched on all day. Intermittent keying throughout the day soon shows up any weaknesses. This method is all right with current drop receivers but may lead to over optimism with the current rise type of which I have no experience. It is appreciated that the transmitter may not have been sufficiently tested but this is overcome as follows. Close the keying lead circuit for about four hours after the day-long test previously referred to. This should assure that all will most probably be all right when the model is taken out for a long flight. Do not forget to change all batteries, after the previous tests, and replace with those of a similar type obtained from a shop with large turnover. The above blunderbuss action may cause the rabid pundits to hide their heads in horror but it certainly sorts out many gremlins.

Many of the commercial radio receivers are badly let down by the relay incorporated in them. This is a great shame since it is probably the reason for many modellers becoming discouraged. My personal preference is for the Sigma relay but these are not virtually unobtainable. Those made by Manning-Carr are nearly as good but tend to change their settings slightly although not to a harmful extent.

If one cannot afford a Manning-Carr, that put out by Messrs. Triang Limited should prove quite satisfactory.

It has been stressed many times before that great care should be taken in the wiring-up of the model. This is blissfully ignored by many who then pro-

*Below, left, the author during his 7-minute flight at Bevington keeps his model upwind of the Beacon in the standing lift wave. Centre, this beautifully finished 13-in. to 1-ft. scale model of the Slingby Skylark III was also seen at the St. Albans meeting but did not participate. Built by P. Babb of Northwick Park, it weighs 3½ lbs., uses a Hill Rx and employs a kick-up elevator. Skylark II on right, was built by Fergus O'Brien of the Cambridge Gliding Club to 1/6th scale and is a replica of the club's full-size machine*

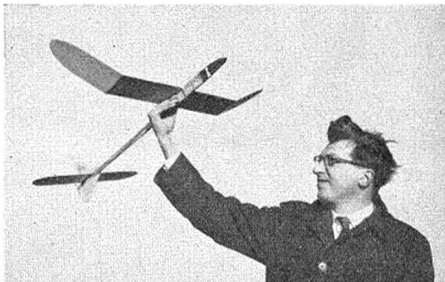


ceed to wreck a model and blame the manufacturers of the radio set. Only the best is good enough, and you yourself know whether a proper job has been done.

Before passing on to the next chapter, I would like to make one or two observations upon multi-control work. With elevator control one can use a lighter wing loading since down elevator produces the extra penetration when needed. Multi-channel equipment is very expensive and the normal duration flier interested in elevator control is well advised to consider a compound escapement. Probably the simplest and most positive for our use in the "Quick-Snap" set-up devised by the New Zealand fliers.

To quote Frank Bethwaite verbatim, the system is as follows: "The two-control system developed for use in later models employs a rudder relaytor modified so that it will perform its normal function and, in addition will operate a second relaytor when desired. The principle is to arrange two series contacts such that they will both be closed only if a very short pulse is transmitted; at all other times one or the other is open. In practice, all normal control of the model is deliberate; the key is held depressed for a minimum of about one-quarter second even when throwing away an unwanted turn, and a definite snap action is necessary to select the second control. The method is to slow down the rudder relaytor drive-shaft with a Bonner-type rattler, and to fit the two series contacts, one as the 'up' stop of the armature, and the other a wiping contact set to make and break slightly before the 'turn' position of the drive-shaft is reached. During all normal deliberate operation, the armature is always down and the first contact open as the drive-shaft moves 90 degrees from neutral to turn, thus the wiping contact does not complete any circuit. But, if at any time a pulse is transmitted short enough to pull the armature down and let it up again before the drive-shaft has rotated past the wiping contact, then the two series contacts are both closed momentarily and current flows briefly to operate the second relaytor".

The mere fact that the names of Les Wright and Frank Bethwaite are connected with this system should be good enough for anybody. Back here in England Ray Monks has built a similar modification on to an E.D. standard escapement and I can only say that he is completely satisfied. (A simpler method of doing the same job would be to use a selective escapement as described by C. C. Badger



*Not It's not a radio slope soarer but John Barker's all-steel job that placed second in the open class at Ivinghoe. Winning model by D. Edwards of St. Albans used a forward fin*

*last month with kick-up elevator in the third position which would obviate the need for a secondary escapement.—(E.D.)*

### Flying the Model

Take the receiver out of the model and fix the rudder at neutral. With the receiver left at home, take the model to a gentle slope which faces into wind. Do not attempt preliminary tests on a calm day but choose one when the wind velocity is about 10 m.p.h. With the wings in approximately the correct position, run down the slope and get the feet of the model in the time-approved manner. Make any adjustments finally considered necessary and then, whilst running down the slope, let the model rise out of the hand.

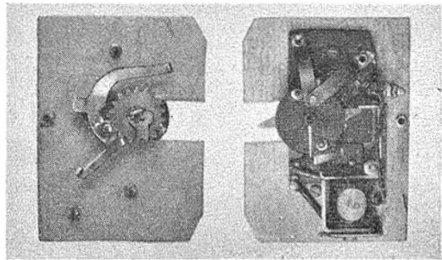
When satisfied with the glide, go back home and check and re-check the radio equipment. Now wait for a wind of about 15 m.p.h. and then take the model to the soaring site. Set the transmitter up at ridge level, make all radio checks and launch into wind with neutral rudder. If everything is not in order you won't be able to do much about it but there shouldn't be a deal wrong with the glide.

Assuming all to be in order, you should find that the model will quickly climb until it sits on top of the lift. Do not panic and key when the model seems to be getting more than a few yards away, let it fly straight until it is either a quarter of a mile upwind or it flies out of the lift. By this time you will be well up and consequently be able to experiment. Remember to keep upwind of the ridge though to avoid turbulence. It is unwise to fly when strong thermal lift is about and thunder fronts should be avoided like the plague.

In conclusion it can only be said that all those who have seen R.C. soaring at its best are impressed. It is the only type of flying when I have seen all participants at a model meeting remaining seated watching a model whilst it flies for minute after minute.



*Left, George Upson came third at Ivinghoe with his "Iris", plans of which are overleaf. It is interesting to compare George's comments with those of Denis Halsey in this article. On right, is the modified E.D. Standard escapement used by Ray Monks. A paxolin disc is attached to the shaft with two studs on the disc which close the brass contacts to the elevator. Rear view on left shows restating "Bonner type rattler."*





## A 6 ft-span radio-control slope-soaring glider by George Upson

RADIO CONTROL FLYING first stirred my interest early in 1957 and having little actual radio knowledge I felt sure that useful experience could be gained by installing such equipment in a glider. Slope soaring was the obvious method of obtaining flights of any duration, and knowledge gained flying an A.P.S. Archangel with radio at 2½ lb. weight eventually led to the design of "Aries".

The prime design factor for slope soaring is good wind penetration, and for this reason a flat-bottomed wing section is used giving the model a fairly fast flying speed. Other components are orthodox, the tailplane area being 25 per cent. of the wing, the moment arm three wing chords, and the dihedral 10 per cent. Tip dihedral is used in order to simplify the two-piece wing joint.

The fuselage was made as strong as possible and designed around the Hill receiver and Mighty Midget Servo unit which means that there is plenty of room for any conventional system.

Single-channel control with rudder only is employed,



utilising the Laurie Ellis Canadian Actuator, described in the February, 1957, *AEROMODELLER*. This provides selective control, i.e., one signal gives left, two right, or *vice versa*, with automatic return to neutral on release of the signal. Sellotape was used for the dead spots on the gear wheel which provides a means of finding their best position.

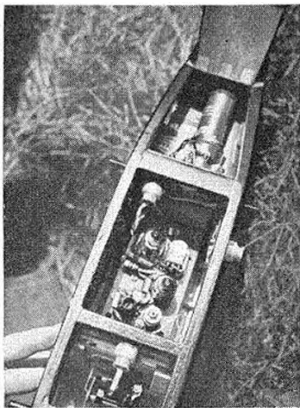
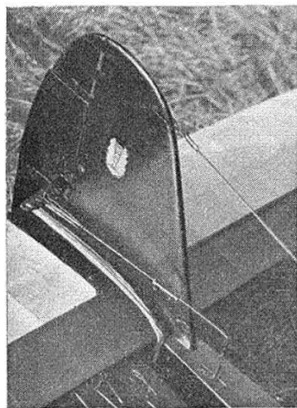
### Construction

Building is straightforward, but the following points should be noted. Washout in the wing should be incorporated when building. Fuselage top sheeting is added after installing the control rod. It is essential that the rudder control linkage operates quite freely. No centring springs are used on the rudder control surface as servo motor overrun is negligible.

### Flying

Trim with C.G. between 50 per cent. and 55 per cent. of wing for straight glide below the stall using the rudder tab and tailplane packing. If you move the C.G. further back than 55 per cent. flight becomes undulating in stall recovery.

Trim as above is standard for winds of up to 10 m.p.h.; for stronger winds move the C.G. forward and adjust tailplane. With the C.G. at 45 per cent., which entails 4½ ounces of extra lead in the nose, the model has flown in winds of 25 m.p.h. Increasing the overall loading about the C.G. also helps in the latter conditions.



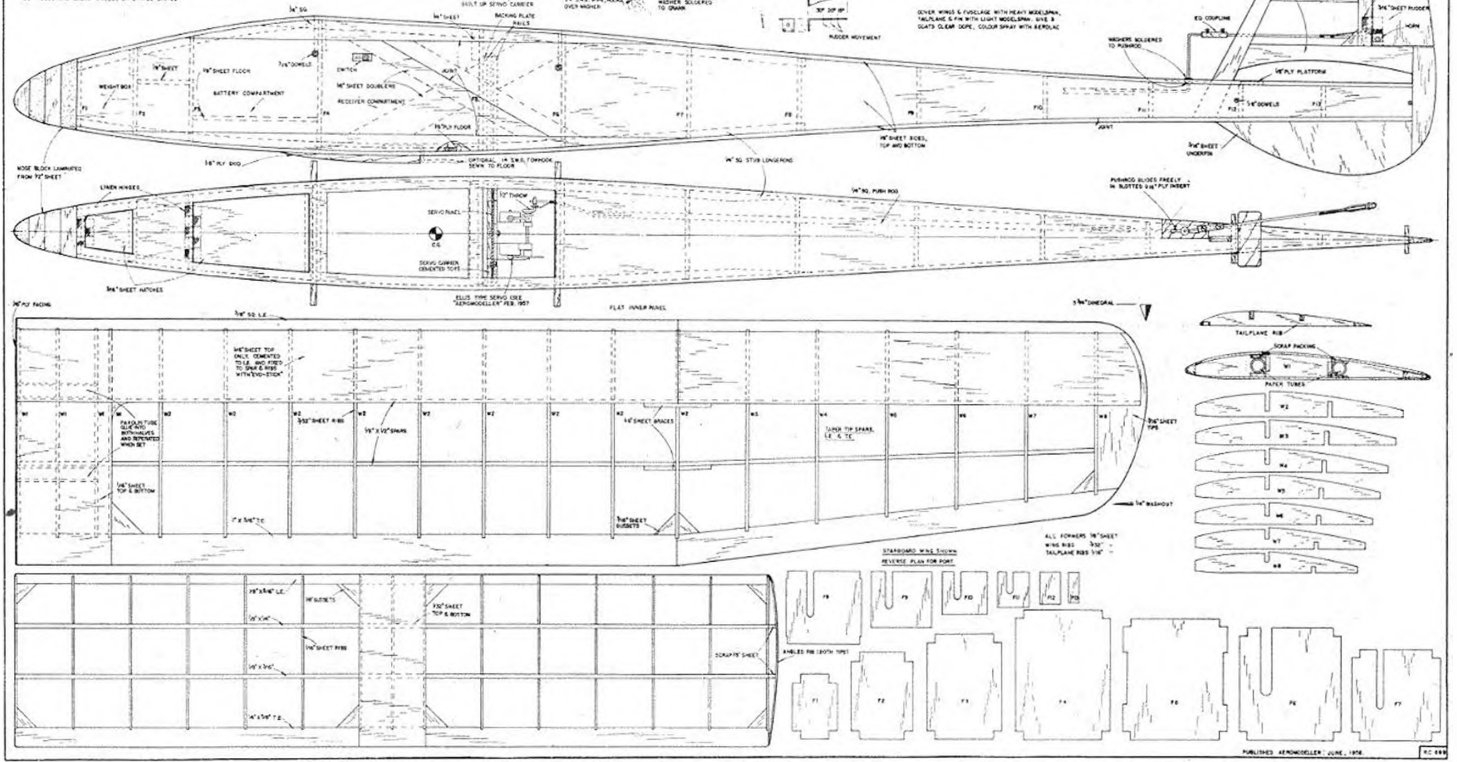
*Photo, left, shows close-up of rudder linkage. Note adjustable horn and grub screw adjuster for control rod length. Aerial, if used, will be seen runs from tip of fin to aft of radio compartment. Right, is top view of fuselage layout with front hatch open. Other compartments are covered by wing. Front section houses batteries, middle section the Hill receiver and the rear compartment the Laurie Ellis type Mighty Midget selective actuator. Note the neat plug and socket connections between the various units*



4" 10T SPARK WIND CONTROL SLIPPER BOARDS

**ARIES**  
 DESIGNED BY  
**G. Upson**  
 DEPARTMENT OF  
**THE AEROMODELLER PLANS SERVICE**  
 18, CLARENCE ROAD, WATFORD, HERTS.

K.C. WOODS ARE BUILT UNLESS OTHERWISE STATED



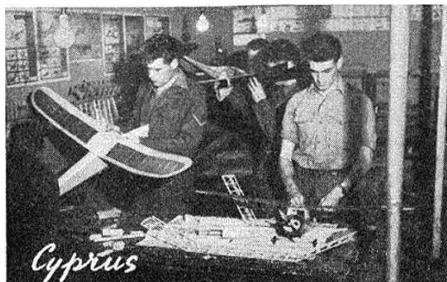
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# World News

Right: Appropriate heading, this super 1/48th Grumman F3F-2 is the handiwork of Paul Matt, Cincinnati, who provided detail for plans on pages 300/9. Below: Horse Guards modellers in their Cyprus club



DESPITE THE TROUBLES in Cyprus, Army model clubs are springing up in many units which not so very long ago were chasing terrorists in Helicopters. Several of the clubs have built their own clubhouses and there is keen rivalry among them. One most enthusiastic group is in the Horse Guards, the famous "Blues" who occupy the hut in pic. above (cost them 33s. to build!) and fly on a local disused airfield.

It is not very often that we are "taken for a ride" at the AEROMODELLER, but last month's leg-pull in these columns was so creditable that we, like Czech *Letecky Modelar* fell for the German *Der Modellbauer* "April Fool" story. It concerns that Kaliumpermgangate jet—definitely non-est—what more to expect at the offices on 1/4/58 from a gent named A. Prill???

All over the world, countries are picking their Inter-

national Championship teams. In Canada, there seems little hope of personal participation; but trials are going on just the same, and in F.A.I. power they're finding great results in spite of the weight. Sorjo Ranta replaced his Tiger with a Tiger Cub with, we quote "Equally spectacular results". Looks like the Cub is going to rival its big brother. In Hungary preparations for a Wakefield contingent are well under way, the famed Dr. G. Benedek may well come to Cranfield. From Australia Bond Baker is in both Power and Wake and has booked his passage for a second Blighty sojourn. Actually he didn't make the Wake team but Art Cooper sportingly stood down for him. In Sweden Hans Friis still leads in power with Lennart Tyskland and Rune Johansson topping Wakefield. Final Eliminator take place in early May, making three rounds in all. In Finland the standard is very high and every contest seems to result in a fly-off no matter what the class. Reino Hyvarinen has been returning perfect scores to lead in both A/2 and Wakefield National Contests, and in the new-rule power events, Ossi Niemi has led two major events with fly-off times of 4 : 59.1 and 4 : 10 so he seems to be a man to watch in the finals. In fact the high standard of results in Finland have led more than one modeller there to start thinking that we haven't seen the last of the F.A.I. rule changes yet! Incidentally, the fly-off time in A/2 was 3 : 24 for the winner, 3 : 21 for second—this in 5 degrees below freezing, without wind and air "as thick as sour milk". All we need to complete the remarkable picture of efficiency is to imagine the event taking place over ice!

