

# **AERO** BUMPER issue - *PLUS* two free plans **MODELLER**

DECEMBER 1964  
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**HOBBY MAGAZINE**

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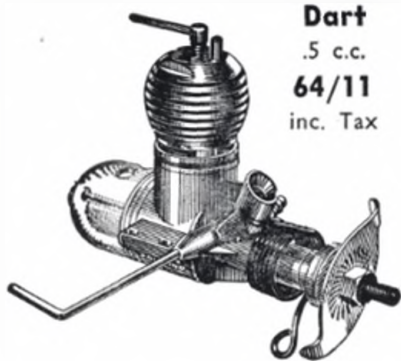
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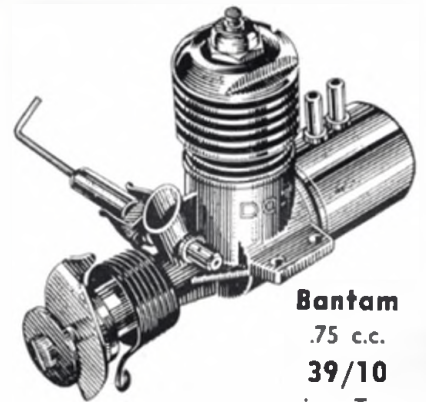
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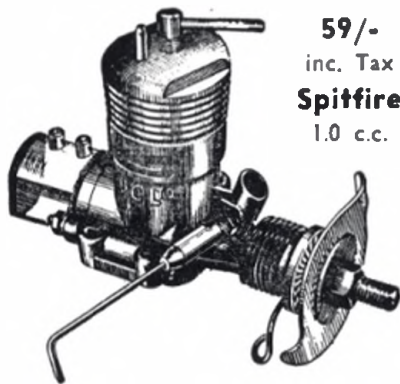
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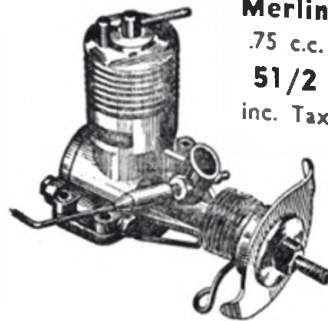
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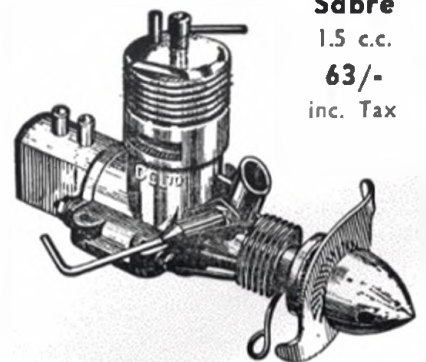
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# AERO MODELLER



HOBBY MAGAZINE

## other modelling angles . . .

December Model Cars carries reports on the Halifax Open event, drawings of the Cooper formula 1 (1964), a preview of our own Clarendon circuit here at the Editorial Offices, used for the National Championships, hopping up details for the Airfix Auto Union, Fibre Glass bodies and a famous Alfa Romeo P/2 car model reviewed.

Radio Control Models & Electronics for December enters into the Christmas spirit with nothing less than a radio controlled Christmas pudding! "TINYTONE" is a really sub-miniature single channel receiver, fully detailed, and new information on a recent electronic development for remote control will be revealed. Test reports include new British and Japanese actuators and photo features cover the radio team trials and other recent events.

Full-size free plan in December Model Maker is for a 30 in. long, 11 in. beam power boat "Remora" intended for up to 3½ c.c. with excellent turning ability in rough or smooth water. Articles include feature on model tanks, a new hydrofoil and hydroplane design, a paddle tug, a Canadian Destroyer Escort and the liner "Empress of Britain".

Each December issue of the above M.A.P. magazines will sell at no increase over the monthly 2/6d. price.

## December 1964

VOLUME XXIX No. 347

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### cover

The 27th Pursuit Squadron captured in Echelon formation by artist Laurie Bagley as they fly their colourful Boeing P-12F Fighters. Extensive details of these, the last of the Boeing Biplane Fighters, are included in George Cox's Famous Biplanes feature on pages 608-611 of this issue. These aircraft of a bygone era make bright subjects for scale modelling and we look forward to the day when we can see a fully aerobatic multi control radio equipped replica competing at a British event.

### next month . . .

Colour cover and scale drawing feature is the unique subject, John Isaacs' Fury. This in itself is a 7/10ths scale man-carrying model of the famous Hawker Fury Biplane Fighter and the intriguing story, plans and cut-away diagram of the structure by the designer, will inspire all scale modellers. More details of Harold Towner's remarkable M.218 and its torque control for free flight, Beginner features for flying power models by John Barker and First Radio Control Flights by E. F. Bryant, Contest Designs, an attractive full-size plan and information on the amazingly simple yet highly efficient all-sheet contest power models designed by Erich Jedelsky in Austria add to regular features, etc., etc., out on December 18th.