South African news is covered on pages 314/5 but one item that took place before their Nats was Fred Raubenheimer's twenty-one turn spin at Cape Town

J. McK. Bone's magnificent 90-in. 15-lb. Invader flies at 60 m.p.h. on an Anderson Spifiter and Fox 59. Ailerons help to keep line tension as there is no rudder offset. Entirely covered in Alloy foil, it has torsion bar shock absorbing a/c to take heavy landing loads

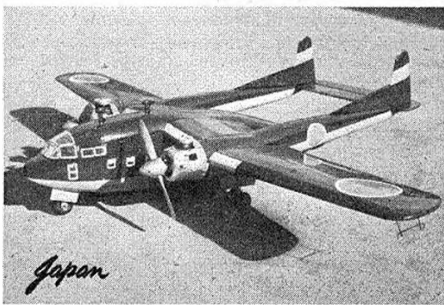


with the Smog Hog seen on page 314. Model started at about 400 ft. and took ninety seconds to complete what must be a record achievement—and it pulled out at 20 ft. in the same direction as entered. New club in the Cape is the S.C.A.R.S. (Southern Cape Aeronautic Radio Society).

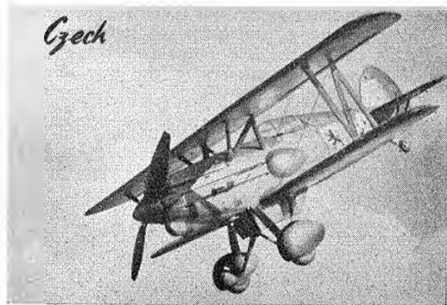
In the U.S.A. radio reaches fever pitch it seems, and Citizen-Ship have broken the 100 dollar bogey with both Rx and Tx available at 99.95 each for eight channels. But eight are no longer enough for some! Flaps or spoilers for fast descent to landings are now being added to many models, actuated on a ninth channel.—It's about time we got British Fred Borders, the TV Mental Arithmetic genius and inventor of Plastic Props (Trulflex) back in our fold with his variable pitch prop r/c Dakota to show the lads how to employ a tenth channel! Still on the radio waves, we read in *Australian Model News* of Ken Eglitt in Brisbane who built himself a Smog-Hog, threw an O.S. 35 up front, launched, and did 48 loops off the reel—then picked up the transmitter!

Are Russian modellers as professional as some would have us think? A feature (unsigned) in *Model Airplane News* bears out what we have thought for a long time. There is no such thing as a concentrated effort to train international teams, break records, etc. Previous performances have been the result of individual rather than combined effort, states the writer in many words, and he names the people to blame for the U.S.S.R.'s poor (?) status quo in International events. Seems like, as in many smaller European countries, aeromodelling is directed by one central office, but all the gravy goes to a few lucky (and more expert) favourites. (Incidentally, if any British aeromodeller, capable of understanding the Russian language and translating articles from Soviet modelling magazines, would care to contact the Editor, we can provide him with a most interesting and profitable spare time occupation). Such cannot be said of Czechoslovakia, the most advanced of all countries where the hobby has to be "directed". Many eliminators are taking place to select their teams for Cranfield, and the new InSTITUTE MVVS—2.5/1958 engine has been mass-produced for distribution. It bears no relation to any other diesel except the E.D. Bee series 11 in its cross-scavenging, has the conventional 15 x 14 mm. bore/stroke proportions, two races and front rotary valve: but the quoted b.h.p. is 0.314 at 15,800 r.p.m. with a usable 0.28 at 12,500.—It certainly will be interesting at Cranfield!

Taro Kishimoto made this Fairechild C119 in Tokyo, decorated in Japanese Air Force colours. Right: Czech Avia Fighter is by Zdenek Drester of Prague for 2.5 c.c. has completely enclosed engine



Top: Lennart Tesklind, chairman of Swedish M.F.F. and Wake winner of Swedish winter contest. Above: Joun Kolander, 2nd in Finnish power contest, uses Olizer Tiger, does 3:14 from 15 secs. engine run



## Famous Biplane NUMBER 15

# Grumman F3F-2 and Gulfhawk

described and drawn  
by G. A. G. COX

IMAGINE AN EXECUTIVE of a private concern in Britain persuading the Ministry of Supply to let him have a Hunter fighter similar to one under test at Boscombe Down! That is analogous to Al Williams' action in 1936 when by virtue of his persuasive charm and, presumably the ability to talk the hind leg of a donkey, he acquired his "Gulfhawk 2". Probably more decisive factors, however, were his reputation as an airman and his service in the U.S. Navy. Mr. Paul Matt of Ohio writes:

"Alford Joseph Williams, Jr. was born July 26, 1896, in New York City. After schooling he worked himself up to become a pitcher with the N.Y. Giants. Turning later to the law business he became an attorney-at-law for a short time. His real interest, however, was not realised until 1917, when he joined the U.S. Navy as a student aviator. Between 1919 and 1930 he did research and test work on Naval Aircraft. For these daring exploits and the furthering of aviation he was awarded the Distinguished Flying Cross by the U.S. Navy.

"After checking out of the Navy as a Lieut. he accepted a similar commission in the U.S. Marine Corps Reserves with the famed "Devil Dogs" outfit. On November 4, 1923, Al won the coveted Pulitzer Trophy in a Navy-Curtiss Racer at a speed of 266.59 m.p.h. By 1935 he became a Major in the Marine Corps Reserves, a title he holds to this day.

"Basically Major 'Al' is a research engineer specialising in aviation and allied products. He has written many newspaper, magazine articles and radio commentaries and was much sought after for public speaking engagements. As long as aviation was the subject the Major was available. Many of his articles were signed with the *nom de plume* "Tattered Wing 'Tips'."

Difficult though it might have been to induce the naval authorities, Major Williams still had his employers and sponsors to convince. As aviation manager of the Gulf Oil Refining Co. he already had "Gulfhawk I" which was a Curtiss Hawk 1A, commercial version of the YP.20. But a man of his ability and ambition naturally seeks a machine which will do him justice and his powers of persuasion eventually won the day.

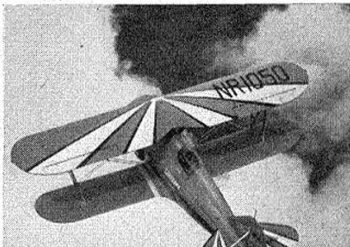
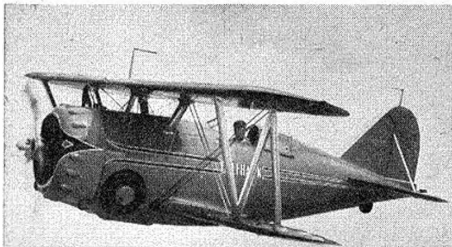
Although admitting the need for a fast monoplane like the Spitfire, Major Williams preferred the biplane for manoeuvrability and he chose the Grumman F3F-1, currently in service with the U.S. Navy, as the basis of his design. He decided to replace the "Twin Wasp Junior" with the new 1,000 h.p. Wright "Cyclone", a choice which coincided with tests by the navy of the very same combination, designated XF3F-2. In an effort to reduce the blunt appearance of a fuselage carrying a 54-in. diameter engine he chose a close-fitting cowl with "Blisters" to house the valve rocker boxes. (The military version appeared later with a larger cowl having the carburettor air intake inside, thus improving forward visibility). The Standard F3F fuselage of Gulfhawk 2 had a neater tail end as a result of the removal of the carrier arrester gear, and the bulged machine gun covers were replaced by smooth panels.

Several different sources give conflicting estimates of the "Cyclone's" power, ranging from 815 to 1,000 h.p. There were many variants of this engine, of course, but the higher figure may have been the product of jubilant propaganda.

The instrument equipment and layout was specified by Major Williams since he had become

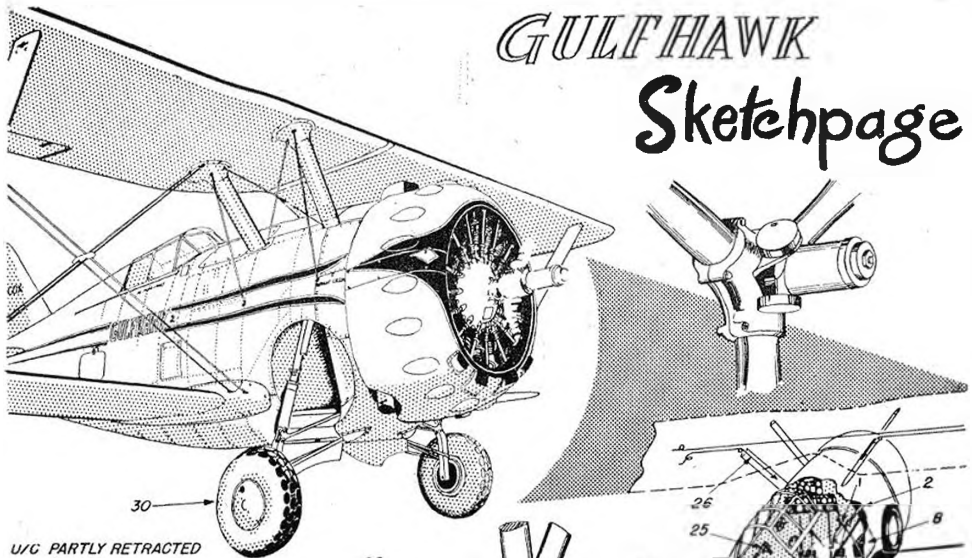
*Continued on page 310*

Heading shows the handing over ceremony at Washington National Airport, October 11th, 1948, when the G-22 became the property of the Smithsonian Institute and the F3F in background took over. At right, these "Flight" photos display the vivid colour scheme

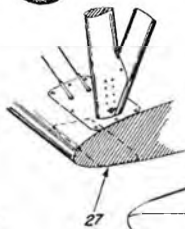
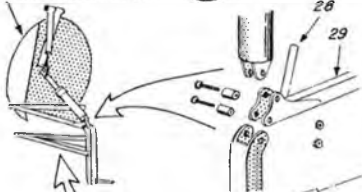


# GULFHAWK

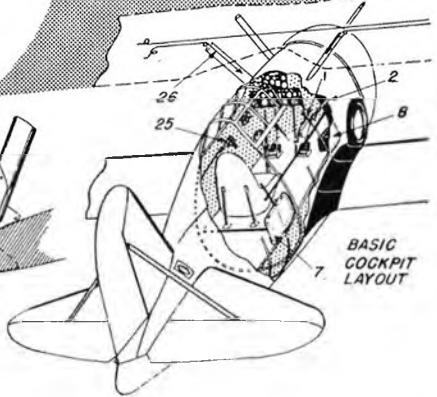
## Sketchpage



U/C PARTLY RETRACTED

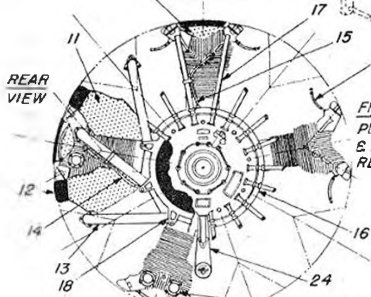


STRUT AND  
UNDERCARRIAGE  
DETAIL

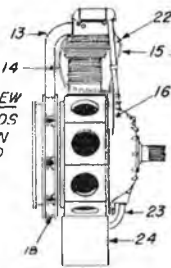


BASIC  
COCKPIT  
LAYOUT

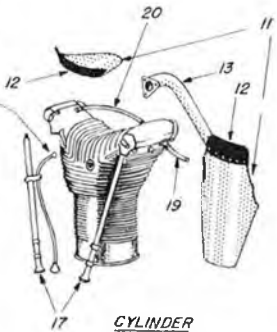
11 FRONT VIEW



FRONT VIEW  
PUSH RODS  
& IGNITION  
REMOVED



SIDE VIEW



CYLINDER  
DIAGRAM  
(NOT TO SCALE)

REAR VIEW  
INTAKE PIPE  
IGNITION & BAFFLES  
REMOVED

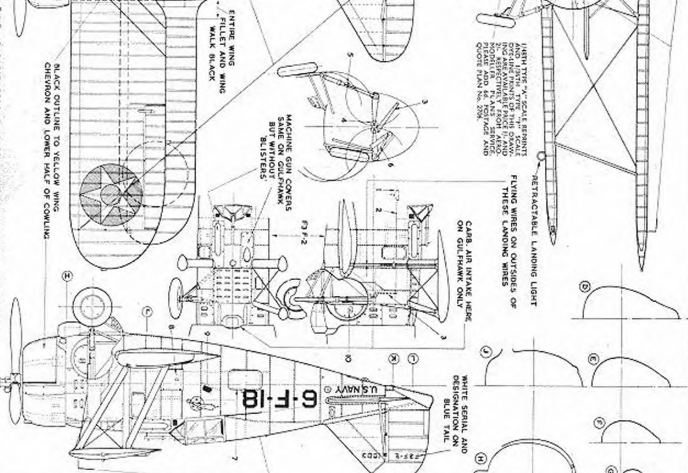
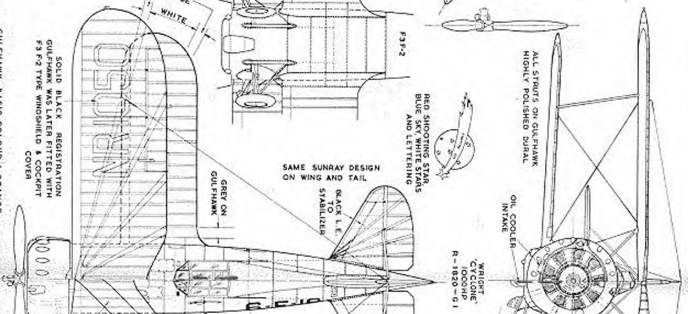
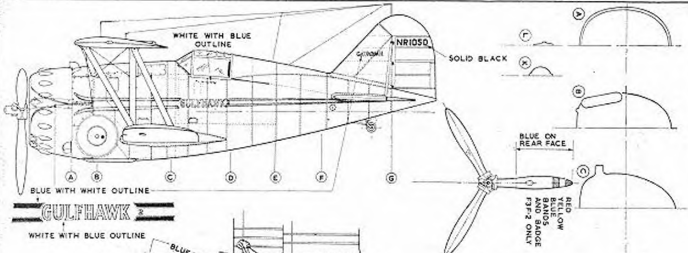
WRIGHT CYCLONE ENGINE DETAIL

Key to Drawing and Sketchpage

1. 5 to 3 reduction gear box to retract u/c.
2. Shaft drive to sprocket.
3. Chain drive to gear box.
4. Reduction gear box to final drive.
5. Hinge point.
6. Spring counterbalance.
7. Same baggage compartment on both models.
8. Battery hatch here on Gulfhawk, but slightly smaller.
9. Steps both sides on F3F-2 only.
10. No nameplate on Gulfhawk.

11. Baffles on top of and between all cylinders.
12. Leather fillets.
13. Inlet pipe.
14. H.T. lead to rear plug.
15. H.T. lead to front plug.
16. Ignition lead conduit.
17. Valve pushrod.
18. Engine mounting lugs.
19. Oil lines connecting cylinders.
20. Oil lines connecting rocker boxes.

21. Exhaust port.
22. Rear plug.
23. Oil line to sump.
24. Oil sump.
25. Tail incidence control.
26. Aileron wires run inside rear cabane struts.
27. Inspection door underneath.
28. Round tube.
29. Square-section tube.
30. Elliptical tyre tread on Gulfhawk only.



From page 306

accustomed to the arrangement in Gulfhawk 1. He also installed several items additional to the normal military complement, including a Pioneer accelerometer an exhaust gas analyser and a cartridge type engine starter with the breech in the cockpit. The fuel and oil systems were provided with double feeds and vents so that the aircraft could be flown on its back for half an hour. Although "Gulfhawk 2" looked heavy, it was in fact quite light by contemporary standards, weighing 4,195 lb., all up and it was immensely strong. The F3F-2 sustained a stress of 14G before the wings collapsed, killing test pilot Jim Collins.

The new Gulfhawk, designated by Grumman the G22, was given a special finish by the Perry Austin Co. in the same colour and style as the Curtiss—orange all over with blue and white decorations; all struts and external fittings were highly polished dural (some sources say chrome or nickel plating). The machine was constantly maintained in immaculate condition by Major Williams and his mechanic Frank Tye, and rests today in Washington's Smithsonian Institute looking exactly as if it had just emerged from the Bethpage factory.

Al Williams had already become a legend among speed and stunt fliers in the United States, holding eleven World records to date. With the Grumman he was all set to enhance his reputation still further. Whenever an air show was staged in America, Al was sure to be invited and if it was at all possible he would accept, giving a brilliant display of aerobatics which made crowds gasp. He would put his glistening machine through every manoeuvre in the book and a few more of his own invention. Particularly impressive were his demonstrations of navy dive-bombing techniques and his meteoric climbs.

In June, 1938, the *Daily Express* organised an air display at Gatwick airport, proceeds from which were to go to the Royal Air Force Benevolent Fund. The star turn was, of course, Al Williams, who agreed to come to this country specially for the occasion. 150,000 spectators watched a dazzling display of aerobatics, the most memorable of which was prolonged flying and climbing with the aircraft on its side.

Proud as he was of his noisy, aerobatic mount, Al Williams envied us for our in-line, liquid-cooled



Slim Al. Williams and his tubby mount make a distinct contrast. Note the u/jc leg detail, polished struts and prop.

engines. He had long campaigned in the States for such an engine and he listened appreciatively to the refined roar of a Kestrel being run up at Gatwick. Al Williams left behind him in England memories of a striking personality and a superb machine which, it is said, only three men ever flew—the Grumman test pilot, Al himself and Ernst Udet.

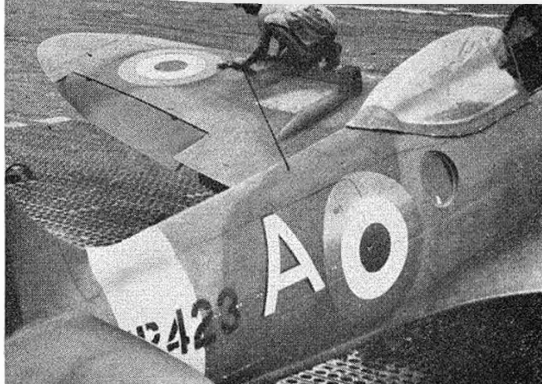
By 1938 many squadrons of the U.S. Navy and U.S. Marines were equipped with the F3F-1 and F3F-2 which remained in service until replaced by the F4F series of monoplanes early in the war. Some of these "Wildcats" were supplied to the R.A.F. with the name "Martlet", and they bore a striking resemblance to their biplane forebears. The undercart was virtually the same, being manually operated through reduction gears. Although this system seems antiquated by modern standards, the process of winding up was effortless and took less than ten seconds; lowering the wheels was an even faster operation. The mechanism was not an innovation on the Grumman fighters. Leroy Grumman was formerly chief engineer to the Keystone-Loening concern which manufactured amphibians employing much the same method of wheel folding. The principal difference was a balancing system using elastic shock cord to offset the weight of the undercart structure instead of spring counterbalances.

Continued on page 320



Left: A VF-6 U.S. Navy F3F-2 showing coloured fin and lower cowl. Below: A Marine Corps F3F-2 of the famous Red Lion Sqdn. Photos from the Paul Matt Collection





## EXCEPTIONS TO THE RULE ON SIX POPULAR MODELLING TYPES

THESE PICTURES have been specially selected to illustrate how there are always exceptions to the standard colour schemes for military aircraft, and although we cannot give as much information as we would like, the variations do allow reasonable assumptions to be made.

First is the Bristol F2B Fighter, carrying unusual identification letters which have been reverse-shadowed. This is a night-fighter version with flare bracket beneath the lower wingtip, and the white in all roundels and rudder stripes blacked out.



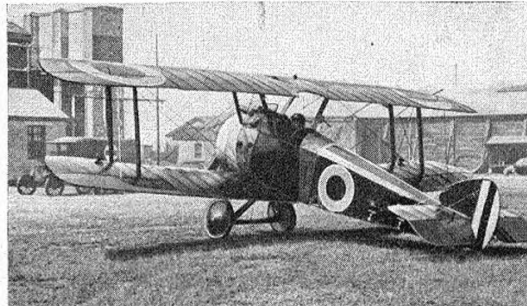
Taken during the closing months of World War I at Hainault Farm, this picture is also a good example of how early photographs can be misleading. Note how the red becomes dark, and the blue, light, in the roundels. (From B. T. Gibbins.)

Next, more shadowed lettering, this time on a Spitfire XVIII FR taken in 1950 at Sek-Kong airstrip in the New Territories on the Chinese Mainland. The letter is silver, black shadowed, and signifies the aircraft TP423 of Sqdn.-Ldr. Yule, O/C 28 FR Squadron. Most remarkable fact about this picture is that the colour scheme is from a period ten years earlier—dark earth and dark green upper surfaces, sky band and undersides. (From J. D. McHard.)

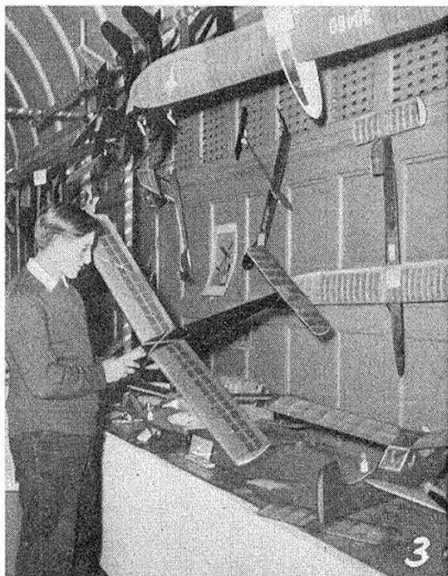
A number of Nieuport types were fitted with these balloon-bursting rockets in the R.F.C., but the Type 16 appears to have only served with the French Air Force.

Below, two more night fighters. First a diamond-decorated S.E.5a with blacked out white in the insignia, seen at Hainault Farm and it is with some regret that we cannot give the colour scheme. (From B. T. Gibbins.)

Beside it is a Camel F.1, and the pilot in the cockpit is the father of Brighton modeller I. C. Lucas. Streamlined lights are fitted on the lower wings and the colour scheme is a slightly glossy black; but roundels are still picked out with the fine white outline.



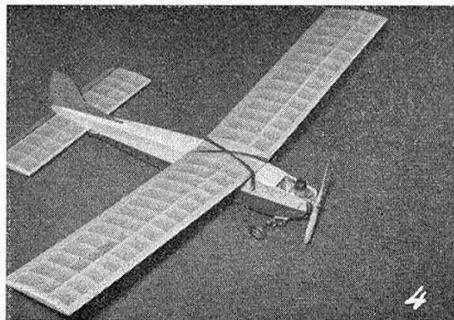


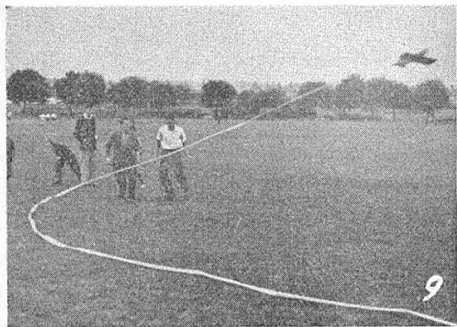


## MODEL NEWS

IF THE MODEL exhibitions in Manchester and Cambridge are any guide to what we can expect in the 1958 season, it seems that there has been a big advance in radio controlability since 1957. Winner of the AEROMODELLER trophy at the Northern Models Exhibition was Wally S. Nield of Chedde, and we see him in picture 1 with his Frog 500-powered 66-inch own design radio job, equipped with multi-channel—we hope to see it in action at the Nationals.

Photo 2 shows what can be done with a bit of trick photography. This is yet another of Mr. Donald George's models which have frequently graced these columns and shows him about to crank up the A.M.25 in his *Black Magic* down at Liskeard, Cornwall. *Black Magic* is silk-covered and finished in an attractive colour scheme of red and black with a white dividing line. Over now to the Cambridge Model Engineering Society Exhibition and part of the aircraft contribution which we see being inspected by "Dusty" Miller in picture 3. This was a particularly fine show with some very nice exhibits and Dusty is seen holding a radio control glider for slope soaring or tow launch by R. Godden. Above him is an A.P.S. *Hovering* for radio control, also by Dick Godden. In picture 4 another exhibit at Cambridge, G. Minifie's little



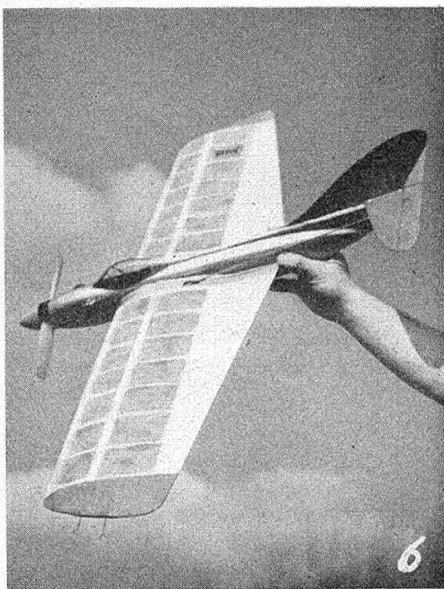


*Impulse* with an Allbon Javelin carrying an AEROMODELLER transistor receiver and having provision for kick-up elevator. The small u/c on this design has a novel trailing action with rubber suspension. Both this model and others by Mr. Minific and Cambridge members have what we consider to be an excellent idea for diesel R/C models. A fibre glass or metal shroud rather like an inverted flower pot is slipped over the engine cylinder before the fins are fitted. Thus all exhaust mess is deflected downwards and the topside of the model is kept clean.

Picture 5 comes from J. Baguley of Hayes and shows his huge 12-ft. span, 12-in. chord glider which weighs 4 lb. The two-piece fuselage length is 7 ft., tail span 4 ft., yet the whole model can be transported in a box measuring 52 x 12 x 8 inches. One of the most popular designs introduced into A.P.S. this year has been George Aldrich's combat or pure stunt design *Peacemaker*. In photo 6 we see how J/T Edwards of Handorf, Germany, has modified the design slightly, increasing the span to 41 in. and built up the otherwise profile fuselage with streamlined fairings. This increases the weight, but we must agree that it does enhance the appearance further without detracting from the *Peacemaker's* magnificent performance. The *Airspeed Envoy* is a very popular subject as a twin engine rubber-driven design and in 7 we have J. W. Ward's (York) version finished in pre-war colours of the King's Flight, red, white and blue.

One can easily be deceived by picture 8 taken by B. J. Fry of Abbey Wood, for it is rather hard to believe that the *Meteor* is a plastic model made from a Frog Kit. Mr. Fry suspended it from the clothes line in the garden by two strands of his sister's blonde hair and with the camera fitted with a close-up lens 30 in. from the model, the result is most realistic.

Last but not least and certainly the longest, is an outsize in streamers attached to Rex Gough's Oliver Tiger model at Enfield. Streamers certainly dampen the model's stunting capabilities, but loops were found possible, although the model could never catch up with its own streamer in spite of the 50-ft. length!

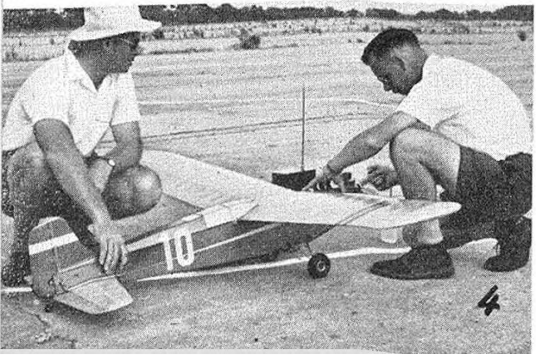
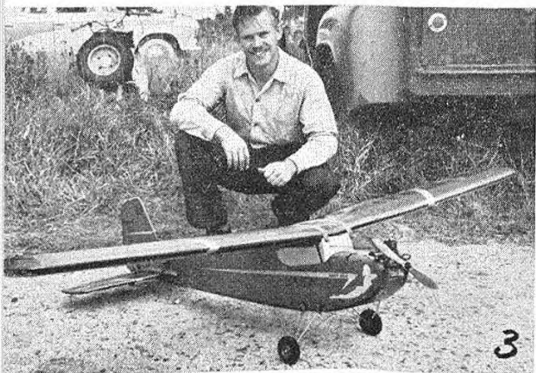
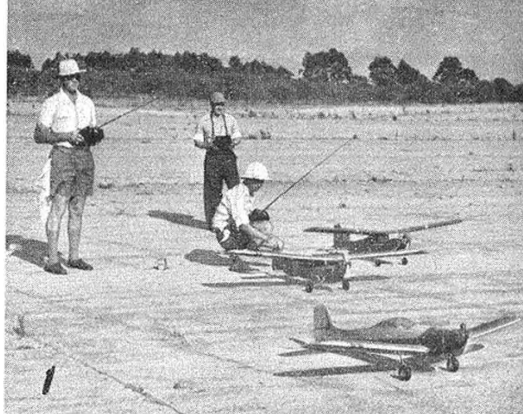


1958 South African  
National Championships

Cape Town  
4-7 April.

EASTER  
EVENT  
SHOWS  
HIGH  
STANDARD  
IN R/C

reported by  
PAT WHEELER



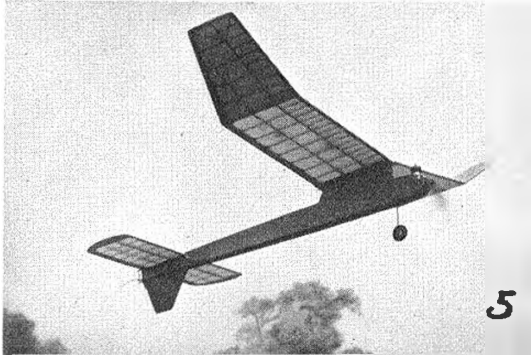
THIS YEAR'S EVENT proved the most enjoyable ever, even some of the organising committee were able to fly. Weather was perfect on all days, some thermals, a breeze never more than 5 knots, occasionally slightly overcast.

Phesantekraal 'drome (F/F and R/C) being out in the country, there was little spectator problem. The local gliding club (to whom many thanks) vacated the site over Easter leaving a free field with vast open areas of concrete runway. Friday started off with Open Rubber won by popular Cape Townner Robbie Rowe with his O/D at 734 secs., followed by other local lads Pete Visser and D. Schonegeval, all using Pirelli. Down from the Rand, Brian Partridge of Jo'burg showed his old form by pipping Rowe's German *Passant* A/2 in the Nordic event by a slim '9 of a second, this after losing his *Lucifer* to the trees in the first round and completing the contest with his reserve, *Inchworm*. The standard of flying in Nordic was high, and big dogs and even bigger farmers made O.O.S. flights quite an eventful affair for those who persisted in ignoring d/t's.

Class B Power brought out the bigger models and in some cases bigger prangs. *Spacers*, the popular Taibi design, dominated and local man Benny Boxall won with 714; secs., giving a ratio of 29:3 : 1 in senior (Torp 23 *Spacer*) and Roy Heydenrych's *Spacer* giving him top junior place with 14 : 21 : 1. Surprise of the meeting was the eclipse of the *Ranrads*, which did not perform in the Cape air (Rand competitors are accustomed to flying from 4,500 ft. ground level).

Saturday's flying was set in an ideal place, a sports stadium of short turf surrounded by tall trees, room for eight circles, only five of which were used. Bloemfontein A.C. aroused the most interest with their pit work in T/R. They had three models in the "B" final, all of which had been flown in heats by Mrs. Lee. Unfortunately she chose the wrong job for the final but it was

*Progress after the Honner visit! 1 shows formation take-off with Orbit 3 equipped winners of multi; 2 shows Cliff Colverwell and first place Astro-Hug; 3 Fred Raubenheimer and 2nd place Smag-Hug; 4 G. Hamilton's Hami-Hug took 3rd place; 5, Spacers dominated the free flight power events*





8, Pete Visser, in both Wake and Power teams, waits with #12. 9 is popular Robbie Rowe, close on the heels of Champion Brian Partridge, repairing his Lucifer in 10

kept "in the family" by R. Lee's win with a Torp 29 *Mercury Thunderbird*. One of them was timed at nine seconds for a prop change and refuel. Partridge's Tiger Cub *Pluto* romped home fast in 1A (85 laps at 72 m.p.h.) and in "A" all the favourites eliminated themselves, leaving it to a Torp 15 *Midget Mustang*.

*Thunderbirds* (Bob Palmer) were the rule in Stunt; though the *Noblers* flown were impressively slow and smooth, and much easier to judge, they were in comparatively novice hands. Speed was rather a laugh, a lot of T/R models being entered, one of which (Jim Connacher) was looped and inverted just as fast! Mrs. Lee won Class A with a Torp 19 (105.8 m.p.h.) and Reg Lee "B" with a Torp 29R *Thunderbird* T/R. Ben Boxall's *Corsair* took scale honours for third year running. Only two collisions occurred in Combat, the standard not being very high, exciting nevertheless.

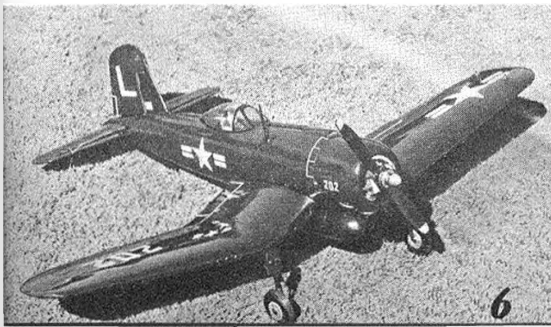
Sunday's flying was opened with 1/4A Power. Pete Visser's *Y-Bar* (AM.10) totalled 572 secs., 20:3 ratio. Jnr. Altman of Port Elizabeth managed 461 for 12:3 with his *Upstart* (Atwood Shriek). F.A.I. next, fell to Brian Partridge's 19-ounce *Calypto* and *Tiger Cub* at 745 secs.; this was against all well-known combinations, and he was followed by a pair of *Dream Weavers* flown by Visser and Altman. After lunch Rob Rowe did it again in "A" power with yet another *Spacer* using a Torp 19, time 534, ratio 21:3. H. Altman gaining another place with 598½ to give 16:4 ratio, using a *Dream Weaver* (Webra Mach 1) with the Junior section. On Monday Rowe started off well again with his *Mantis* in Open Glider Senior, 611:3 secs. This day, the thermals were really around and d/t's were not enough in some cases. In Junior Glider II, Griefl clocked 647 secs. with his *Seraph*. This was Rowe's day, after lunch he had another third time winner with his now-famous O/D Wakefield, new 20-in. prop and 12 strands of Pirelli, time of 780 secs. This he topped off with 200 secs. in H/L Glider using another proven design, his own *Polly*. Jetex and P.A.A. Load were both won by Brian Partridge using an *Arrow* (Jetmaster) and *P.A.A. Master* (Thermal Hopper).

In R/C, everything in the A.M.A. rule book (adopted as standard) except knife edge was completed. The judges were critical in following the judging system laid down, yet the first three scores were 240, 213 and 197 points, winner Culverwell topping 200 three or four times. Of the first three, he was the only one using ailerons, for Cuban 8s, Immelmans, Split-S, rolls and inverted; others did snap rolls from the semi-stall position. Winning plane was a beautiful *Astro-Hog*, second a *Smog Hog*, third a *Hami-Hog*; the latter is much the smoothest flier, being a shoulder wing *Smog Hog*, wing in line with top of nose, ⅝-in. incidence, 0° tail, *Astro-Hog* 5in and rudder (balanced) and 2 in. extra tail span, 1½ in. extra nose length. It's Fox 35 R/C with exhaust throttle really purrs on low speed, taxiing and take-off equal to the *Astro-Hog*. The name is derived from designer Hamilton's surname.

Most amusing (and amazing) incident was Swartz's *Beaver* being forced right down to ground out of thermal (that would have given him a max) by a large crow that repeatedly dived and rocked the model. And so on to the prize-giving dinner where chaps looking like down-and-out hoboes on the flying field were almost unrecognisable in their evening "togs". Prizes (example, a Bramco Transmitter and Receiver for the Nordic event) were probably the best ever. The £50 High Point Trophy went to B. Partridge (Rand M.A.C.) who needed help to carry his prizes home, while the Western Province M.A.C. were declared the champion club. Special prize was given to young Peter Connacher (Jim's son) who battled to repair his 1/4A power job that was "stepped upon", only to have contest time closed on him three minutes after finishing.

So ended the 1958 Nationals, an event long to be remembered, not only for the excellent weather and prizes, but mainly for the friendships made where they matter most—on the flying field.

6, Ben Boxall, noted for the beautiful finish of his models, excelled in scale gl with his Vought Corsair. 7, D. Caetans was second in class B power using a Frog 500 "City Bay"



Continuing our international quest for nothing but the best  
 . . . . Walt Mooney's

## LUTON MINOR (Prototype)

THIS LITTLE high-wing ultra-light aircraft is already a modeller's favourite and is likely to become more of a household word as years go by, for we learn that plans and perhaps kits for building the full-size aircraft are shortly to be available in England through the newly-formed Phoenix Aircraft Co.

the baby motor fans. Due to its small size, Walt found that it was impossible to completely eliminate dihedral as on the full size, but this is just about the only concession made to true scale apart from the engine which, of course, on the prototype was an inverted Vee-twin JAP motorcycle unit.

The dihedral problem *can* be eliminated perfectly



Smallest in  
 our scale  
 plans range,  
 this 23 inch  
 ultra-light  
 flies just like  
 the real thing  
 with the new  
 miniature  
 engines

G-AEPTD was the prototype, as distinct from the one represented by our larger 42½-in. span AEROMODELLER Plans Service scale model for 1 c.c. by Eric Fearnley, and has differences in the wing strutting, tailplane profile and undercarriage. Famous Californian modeller Walt Mooney chose it originally for a subject for a rubber power scale, but put it to one side when he discovered an extreme lack of useful propeller clearance.

### Bambi power

Eventually, when the Allbon Company introduced the miniature Bambi diesel his dream was realised and the prototype model is now approaching three years old, has had two re-coverings and is a veteran of many many flights. Introduction of the Cox Pee-Wee .020 cu. in. glowplug engine in the U.S.A. now makes this a design of popular appeal and with its simple straightforward construction, the Minor prototype will be a favourite with all

by means of transparent pylon at the centre strut, but it is thought from the appearance point of view, introduction of actual dihedral is the lesser of two evils.

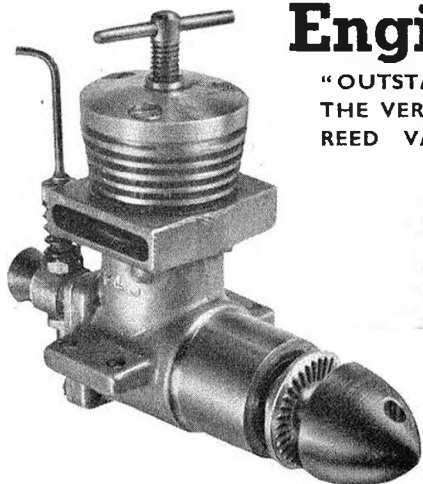
One must select the material carefully choosing lightest possible grades of wood for all components in order to reduce the all-up weight to an absolute minimum. The high lift thick section wing and fine pitch required by these tiny engines will mean that the actual airspeed is extremely low and very much in keeping with the 75 m.p.h. airspeed of the full-size.

As can be seen by the photo on this page of the two Bambi-powered prototypes, the Minor is a most attractive shape (many say that the prototype was far more attractive than the later versions) and for colour scheme we suggest red fuselage and wing leading edges with cream wings, tail and fin and the red "Safety First" triangle on the vertical tail surfaces as seen on G-AEPTD.



# Engine Analysis Number 48

"OUTSTANDING HANDLING QUALITIES" IS THE VERDICT FOR THE NEW 1.5 C.C. BALL-RACE REED VALVE ENGINE FROM W. MOLESEY



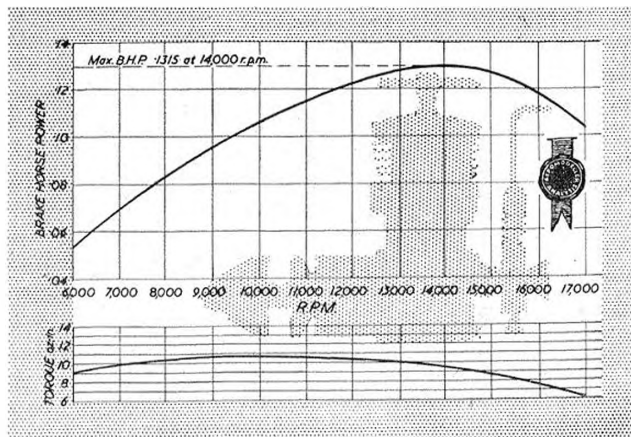
## E. D. 1.49 "FURY"

Reviewed by R. H. Warring

EVERY ONCE IN A WHILE, amongst the dozens of specimens that pass through the test shop each year, there comes an engine which is outstanding in its handling qualities—and a sheer pleasure to put through the range of individual propeller r.p.m. tests, hand-started down to the very smallest diameter sizes, as well as giving no trouble at all on the dynamometer rig. Such an engine was the new E.D. 1.49 c.c. "Fury", which on handling qualities alone should achieve great popularity.

The engine as received for test had obviously done quite a lot of running at the factory, and was completely "run-in" for us. As supplied new, the "Fury" needs at least one-hour moderate running speed to obtain similar performance. Essentially,

of course, the "Fury" is of "racing" layout—virtually scaled down from the well-known 2.46 diesel with the addition of reed valve induction in place of a rotary disc. This form of induction means that an engine should run equally well in either direction, but there is remarkable absence of "kick" in the "Fury" when hand starting so that on only one occasion hand starting did it actually start backwards. Starting proved virtually instantaneous on any propeller load after giving a finger choke at suction point and backing off the compression slightly. "Choking", incidentally, is an easy way of stopping a reed valve engine. It does not result in flooding, but merely stops the valve from working.



### SPECIFICATION

Displacement: 1.500 c.c. (.92 cu. in.)  
Bore: .500 in.  
Stroke: .468 in.  
Bore/Stroke ratio: 1 : .92  
Bare weight: 3½ ounces  
Max. torque: 10.7 ounce-inches at 10,400 r.p.m.  
Max. B.H.P.: .1315 at 14,000 r.p.m.  
Power rating: .0875 B.H.P. per c.c.  
Power/weight ratio: .0364 B.H.P. per ounce.

### Material specification:

Crankcase: magnesium alloy pressure die casting  
Cylinder: hardened steel  
Cylinder jacket: machined from dural  
Piston: cast iron  
Contra-piston: hardened steel  
Connecting rod: hardened steel  
Main bearings: two ball races  
Induction: reed valve  
Spravbar: brass  
Needle valve: steel, silver soldered (coil spring lock)

### Manufacturers:

Electronic Developments (Surrey) Ltd.,  
Island Farm Rd., West Molesey, Surrey.

### Price:

£3 5s. 0d. plus 14s. P.T.  
Total £3 19s. 0d.

The controls are nice to handle, the contra piston fit just right and the needle valve positive in setting. The needle thread is rather coarse, making adjustment of the mixture a little critical at the higher speeds and if leaned out too much the engine does stop abruptly, but it is quite an easy matter to establish an optimum setting.

The "Fury", too, is quite happy running at low speeds and swung a 10 in. x 4 in. Trucut propeller smoothly at 5,000 r.p.m. Actually with this load the compression was backed off to its limit and a somewhat higher r.p.m. figure would possibly have been obtained if it could have been reduced still more. But operation at such low speeds would, of course, not normally be called for. In terms of power output, in fact, the low speed performance is quite modest and the torque curve is a little unusual in showing a peak between 10,000 and 11,000 r.p.m. so that the true potentialities of the "Fury" are only realised at the upper end of the speed range. Peak B.H.P. from the test data was plotted as 1315 at 14,000 r.p.m. Running with propeller loads is still consistent and smooth up to 17,000 r.p.m. and beyond, although there is a marked falling off in power past the peak.

About the only criticism that can be levelled against the operation of the "Fury" is a marked "vibration period" within the speed range 9,500 to 10,000 r.p.m. All propeller loads tried which brought the speed to within this range resulted in considerable vibration. In fact, propeller sizes which would have been expected to give, say, 11,000 to 12,000 r.p.m. tended to "stick" in this vibration speed range. This was noted on both wooden and plastic propellers.

Fuel consumption of the "Fury" appears quite moderate, which should be a particular attraction for S.M.A.E. JA team racing. High pitch propellers are also handled with ease, although the propeller shaft is not really long enough to take any

## E.D. FURY

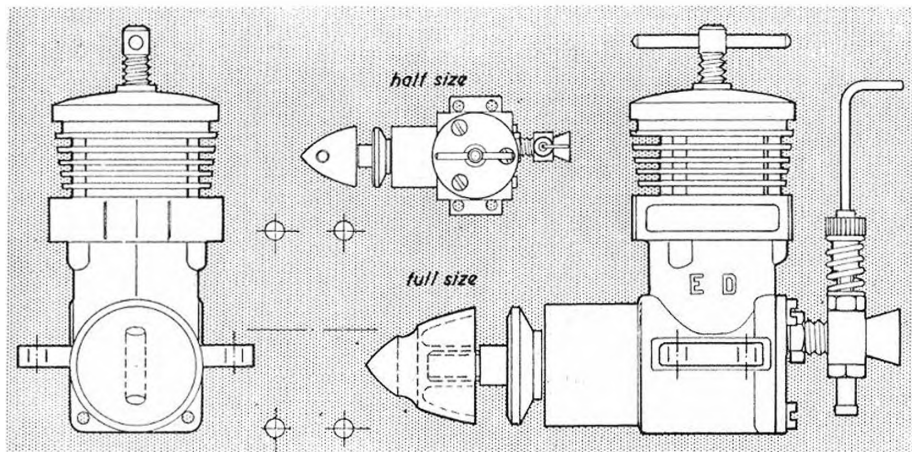
## PROPELLER—R.P.M. FIGURES

| Propeller<br>dia. x pitch | r.p.m. |
|---------------------------|--------|
| 8 x 3 (Tiger)             | 12,000 |
| 8 x 4 (Tiger)             | 10,800 |
| 9 x 3 (Tiger)             | 8,600  |
| 6 x 9 (Tiger)             | 10,000 |
| 10 x 4 (Trucut)           | 5,000  |
| 9 x 4 (Trucut)            | 7,250  |
| 8 x 4 (Trucut)            | 9,800  |
| 7 x 3 (Trucut)            | 15,000 |
| 7 x 4 (Trucut)            | 12,500 |
| 7 x 5 (Trucut)            | 9,800  |
| 7 x 6 (Trucut)            | 8,500  |
| 6 x 6 (Trucut)            | 11,800 |
| 7 x 4 (Stant)             | 11,900 |
| 6 x 5 (Stant)             | 13,900 |
| 7 x 6 (Stant)             | 10,000 |
| 8 x 4 (Stant)             | 10,000 |
| 6 x 6 (Stant)             | 12,700 |
| 7 x 4 (Frog nylon)        | 10,000 |
| 6 x 4 (Frog nylon)        | 16,000 |

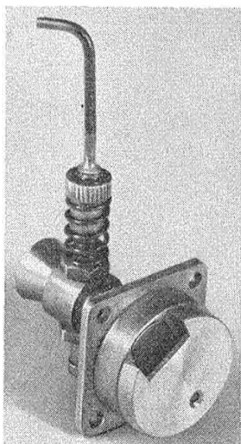
propeller with more than six-inch pitch unless the hub is cut back. Static r.p.m. figures with high pitch propellers are, of course, not a reliable guide for propeller selection because of the greater extent of "unloading" in the air, and consequent increase in operating r.p.m. The "Fury" is not at all fussy about the type of fuel used and showed very little difference in performance on various standard mixtures.

The "Fury" has the typical characteristics of a Basil Miles design and E.D. production methods. Size for size it is a much sturdier engine than the 2-46 with a proportionately more rigid cylinder and appears quite free from the distortion trouble that can be produced on a 2-46 by tightening down the cylinder bolts excessively.

The crankcase unit is a typical E.D. type casting in magnesium alloy, which gives a robust casting of relatively light weight. The crankcase casting is virtually machined all over, the front "bearing length" also being machined externally—presumably as an initial operation so that the unit can







The E.D. Bee series 11 backplate is modified for the new L-19 Fury to take the alloy fixed disc retaining a spring steel reed valve. First batch of Furies will have L-16 embossed on crankcase—on engraver's error due to be rectified with the next casting batch

be held in a collet for subsequent working.

The bearing length is cast with generous clearance, leaving only a small "land" area to be finished to shaft size immediately in front of the rear ball race, providing an oil seal. There is some oil leakage from the front of the crankshaft, but certainly nothing excessive. Two FBC ball races are press-fitted into the machined crankcase housings. The two races are of the same bore but different size—the rear race having seven and the front race eight balls—presumably selected to the basis that the rear race is more heavily loaded and so bigger balls are used.

The shaft is a sliding fit in the ball races, measured as half-a-thou. down on  $\frac{1}{4}$ -in. diameter. This is solid throughout its length, machined from alloy steel, case hardened and ground to finish. Two areas are cut from the web to produce a counter-balance. The shaft has a moderate taper outside the bearing length down to the threaded length.

The cylinder is quite conventional, machined with an external flange to seat on the crankcase casting. The lower end of the cylinder is located in the crankcase by three lands, the space between them forming the transfer passages. Transfer ports are cut in the cylinder wall below the flange and so it is possible to vary the effective area according to the circumferential position of the ports and lands when assembled—although the effect is probably negligible. Exhaust ports are cut in the cylinder flange, the area of both exhaust and transfer ports being relatively small. The cylinder is located by the quite substantial turned dural jacket held down by three bolts screwing into the crankcase. No gasket is used.

A cast iron piston is machined with a shallow conical top and central "flat". Wall thickness is generous to provide support for the silver steel gudgeon pin, which is a light press fit. The piston is a nice fit in the cylinder and is almost entirely

"free" at the bottom of the cylinder due to the generous relief grinding on the bore. Contra-piston is of cast iron, and again perfectly fitted as previously noted in the handling comments.

Connecting rod is machined from steel and hardened and although this produces a tough, light unit, wear rate on the crankpin and gudgeon pin is likely to be high.

The backplate unit housing the reed valve was originally intended for rotary disc induction, and is, in fact, the rear cover from the E.D. Bee 1 c.c. Series II model modified. It has the advantage that a disc valve version of the Fury could be produced if thought necessary. The choke tube on the production model is machined from bar and screws into the backplate, locking with a nut. The centre-line scribed round the spraybar boss seems to be a guide for hand drilling, which again would appear to indicate a modification from an initial production design.

The reed valve itself is quite simple and robust. Cut from  $3\frac{1}{2}$ -thou. pen steel it is simply clamped to the inside cover by an aluminium disc with a suitable port opening and chamfer lead, the unit secured by a single screw from the outside. This valve, it may be remarked, works perfectly with complete absence of blowback at any speed.

Apart from the criticism concerning the vibration speed range just under 10,000 r.p.m., everything else deserves the highest praise for sound design and good workmanship, and if the performance is not quite in the extreme "racing" class, the pleasant handling characteristics alone will endear it to thousands of aeromodellers throughout the world.

## Continued from p. 310

### GULFHAWK PERFORMANCE

|                           | F3F-1                      | F3F-2                      | G22<br>Gulfhawk             |
|---------------------------|----------------------------|----------------------------|-----------------------------|
| Max. Speed ...            | 240 m.p.h.<br>at 7,500 ft. | 270 m.p.h.<br>at 7,500 ft. | 290 m.p.h.<br>at 12,000 ft. |
| Cruising Speed ...        | 215 m.p.h.<br>at 7,500 ft. | 243 m.p.h.<br>at 7,500 ft. | 230 m.p.h.<br>at 12,000 ft. |
| Landing Speed ...         | 65 m.p.h.                  | 67 m.p.h.                  | 60 m.p.h.                   |
| Initial rate of climb ... | 2,700 ft. min.             | 3,000 ft. min.             | 3,500 ft. min.              |
| Service Ceiling ...       | 29,000 ft.                 | 32,000 ft.                 | 26,000 ft.                  |

### THE GULFHAWKS

**Gulfhawk 1.**—Curtiss 1A Hawk Special, commercial version of the YP20, powered by Bliss "Jupiter", then Wright "Cyclone" engine. Registration NR 982V.

**Gulfhawk 2.**—Grumman G22, basically F3F navy fighter redesigned by Major Williams, built 1936. Wright "Cyclone". Registration NR 1050.

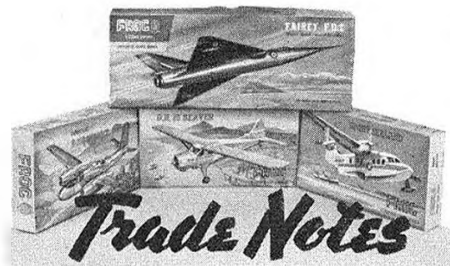
**Gulfhawk 3.**—Grumman G22 modified as two-seater with dual control. Wright "Cyclone". Built 1938. Registration NR 1051.

**Gulfhawk Junior.**—Standard Sirocco 105, Franklin engine. Built 1940. (The Gulf Oil Co. also had at this time five Stinson "Reliants" for company use, but the 105 was for Williams' use only).

**Gulfhawk 4.**—Grumman F8F, built 1948. Pratt and Whitney engine. Registration NL 3025. It is rumoured that this machine was wrecked in a crash and no "Gulfhawk" has flown since. All "Gulfhawks" were finished in the same colours and style, all were based at Pittsburgh, Pennsylvania, headquarters of the Gulf Oil Co.

Reprints of G. A. G. Cox's feature on U.S. Navy Markings squadron decors for the F3F-2 are available from AEROMODELLER Offices, price 6d. plus S.A.E.

The writer is grateful to Mr. Paul Matr, of Cincinnati, Ohio, for supplying biographical notes and photographs for this article.

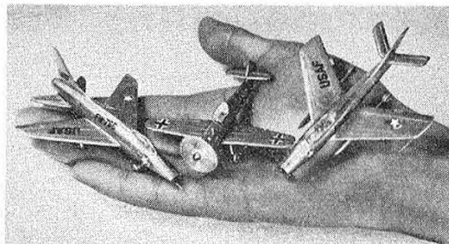


YET MORE plastic kits are announced this month, and among them a new series of sub-miniature Busch 1/175th scale aircraft that are sure to be popular at the price of 1s. 6d. each. Three sets are to be available: A, for Civil Aircraft; B, for latest Warplanes; and C, for World War II types. They are moulded here by Model Toys and the scale is near to 00 model railway gauge. Airfix have added the North American Mustang and Westland Whirlwind fighter to their 2s. range, and International Model Aircraft have added the Scimitar, soon to enter Naval Squadron service, to their detailed range at 6s. 6d. One might say that the 1/72nd Scimitar makes an ideal beginner's approach to the detailed plastics, for it rewards the builder with specially fine effect for very little constructive effort.

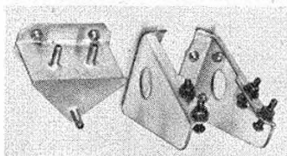
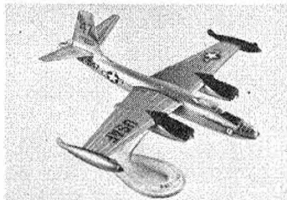
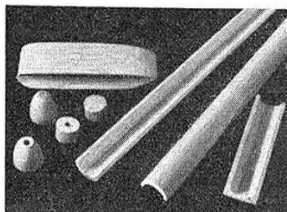
Associated with plastics is the Humber Oil Co. announcement that the Britfix Plastic Polystyrene cement is to come out in large size 2-ounce tubes at 1s. 8d. for those who like mass production. For standard Britfix, the new tube cap will be a welcome replacement for the pin that always ends up like a cement Christmas tree—and may save a few teeth from being clipped or tongues from being cement-stung by avoiding our awful habit of chewing the tube clean.

Model Stadium of Rayners Lane, Harrow, have a novel sales appeal item that is exclusive. To every engine purchaser they provide free engine bearers and a specially made tank, commercial value of which will be quickly appreciated. Sample sent to us included mounting bolts, too!

Talking of engines, the A.M.15 is now out at 59s. 8d. through Henry J. Nicholls, and for it, a new 4-A team racer to latest S.M.A.E. specifications is due to reach the shops in June. Latest Mercury kit is the Swan 42-in. lightweight glider for towline at 12s. 6d., ideal for club "one-model" contests, and exciting news is that H.J.N. will have the fabulous Cox Pee Wee .020 cu. in. glow engine soon at 52s. 6d. had



Heading shows Frog plastics mentioned last month, above are new Busch series. Left: machined parts in new Veron Nimrod kit, and Tornado plastic from Frog kit



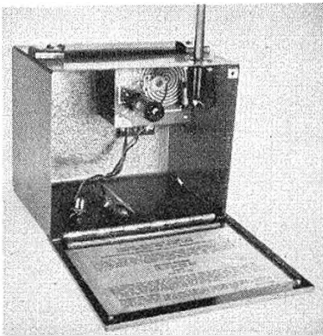
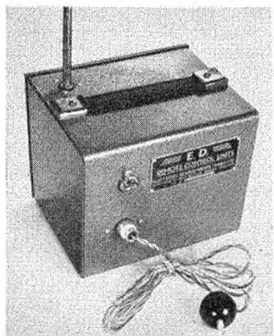
Model Stadium offers free bearers and tank to all engine purchasers

more enquiries for this engine than any other ever reviewed in our Motor Mart feature.

A completely new approach to the beginner's rubber model design has been launched by Model Aircraft (Bournemouth) Ltd. in their Veron Nimrod. In one way it takes us back many years to the stick-type model, as distinct from the fuselage variety, and in so doing it introduces an outstandingly simple stick construction of tubular cross-section. This arrives in the kit in the form of two half-round "gutters", accurately formed from balsa. A mating pylon, nose cap, tail plug and other parts make assembly so easy that no beginner could fail to achieve success although he has to pay 18s. 9d. for it. The prop is hand-carved from balsa, ribs are die-cut, and the plan leaves nothing to chance.

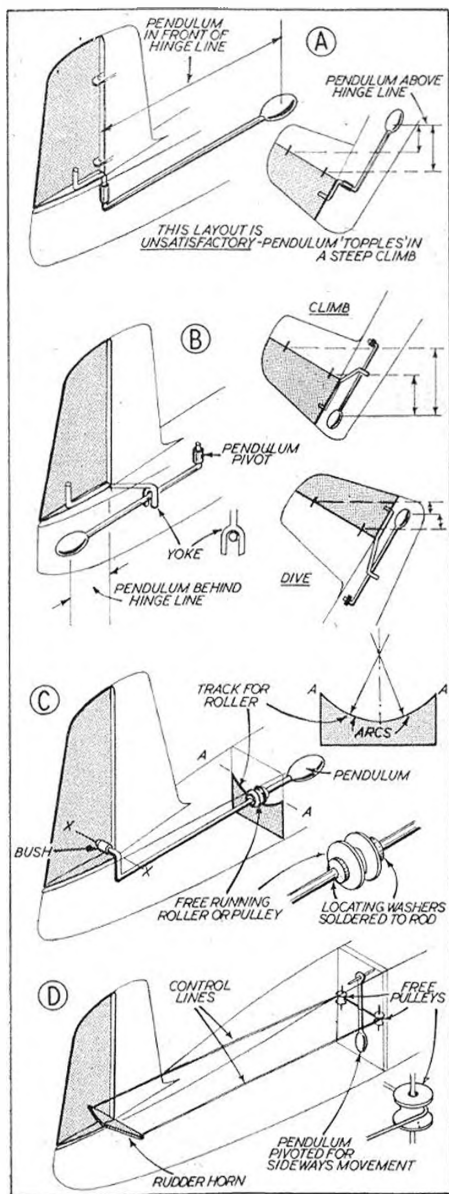
Transistors are revolutionising radio, and model radio control. In the U.S.A. latest reports speak of a 21 transistor receiver that has no relays, and operates nine channels; but that is likely to cost more than a 21-in. "T.V. set" latest from Electronic Developments Ltd. is, however, a considerable advance towards lightweight equipment for single channel operation, and in the "Airtrol" receiver at £7 5s. 0d. including P.T., we have a small 2½-ounce unit that calls for no more than a pen-cell and a B.122 22.5 volt H.T. battery. With standing current at 0.6 Ma rising to 5 Ma on signal it has flexibility and range more than ample to meet the aeronautical demands. A hard valve, the DL 66, is used as a detector, amplified by two coupled transistors, much the same as in the Aero-Modeller transistor Rx. Neatly contained in a 2½ x 1½ x 1½ in. plastic case, the Airtrol is matched to the latest F.D. transmitter, the P.C.1. This is a Primed Circuit compact unit with a DCC 90 in push-pull for maximum power. The Tx is so compact it only occupies a small part of the handsome grey box, leaving plenty of room for batteries. Cost of the P.C.1 is £5 19s. 10d. and it is, of course, suitable for all carrier wave receivers.

Latest E.D. Transmitter/Receiver outfit has fine performance, is compact, and easy to tune. Transistorised Rx permits lightweight installation in 1 v.c. models



# Aeromodelling Step by Step

PENDULUM OPERATED  
CONTROL SURFACES



PENDULUM CONTROL APPLIED to free flight models provides the equivalent of an automatic pilot, with limited "sense". In other words, under favourable circumstances a pendulum-operated control will provide automatic correction to an unstable movement on the part of the model. Under less favourable circumstances, however, since the pendulum cannot "sense" or appreciate the exact movement of the aircraft it may apply a "correction" in the opposite manner to that required. The main thing to appreciate is that pendulum control does not automatically guarantee free flight stability. Properly applied, however, it can give quite satisfactory, if not completely consistent, results on a model with limited "built in" stability.

A pendulum mounted ahead of the rudder hinge line as in (A) for instance, is generally unsatisfactory. If the model banks to the right the pendulum also swings to the right, applying opposite rudder to correct, which is what is required. If, however, the model assumes a climbing attitude the pendulum weight may well come above the rudder hinge line, when it will naturally tend to "topple" to one side or the other and apply full rudder.

The way to overcome this is to mount the pendulum *behind* the rudder hinge line, as in (B) which will be generally satisfactory in level and climbing flight, although again the pendulum weight may come above the rudder hinge line in a steep dive, although generally the length of rod can be arranged so that this does not occur except in a very steep dive. The main limitations then are the fact that a weight has to be mounted in the rear of the fuselage (which is not desirable from a trimming point of view); and also the fuselage must be wide enough at the rear to allow for sufficient pendulum movement side to side.

Method (C) is a workable method of bringing the weight forward again (overcoming the two objections just mentioned), but *controlling* it against a tendency to "topple" in a climb. By means of a free-running roller or pulley on the pendulum rod running on a circular arc transverse (e.g. cemented across a former) the weight must rise in moving sideways, which combats the "toppling" action and can overcome it provided the line A-A is above the pivot line X-X. It will be noticed here that the pendulum rod is actually pivoted in the rudder and from the geometric requirements of the system will be more or less limited to designs where the rudder is full depth and not terminating above the fuselage.

To get the pendulum weight still farther forward, system (D) shows how the pendulum can be mounted vertically in the middle of the fuselage—preferably at the centre of gravity of the whole machine so that the pendulum is subjected to a minimum of "false" forces. The pendulum in this case is coupled to the rudder via cotton or thread lines terminating on a rudder horn. The main

disadvantage in this case is the friction of the pulleys, which must obviously be reduced to a minimum to prevent the control from sticking. In all cases, of course, freely hinged control surfaces are a necessity, also a limited rudder movement, otherwise the action will be far too drastic.

Elevator controls use a fore and aft swinging pendulum and are generally simpler to rig—and therefore far less likely to give trouble. The scheme shown in (E) is more or less standard for pendulum-operated elevators, limiting elevator movement to a very small amount (generally only a matter of two or three degrees movement up and down). The response in a climb and dive is shown in the smaller sketches. The system will, of course, equally respond to acceleration or deceleration due to the inertia of the pendulum and under such circumstances may put on "opposite" control to that required. Nevertheless, it is widely used on flying scale models as a satisfactory method of longitudinal control.

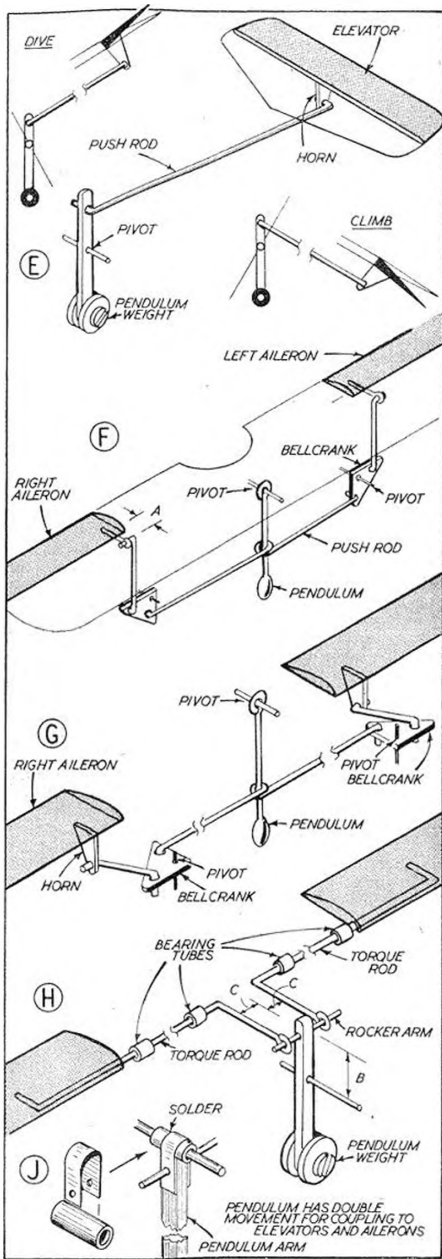
Aileron control is generally regarded as better in effect and less drastic in action than a pendulum rudder—and again using a pendulum pivoted for sideways movement. Scheme (F) is typical of that which might be used in a scale biplane, where the ailerons are on the upper wing only and the control linkage can be accommodated out of sight in the lower wing. Movement can be adjusted by the length "A". Method (G) is more suited to a low wing design, the bellcranks in this case being horizontal and linked to a conventional horn on each aileron.

The amount of aileron movement required would be best determined by practical tests. There is an objection to ailerons having a large "down" movement since this may reverse the control effect (the "down" elevator "dragging" instead of lifting that wing). Where necessary a differential movement can be obtained by selecting the bellcrank pivot point to give the required movements.

Scheme (H) is another practical ailerons control system where the ailerons are mounted directly on torque rods instead of being operated by push rods through linkages. In this case the top of the pendulum rod is fitted with a rocker arm engaging the angled ends of the torque rods to produce the required rotary movement in the rods (again piano wire, of course). The actual amount of aileron movement is controlled by the dimensions "B" and "C".

Lacking previous experience in the installing of a pendulum control system the best approach is usually to make a mock-up of the proposed system outside the model, check it for freedom of working and the degree of movement required.

If both longitudinal and directional control is required, then combined elevator and ailerons control normally gives best results. These can be worked from a single pendulum by a suitable design of pivot so that the pendulum is free to swing both in a side to side and fore and aft direction. A suitable form of pivot is shown in (J), the pendulum rod being coupled to elevators and ailerons by any of the methods previously described.



THE CONVENTIONAL tip-up tailplane used for dethermalising most duration models presents few problems. There are, however, a number of commercial designs in circulation with a low-set tailplane and in AEROMODELLER Plans Service we have, for example, the *Elf Axe*, PET/473, *Scalded Kitten*, PET/352, and *Achilles*, PET/543, to name but three. The main difficulty arranging a tip-up tailplane is that of simplification. In sketch **A** J. Coutts of Newcastle-on-Tyne offers his solution and it will be seen that the tailplane is held in flight position by rubber band tension on an "S" hook to which is attached a line to the leading edge. This pulls the leading edge up against the underside of the fuselage and the line passes through a small piece of plywood on the side. A dethermaliser fuse is placed in the rubber band and when the band breaks the tailplane is pulled to "down" position by tensioning of the rubber bands around the underside of the tailplane and the range of movement limited by the length of line between the ply on the fuselage and the "S" hook.

## ● ● ● ● GADGET REVIEW ● ● ● ●

A very simple rubber model propeller is that shown in sketch **B** sent in by J. R. Crosby of Kingswood School, Bath. A metal hub is used and to obtain folder action a block is shaped and pivoted in one end of the light alloy channel. Simplicity comes in the blade itself, for it is only a couple of laminated  $\frac{3}{32}$ -in. sheets, and here we have an extra suggestion of sandwiching a piece of lady's silk or nylon stocking between the sheets for extra strength. To obtain true blade camber first carve a dummy former as sketched. The  $\frac{3}{32}$ -in. laminations costing, incidentally, a mere 6d. or so, are placed one above the other and pinned down whilst the cement is still setting. If allowed to dry overnight the curvature sets and one only needs to sandpaper the outline prior to fitting in the root block.

Pendulums are popular and in idea **C** we have a universal system by L. Airey of Kingston-on-Thames. This is an automatic pilot which has been thought out for use in D. P. Golding's *Hawk Speed 6*, a popular AEROMODELLER Plans Service design FSP/434. Mr. Airey tells us that installed with combined elevator, rudder and aileron, the model flies as though it were on rails and the landings have to be seen to be believed. Important points to watch are that all controls must move freely and there should not be any down movement on the elevator or the aileron. The pendulum must swing freely in all directions and should be located as near to the centre of gravity as possible. Study of the sketch will show that the pendulum will swing fore and aft to actuate the elevator. If it moves sideways it swings the "T" shape crank to alter the rudder angle and at the same time shifts the aileron control wires to give compensating bank. Remember the old theory "advance slowly with caution and be sure of success" and with this system you will find many a scale model becomes inherently stable.

Tired of breaking centre sections? M. W. Turner of Gillingham, Kent, sent in idea **D** which is virtually indestructible. Use commercial pre-shaped leading edges with the rectangular slot in the rear face and cut a desired keeper from a strip of engine bearer material so that it is a tight fit in the leading edge slot. It'll never break.

Complicated perhaps, but once built, always useful for a long series of models idea **E** is from that popular R.A.F. modeller, Corporal A. Anderton. It is a means of mass producing elliptical wing tips (which minimise

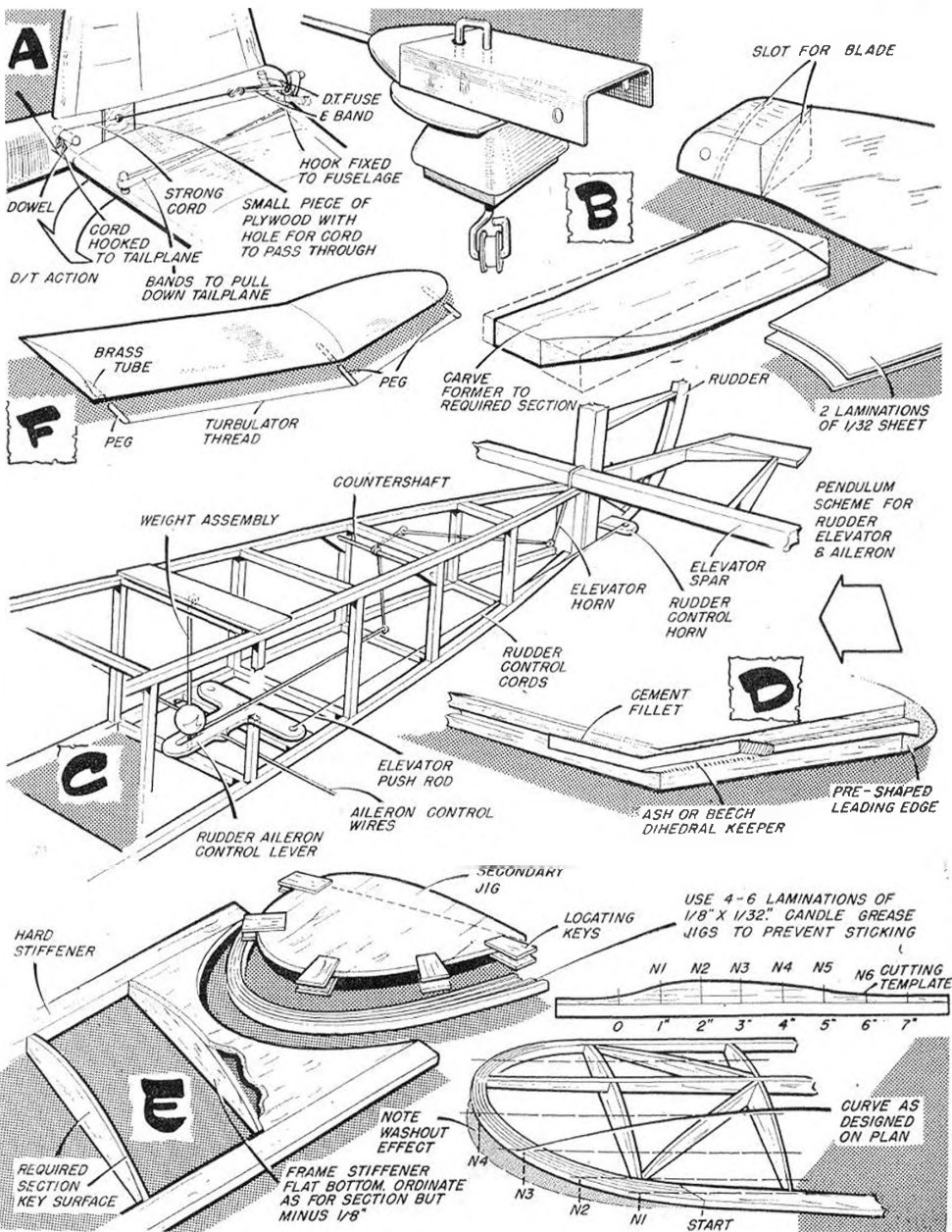
induced drag and increase efficiency) from laminations of  $\frac{3}{32}$  in. x  $\frac{1}{8}$ -in. balsa and ensures that all wing tips are identical. One must make up a basic jig in which the formers or ribs are to the same contour as the wing upper surface. This is sheet covered on one end and the sheet cut away accurately to the desired contour of the tip profile. Remove the piece to form the secondary jig and to obtain the wing tips laminate 4-6  $\frac{1}{8}$  in. x  $\frac{3}{32}$ -in. strips. A means of improving the tip is to build in washout and if we take a strip of paper and curve it around a tip with the desired amount of washout, we can obtain a cutting template somewhat like that shown in the right of the main sketch. This can be used for cutting a series of curves  $\frac{1}{8}$ -in. apart to provide  $\frac{1}{8}$  in. x  $\frac{3}{32}$ -in. tip laminations with the incorporated washout. One will, of course, require a slightly different jig to allow for the rising-in the rear section of the tip. Of course two jigs are needed, one for the left and one for the right hand side. It is only scrap wood that is needed for the job; there is virtually no waste and considerable benefit. The simple idea **F** comes from

A. Skard of Lysaker, Norway, and is a means of detaching turbulator thread or elastic on A/2 designs in experimental analysis of performance. Small lengths of brass tube are built in to the leading edges of the wing and detachable pegs hold the thread as sketched.

### Not illustrated

Do you know that the transparent plastic tops of AirWick Mist bottles make suitable radar or astro-domes for scale models? Roy Smith of Wirral, Cheshire, has found them most useful. SAC Andrews, of R.A.F. Cranwell, has found some ideal little cowling fasteners which are generally sold for making up children's necklaces and are known as "daisy poppets". Made of extra flexible plastic, they are very light and, of course, inexpensive and their very shape permits them to be glued to balsa surfaces. D. J. Bayliss of East Molesey goes one further with putting the conventional name and address on his model and fixes a stamped addressed postcard to the aeroplane asking the finder to fill in his name and address and he tells us that people are more likely to reply if they don't have to buy a stamp or write a letter—good idea.

Laurie Barr, Manager of the famous Westway Models establishment, found another use for polythene sheet. He makes up a balsa framework, drapes the sheet over and has a mobile plastic bath for making large areas of microfilm covering. At least that does avoid creating a family disturbance in the bathroom and saves many accusations as to the source of the permanent scum on the bath sides! D. Whittaker of Levenshulme has sent us a sample of nylon from an Ex-W.D. parachute which is perfect for covering power models. These parachutes contain approximately 1½ sq. yd. of nylon in red, white, blue, yellow or khaki plus 2 yards of piano wire and several yards of nylon cord, and are sold at only 1s. each, so we suggest that you lads in the rainbelt go scouring the markets. Another thought sent by Mr. Whittaker is that some of the I.F. transformer covers and cans in the ex-radio market are available very cheaply and if broken up are absolutely ideal for scale engine cowls. And yet once more for those who aren't aware that fittings from old electric light plugs, etc., can be broken up to make wheel retainer collars, contacts for battery boxes, scraps of brass for making into washers, etc., the idea has recently been discovered by D. Wilson of Kenton, and we pass it on yet once more.



## READERS WRITE...

Letters of interest selected from  
our daily post bag

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.

## Engine Plea

DEAR SIR,

I am glad to be able to congratulate the S.M.A.E. on their decision to adopt the new aerobatic schedule. It is a real challenge to those who have stunt flying at heart. I write mainly in the hope that the organisers of all the model aircraft competitions and rallies who have not yet included a stunt event will now do so, while there is still time, or many keen competition fliers will be most disappointed in this coming season.

It has cheered my friends and myself immensely to see more articles on aerobatic models and we feel that this year we shall see a spectacular revival of stunting. We do hope, however, that the Trade will take the present golden opportunity with both hands and produce some good '29's and, especially '35's—both powerful and light in weight, together with a few good kit models to fly them. I am sure that all those who cannot get a Fox '35 and Thunderbird kit will be most keen to buy (not to mention the present U.S. motor users who would "buy British" if they could) and it will also enable the ordinary kit and British motor modeller to participate in the competitions as they used to do in 1948-9, and not feel they are reduced to the ranks of "ignorant spectators" because the privileged few who appear to dominate the competitions are present.

I do, however, take my hat off to people well known to us who have won major stunt contests with small British motors. It is possible that they too would like to see larger British equipment if it were available.

L. P. F. GLOVER.

Swindon, Wilts.

(One should not overlook the impressive performance of the Spanish team at the 1957 European C.I.L. Championships, who flew tenth Miles S.c.c. diesels, nor the fact that many are finding the E.T.A. 29 Mk. V a most flexible power unit for stunt, both of these engines being remarkably insensitive to fuel feed variations, while the Frog 500 also has a strong following and placed 2nd in the 1957 Gold Trophy.—J.D.)

## Classified Success

DEAR SIR,

The next time I advertise anything for sale in the AEROMODELLER I shall have to engage a secretary, I think.

I have often heard that an "AM" advert brought good results. That statement is not true: the results are FANTASTIC.

I have just finished answering today's batch of mail—I do not know how many replies I have received to the advert, I lost count at the third dozen, but it must be somewhere in the region of 60!

Not only have I sold everything I advertised—with the exception of the Barbin, and I have had inquiries for that too—but I have managed to get rid of old things I was convinced would never see the light of aeromodelling day again.

The amazing thing was that some of the goods sold before the "AM" was on sale

officially—some of these retailers must be jumping the gun a bit, but who worries? I certainly do not wish such results.

One bloke this morning even offered to buy everything I had for sale—and that nearly a fortnight after the original advert appeared. Some "pull" the AEROMODELLER has!

Judging from the number of letters I have had about the "Unlimited" and the Mills '75 I think these two must be about the most popular things on the second-hand market. The old Elfin 1 8 was also a good seller.

I must say that the next time I have anything for sale the AEROMODELLER will feature on the top of my advertising schedule.

P. HOSKISSON.

Cambridge.

(All of which adds up to "If you don't use it—sell it, and sell it quick through AEROMODELLER Classifieds"—ED.)

## First of the many?

DEAR SIR,

Praises be to your Peacemaker! One of the best stunt/combats fliers I've ever seen. I have been flying mine with great success on AM.35 and E.D. Hunter.

As soon as I saw George Aldrich's article I sat down to build one. I have incorporated several modifications such as reversal of wingtips and  $\frac{1}{2}$  sheeting on upper leading edge.

Peacemaker seems to do every stunt in the book. I reckon mine was the first Peacemaker finished after the article came out.

Here's hoping for more articles from our American counterparts (they seem to be able to show us a thing or two however modest they are).

DAVID PETERS.

(Bedales M.A.C.)

Petersfield, Hants.

## Simpson's Rule

— not so simple ?

DEAR SIR,

On reading Naftali Kadmon's article on calculating areas (April AEROMODELLER), it struck me that a simpler approximation would be found in the Trapezoidal Rule, while being just as good as Simpson's Rule for modelling purposes.

Divide the area by equally spaced vertical lines, of heights  $h_1, h_2$ , etc. Taking the sum of the areas of the trapezia so obtained as an approximation, we have the area equals  $\frac{1}{2} (h_1 h_2) + \frac{1}{2} (h_2 + h_3) \dots + \frac{1}{2} (h_n + h_{n+1}) = \frac{1}{2} (h_1 + h_{n+1}) + (h_2 + h_3 \dots + h_n)$ .

In words, this becomes: Take the average of the first and last heights (for an airfoil of course, this is zero), and add to it all the other heights, then multiply by the distance between two consecutive dividing lines.

For this rule, as for Simpsons, the greater the number of dividing lines, the more accurate the result becomes. Perhaps it might be of interest to other modellers.

R. CROW.

Sedburgh, Yorks.

(Stretch !!! Think I'll stick to constant chord, square tapered models in future.—ED.)

## Capt. Armstrong

DEAR SIR,

I notice in the R.A.F. Flying Review an advertisement showing a Camel, Sopwith F1 performing a roll so low that its wings brushed the grass. You say it actually happened. I wonder who did it. I was in No. 78 Squadron at Hornchurch flying these machines and my colleague D. V. Armstrong used to perform this feat very often as well as loop the machine so soon as the wheels left the ground and gain height in the process.

He and Gerrard (Navy) were the finest Camel "stunt" pilots I ever came across.

I should dearly love to read the full story of this 'aerobatic yet dangerous aircraft' for I had an affection for it though it killed many of our men in 78.

Actually, Riechen shot me down one when I was 19 years old.

Do I understand that if I send 1s. 6d. this story is mine?

Somebody sent me a model the other day of the Fokker Triplane which shot me down.

D. G. LEWIS.

Salisbury, Southern Rhodesia.

(Nice to hear from you, Mr. Lewis. A copy of our March edition with Peter Gray's story of Captain Armstrong's exploits in "Camel Close-up", is on its way to you.—ED.)

## Beware Danger!

DEAR SIR,

Readers of the May edition of AEROMODELLER will be interested to know that Canberga B (1) 8 XH234 featured in your Aircraft in Service is now doing sterling service with No. 59 Squadron at R.A.F. Geilenkirchen.

Canberga XH234, the A/C from which your scale plans were drawn, like all 59 Squadron A/C now bears a red triangular insignia on the fin and rudder. This insignia is a reproduction of a German road sign, meaning "Beware—Danger!"

Additionally I wish to take you to task on a statement that the B(1) 8 is a rare bird in British skies. If one has a quick eye, B(1) 8's of 59 Squadron may be seen operating over Britain almost any day of the week.

I have critically compared your plans of XH234 with the actual A/C and I find that they are absolutely faultless in every respect, but I would suggest that anyone modelling this A/C adds our unusual, but apt Squadron insignia.

P. G. MASTERMAN.

F/O, R.A.F.

(Thanks P/O Masterman, your photo of XH234 will appear in Decor Detail next month.—ED.)

THERE'LL BE NO EXCUSE for not understanding the S.M.A.E. rules in future. By decision of the Council a rule book will be issued free of charge to all full members and copies for individual club members will be issued through club secretaries who should send a list of their full membership, seniors and juniors to Londonderry House, Postage at the rate of 3d. per copy is required, otherwise the issue is free. For associate members, and others, copies of the rule book are available at 2s. 6d. each. A number of rule changes have been made and it would be as well for all aeromodellers to study closely the regulations for those events which directly concern them.

## London

The old EAST LONDON SPEED CLUB has swung back into action again under the name of **DOPE PEDDIERS**. The first meeting was held on March 30th in the form of a combat tourney against **WANSTEAD** with a convincing win for the D.P.s. I understand that the club badge is to be a crossed syringe and nitro methane bottle on a silver and black background. **UXBRIDGE M.A.C.** held its first monthly competition on April 6th for team racing and combat. Highlight of the day was a new club record by F. Cox, 121 m.p.h. with a Doering! The club also challenged the **NORTHWOOD M.A.C.** to a team race contest, winning both the A and A classes. Recent activities in the **ENFIELD AND D.M.A.C.** have centred on their exhibition and the trophy for the best model in the show went to Vic Spence for his Mills '75 scale *Westland Widgeon*; second was Arthur Lucas's *R.E.8*; and third, Don Walker's new 1958 Class B team racer. One hundred and thirteen models were on display and a film show ran almost continuously thanks to Fred Carter and the Shell Film Library. There were also demonstrations of control-line and R.T.P. flying. July 13th is the date for the Enfield Control-line Rally and although they found that the recent exhibition did not produce all that was expected, there will be no reduction in the prizes to be awarded at this popular annual event, and, please note, there will be C/L aerobatics included in the programme.

**EPSOM AND D.M.F.C.** have set the date for their slope soaring rally at Chobham Common as August 31st. Trophies will be presented in Junior and Senior Open

## For Your Diary

- June 15th  
Godalming C/L Rally, Team Race, A1 Classes, Combat, Farncombe Rec. Grd.
- June 22nd  
Clwyd Slope Soaring, Open, A/2, Tailless Junior, R/C.
- June 21-22  
PAA Festival, Scotland, R.N.A.S., Abbotsinch.
- June 29th  
Northern Heights Gala, All Classes F/F, Combat, Concours d'Elegance, Queens Cnp, A/2, R.A.F. Station, Histon, Bucks.
- June 29th  
Scottish C/L Nationals
- July 13  
Enfield C/L Rally, all classes incl. Stunt.
- August 17th  
Devon Rally, All Classes F/F, Combat, R/C Woodbury Common
- August 24th  
S. Midland Area Rally, All Classes F/F, Combat, R/C, T/R A & B Cranfield.
- August 31st  
Epsom Slope Soaring, Chobham Common  
Wanstead C/L Rally, T/R, Combat.
- October 5th  
Bill White Rubber and Glider, Chobham Common.
- October 19th  
South Coast Gala, Ashdown Forest.

# Club News

Classes and for control-line flying with 16 min. maximum applied in the latter class. **NORTH KENT NOMADS M.C.** had a great time at their annual prize giving and dance and there was fine evidence of winter activities at the recent Concours d'Elegance meeting. Still we are seeing more of those super flying ambulances, etc. at the 1958 rallies! Another rally scheduled for August 31st will attract the control-line lads, for it is a combat and team racing meeting organised by **WANSTEAD M.A.C.**, presumably at the famous Flats. The club record for chuck gliders now stands at 4 : 54 seconds by Len Soanes.

## Western

**CHILTENHAM M.A.C.** have sent me what is certainly the most ambitious of all British club newsletters in the form of the "Wreckord". Bound with stiff coloured cover, the book summarises club activities during 1956/57, includes a special aeromodeller's crossword, hints and tips, and a novel Heath Robinson subject for V.T.O. results. It is a pity that more clubs do not undertake this sort of work which always stimulates great interest. Cheltenham annual team races were held at Brockworth on Easter Monday and due to lack of interest in racing was postponed until a later date. M. Charlpin won Class A and T. Allen Class B using a Frog 500 in a *Mercury Thunderbird*. On the previous day Stan Perry won the open glider class in the Western Area at Wroughton.

There is a lull of activity in the Bristol area at present. **BRISTOL BULLDOGS**, has been formed and hopes to get permission to use Filton Aerodrome. All members are employees of the Bristol Aeroplane Company and with such fine hands they should be able to shine in the Western Area contest. **SOUTH BRISTOL M.A.C.** are pleased with their junior M. Sawyers who flew a modified A.P.S. *Creep* to win free-flight power at the area rally and in glider. J. Down and D. A. Wilson were second and third. A number of new American motors have found their way into the club and there are great expectations in control-line stunt and combat.

**EXMOUTH AND D.M.A.C.** were another club at the area rally and although they did not manage to win any first places, returned home happy and contented with their performance, although Elvin Derrick's model managed to end up in a water tank!

## North Western

D. Morgan and F. Anderson of WIGAN M.A.C. set a new club speed record of 116 m.p.h. for 3-5 c.c. class at Congleton and the same pair were well placed in the team race event until the "up" line broke, with disastrous results. A full coach is expected to arrive at the Nationals and from a copy of the special newsheet issued to National visitors from Wigan Club, I note that the club has wisely placed all their cards on the table and have informed all and sundry exactly how much the coach line cost and thus justify the £2 return fare. W. Nield's win of the AEROMODELLER Trophy at the Northern Models Exhibition is the main item from the **CHEADLE AND D.M.A.S.** and Len Whalley's first prize in glider control-line section of the same exhibition are not to be overlooked. **SHARSTON D.M.S.** held their first contest on March 22nd in extremely bad weather. The winning time being a mere 27 seconds. Bill White beat club members in the **WALLASEY M.A.C.** have been travelling up to fifty miles (What? Only 50! say some even less fortunate!) to get some flying done owing to the local club's field being out of bounds during the lambing

season. Current interest at the moment centres around F.A.I. designs and one junior club member has an interesting project on the way in the form of a 10-ft. glider intended for aerial photography. Unattached aeromodellers are welcome to join the club in their activities at Histon Moss on Sundays.

## Southern

The revived annual control-line rally by **GODALMING AND D.M.F.C.** will be held at the Farncombe Meadow Recreation Ground and events are finalised as Class A and B Team Racing and Combat . . . no stunt . . . what a pity! Entries will close sharp at 12 noon, insurance cards are essential and further information is available from D. R. Drew, 62 King's Road, Farncombe, Surrey. **READING AND D.M.A.C.** wound up their indoor season with a lecture by our Assistant Editor on latest news from America and a beginner's approach to radio control. According to the club's Secretary, even the usual inattentive types were silent — were they really interested, or could it be boredom! **SOUTHAMPTON M.A.C.** had a good day at Larkhill for the Pilcher Cup, etc. P. Giggle knocked off 11 : 20 in the Pilcher which earned him a deserved first place and Mavis Pepper made sure of her Women's Cup Trophy retention with a creditable 7 : 31 with her A.2. In Jersey, M. Worley made a ratio of 39 : 35 and most notable was Brian Lewis's 11-ft. span glider with crescent wings and high-mounted tailplane just like the Victor. Unfortunately, it was a victim of crossed towlines during the contest flight. Incidentally, the coach are from Southampton or Bourne-mouth to the Nationals is £24s. 0d. return and there are a few seats for anyone wanting to go. They should contact N. Worley, Cemetery Lodge, The Common, Southampton. Free-flying success at the current race is **FARNBOROUGH M.A.C.** and Duncan Sibbick's version with a Mills '75 makes spectacular vertical take-offs. M. Young's new radio model is built in the true brick style: he claims that he used this wings as a stop-lifter before they were covered.

**BEXHILL AND D.A.C.** are planning a contest to find the best club all-rounder, with classes for control-line, free-flight power, rubber and indoor gliders. The prize will be given in the form of a model shop voucher.

## South Eastern

In spite of snow and bitter winds on Easter Sunday (fancy that, you lucky Northerners) a successful start was made in the 1958 area competition programme with Reg Boxall of Brighton rolling 8 : 15 in the Pilcher Cup and J. Fox, a country member, topping the tailless with 5 : 31. **TUNBRIDGE WELLS** lead in the inter-club event for the R.A.F. Association but incidentally after almost a complete lack of activity in the Sevenoaks area recently, there are hopes of a most active season and a new interest in radio control. **SOUTHERN CROSS A.C.** were much surprised by a quote in the local *Sturham Herald*: "members of the club make and fly their own models and specialise in the latest ringless types of aeroplanes". (!)

## East Anglia

The local Engineering Exhibition at **CAMBRIDGE** drew forth a number of enquiries for membership in the local club. Strong winds have somewhat handicapped free-flight activity in the contest at R.A.F. Oakington and the somewhat hard hill side of Wingloe Beacon cost a wingtip from Dick Godden's *Hoovering* (see Model News) in the St. Albans Rally when the model was lying in second place. Incidentally, the club nearly lost its Treasurer as a result of the rally. While on a retrieve on a hillside and rolled down the very steep side of the ridge at about 20 m.p.h., but fortunately D/T'd before reaching the hard highroad below! **NORWICH M.A.C.** had a good day



at the area meeting, R.A.F. Debden, over Easter and have been held to the members of the LOWESTOFT CLUB at club affairs. HODDESDEN M.F.C. has been going since 1950 and now have a very healthy membership with interests in radio control and regular meetings are held every Wednesday at the Scout Hall, at 7.30.

### South Midland

A recent attempt at Combat by the LUTON AND D.M.A.S., using the American class of model with "35" engines, ended somewhat abruptly when P. Mitchell lost part of a finger while adjusting a Veco 35. He was rushed to hospital where he deposited a sizeable pool of blood before a disbelieving nurse "sawed him up". Interest is increasing in stunt, possibly because of the introduction of the A.M.A. rules. Some stunt models are fitted with engine control operated by impulse through the lines. This idea, developed over the past two years, is still being perfected but is already quite practical, one model having both engine control and brakes on the main wheels, but using no extra lines. I expect they will be very pleased that Gerry Moss has won the S.M.A.E. Cup. KETTING AND D.M.A.C. have been interested in radio, most popular model being the A.P.S. *Thoma*, but lack of a free-flight film is holding up that side of modelling. Mr. Thrower has taken two years to compile his colour film of modelling and full size aviation activities and recently gave it its first showing to the club and, although parts were inverted, it succeeded in pleasing the members!

### S.M.A.E. Results

#### C.M.A. CUP

| U/R Glider          | March 16th, 1958 |       |
|---------------------|------------------|-------|
| 1. Moss, G.         | Luton            | 8: 09 |
| 2. Swindon, R.      | Teeside          | 7: 25 |
| 3. Wisler, A.       | Surbiton         | 7: 10 |
| 4. Collinson, A. R. | Baldon           | 6: 55 |
| 5. Topham, D.       | Lough, Coll.     | 6: 50 |
| 6. Ward, C. A.      | De Havilland     | 6: 43 |

#### GAMAGE CUP

| U/R Rubber       | March 16th, 1958 |       |
|------------------|------------------|-------|
| 1. Fuller, G.    | St. Albans       | 9: 51 |
| 2. Robson, A. M. | Teeside          | 9: 38 |
| 3. Crossley, P.  | Blackheath       | 9: 08 |
| 4. Latter, D.    | Men of Kent      | 9: 00 |
| 5. Sharp, F.     | Blackheath       | 7: 57 |
| 6. O'Donnell, J. | Whitefield       | 7: 51 |

April 6th, 1958 Area Centralised

#### LADY SHELLEY CUP

| Tailless (18 entries) |                |       |
|-----------------------|----------------|-------|
| 1. Murray, W.         | Belton         | 6: 01 |
| 2. Fox, J.            | C/Member       | 5: 31 |
| 3. Masters, C. (J.)   | Apsley         | 5: 29 |
| 4. Leath, B. G.       | Coventry       | 5: 18 |
| 5. Marshall, J.       | Hayes          | 5: 00 |
| 6. Bates, G. K.       | Southern Cross | 4: 55 |

#### WOMEN'S CHALLENGE CUP

| U/R Rubber-Glider (41 entries) |             |       |
|--------------------------------|-------------|-------|
| 1. Pepper, Miss M.             | Southampton | 7: 31 |
| 2. Fuller, Mrs. O.             | St. Albans  | 6: 54 |
| 3. Jenkinson, Miss E.          | South Essex | 6: 06 |
| 4. Cox, Miss G.                | Thameside   | 5: 33 |
| 5. King, Mrs. P.               | Hamstead    | 5: 28 |
| 6. Moulton, Mrs. B.            | Wayfairs    | 5: 15 |

#### JETEX CHALLENGE CUP

| Jetex (10 entries) |             |      |
|--------------------|-------------|------|
| 1. O'Donnell, J.   | Whitefield  | 36:7 |
| 2. Werley, N.      | Southampton | 29:3 |
| 3. Buskell, P.     | Surbiton    | 23:5 |
| 4. Smeed, S.       | Surbiton    | 18:5 |
| 5. Sharp, F.       | Blackheath  | 17:7 |
| 6. Dowsett, I.     | Hayes       | 17:2 |

#### PILCHER CUP

| U/R Rubber (164 entries) |             |             |
|--------------------------|-------------|-------------|
| 1. Giggie, P.            | Southampton | 9:00 - 2:20 |
| 2. Chadwick, J.          | Ashton      | 9: 00       |
| 3. Graves, D.            | Leamington  | 8: 50       |
| 4. Woodward, T.          | Foresters   | 8: 16       |
| 5. Gregoosse, R.         | Anglia      | 8: 15       |
| 6. Boxall, R.            | Brighton    | 8: 15       |
| 6. Dowling, B.           | Wayfairs    | 8: 11       |

DE HAVILLAND (HATFIELD) M.A.C. were somewhat dismayed when they arrived at their flying field on a windy Gamage day to find that half the area had been ploughed which in turn means standing crops for the rest of the year. Membership of this club is open for De Havilland Company employees and interested modellers should contact P. E. Williams, 59 Holme Road, Hatfield. STEVENAGE M.F.C. paid a visit to the Hatfield club to see the Nationals film and made their debut in the area contest at Henlow on Easter Sunday when G. Dallimer made two maximums with his A.P.S. *Aiglet A.1* in the Pilcher. CHESHAM AND D.M.A.C. have been formed for a couple of months and main interest is in control line. Local unattached modellers should contact A. Brown, 29 Benham Close, Chesham.

In OXFORD METEOR M.C. there is great interest in John Smith's free-flight Ju. 87 Stuka to be powered by a Frog 2-49 BB, no less than 6-ft. span.

### Midland

STRATFORD-UPON-AVON M.A.C. had a good write-up in the *Birmingham Post* following their activities at Easter Sunday at Wellesbourne Aerodrome with two photos showing club activities and a most encouraging write-up detailing activities and performance put up by LEAMINGTON, LEICESTER and the host club. Incidentally, there is a new club record in LEICESTER M.A.C. of 13 min. 30 sec. for open glider by junior member A. K. Froggatt with his A.P.S. *Altair*. LITTLEOVER M.A.C. had a junior contest for combat with J. Pope first and in 1/2A team racing J. Wright coming out top. Latest club achievement is B. Kirkman's Class A racer which does 60 laps at 82 m.p.h. and the model is so steady that it does not need elevators. THE MIDLANDERS have some fast team racers on the way, both B. Colley and T. West are said to be exceeding 90 m.p.h. and an influx of a few American engines has enabled M. Lambert to "go real square" so they say with a Veco 35.

### Northern

Gamage day lived up to its evil reputation for BALDON M.F.C. on Baldon Moor and several models finished in a lot more times than their designers had intended. Unluckiest was Stan Eckersley, whose glider (after a first flight max) hit some high tension wires and was then finally demolished by a herd of frisky young bulls. Top man in glider was Arthur Collinson, the noted power flier and two juniors very creditably filled in second and third places. It seems to be Arthur's season for glider, at Rufforth on April 6th he placed top of the area, first flight being no less than 61 min. A school club, the WING EDWARD VII M.A.C., Sheffield, invite postal competitions from any other similar school club in the country. Contact should be made with J. A. Hague, 37 Binham Park Road, Sheffield 11. YORK M.A.S. have successfully arrested their declining membership by the acquisition of new club room accommodation at the local school where indoor facilities are available.

### Scotland

THE SCOTTISH AEROMODELLERS' ASSOCIATION has received permission to hold its free-flight Nationals at Abbotsinch and, as usual, all competitors must have third-party insurance and be able to prove evidence of such. Control line Nationals will be held on June 29th because of the change in date of the Pan American Airways Rally.

### Ireland

THE IRELAND AEROMODELLERS' COUNCIL OF HROPSD announced the first round of the 1958 Irish eliminators as a blow-out. Best models flew away and were lost and second best were not of international class. Power men found flying to the new rules

### S.M.A.E. Contests

#### THE BRITISH NATIONALS

May 25th R.A.F. Waterbeach.  
Tharston Cup; U/R Glider.  
Short Cup; International Class PAA-Load.  
Gold Trophy; Control Line Stunt.  
S.M.A.E. Trophy; R/C "Multi"-Stunt and Course.  
Davies Trophy "A"; Team Race Class "A".  
Speed: Classes 1, 2 and 3.  
Combat: Heats.

#### May 26th R.A.F. Waterbeach.

Sir John Sheller Cup; U/R Power.  
Model Aircraft Trophy; U/R Rubber.  
Super Scale Trophy; Free Flight Power Scale.  
Knockie Trophy; Control Line Power Scale.  
Ripmax Trophy; R/C "Rudder only".  
Davies Trophy Team Race "B".  
Speed: Classes 1, 2 and 3.  
Combat: Final Rounds.

#### June 7th-8th R.A.F. Hemswell.

Wakefield and Power Trials.

#### June 22nd

C/I, Trials, Tailless Trials.

#### July 5th-6th R.A.F. Hemswell.

Wakefield and Power Trials.

can still hook thermals and knock-up maximums. The teams will not be picked until after the second round on May 11th.

### Pen Pals

Eldron Lichtsinn, Dumont, Minnesota, U.S.A., 32 years old, married with two children, wants a pen pal from England or Germany. Interested in free-flight or U.C. stunt. Extra keen scale control flier and 28 years old, a member of the several famous Californian clubs, C. Wagner, 116E Fairmont Avenue, Modesto, California, would like to swap ideas and accessories.

THE CLUBMAN

### Secretarial Changes

#### CHELTENHAM M.A.C.

L. H. Rushworth, 2 Belmont Cottages,

Moored Street, Cheltenham.

#### CHINGFORD M.F.C.

B. G. Spence, 12 Liverpool Road,

Leyton, E.10.

#### MFN OF KENT

D. Latter, 20 Pope Street,

Maidstone, Kent

#### NORTHERN HEIGHTS M.F.C.

Ken Tansley, 26 Falkland Avenue,

New Southgate, London, N.11.

#### OUTLAWS (CANNOCK) M.A.C.

L. R. Lockley, 24 Horse Fair,

Rugeley, Staffs.

#### SOUTHERN CROSS A.C.

R. E. Delves, 11 Rutland Road,

Hove 3.

#### STEVENAGE M.F.C.

G. W. Dallimer, 10 Angel Ways,

Leaves Spring, Stevenage.

### New Clubs

#### BRISTOL BULLDOGS M.A.C.

C. R. Foot, 3 Queensholm Crescent,

Downend, Bristol.

#### WEST MIDDLESEX M.F.C.

A. J. Sturley, 2 Princes Avenue,

Greenford, Middlesex.

### ST. ALBANS SLOPE SOARING MEETING

Ivinghoe Beacon, Sunday, April 13th

#### RESULTS

Radio Control (9 entered)

1. D. Illsley (Birmingham) .. 7: 33

2. R. Monks (Birmingham) .. 2: 50

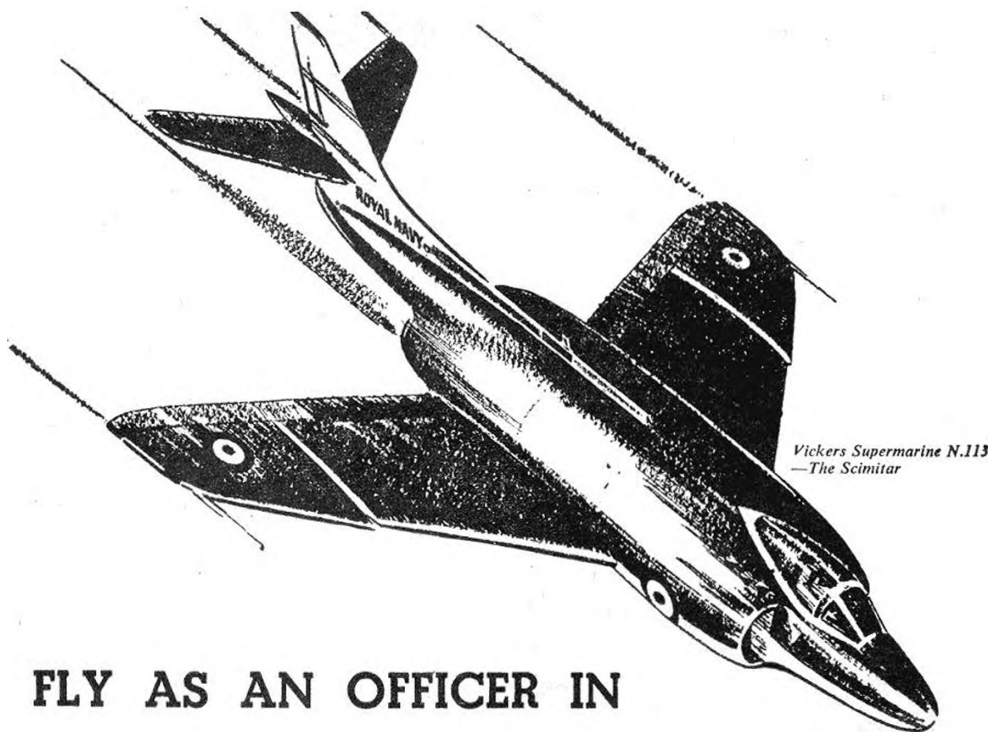
3. G. Upson (N'thw'ck Park) .. 1: 53

Open

1. D. Edwards (St. Albans) .. 1: 31

2. J. Barker (Surbiton) .. 1: 15

3. D. Partridge (Whiteleaf) .. 1: 02



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| Marvin ... 19/6       | Joker ... 11/5               | Calypso Major ... 35/-  | Crusader ... 10/9                | Merlin ... 47/6                       | Plastics by FROG, REVELL, LINDBERG,               |
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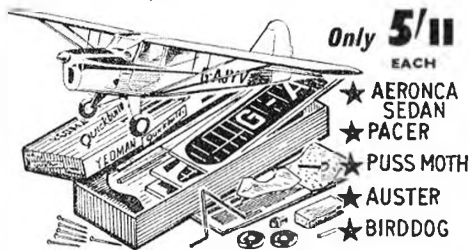
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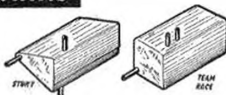
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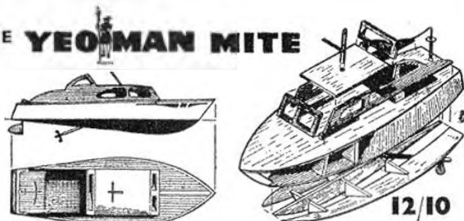
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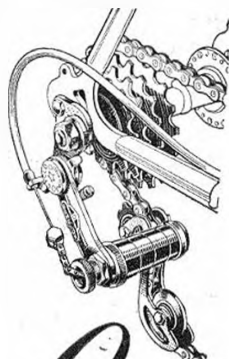
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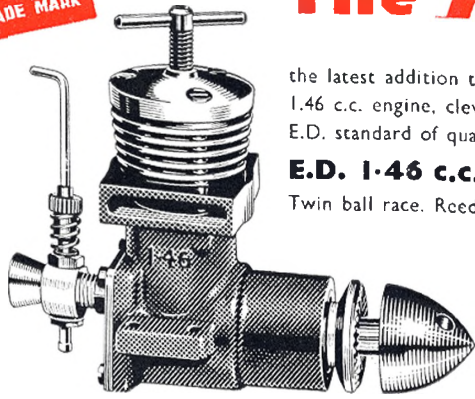
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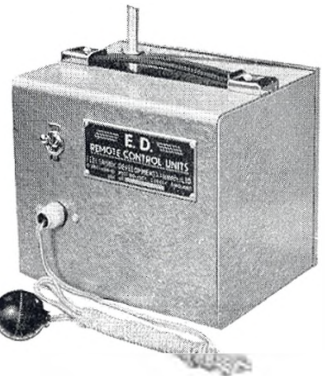
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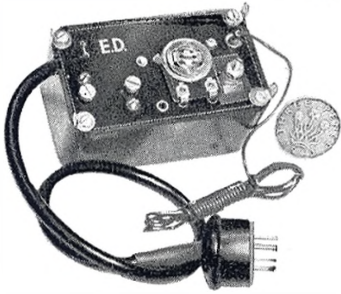
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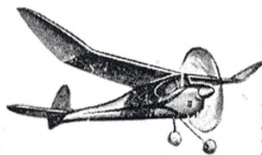
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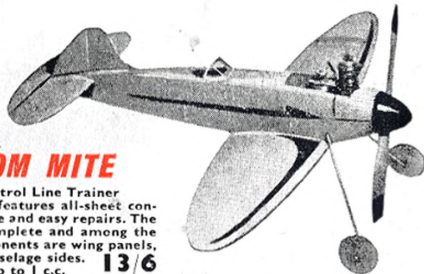


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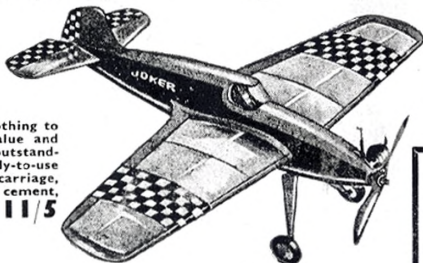
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