### Editorial and

### Advertisement offices

38 Clarendon Road,  
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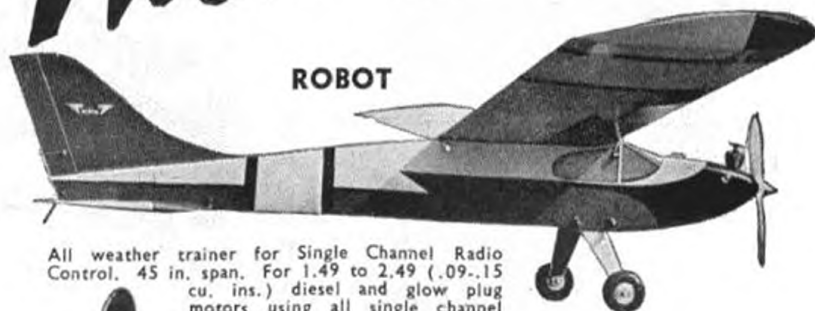
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# Top of



ROBOT

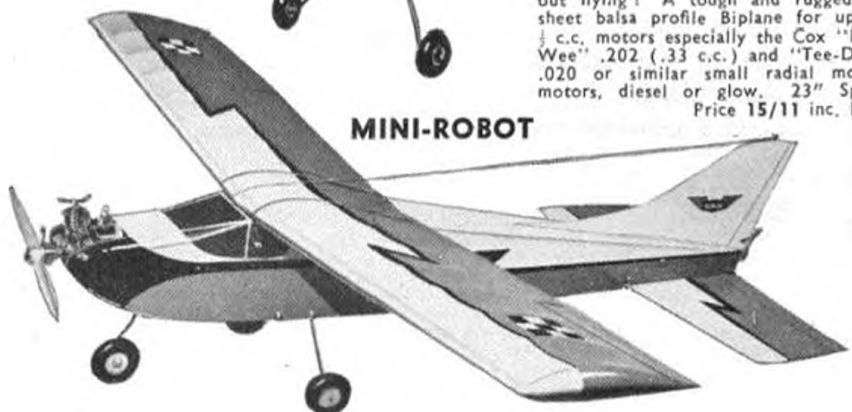
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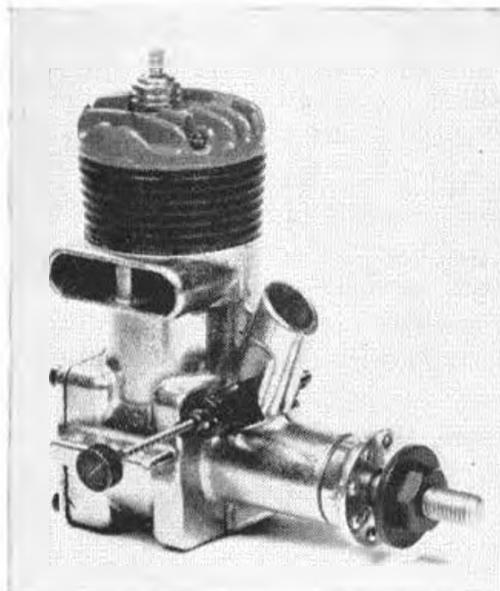
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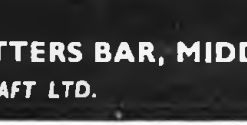
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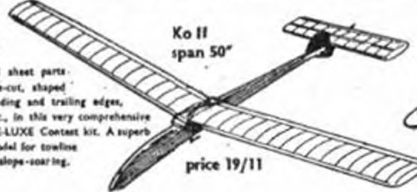
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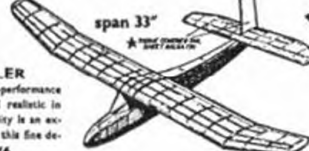


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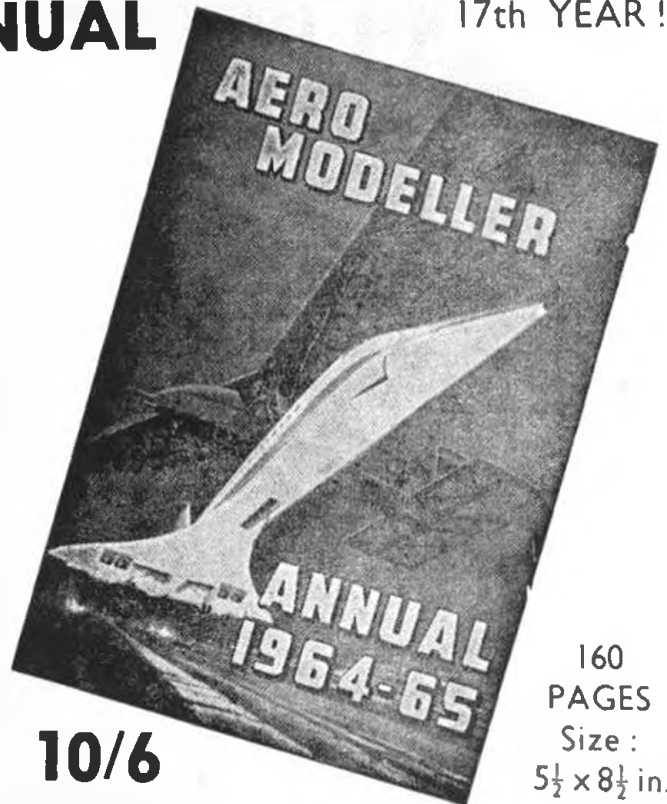
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**10/6**

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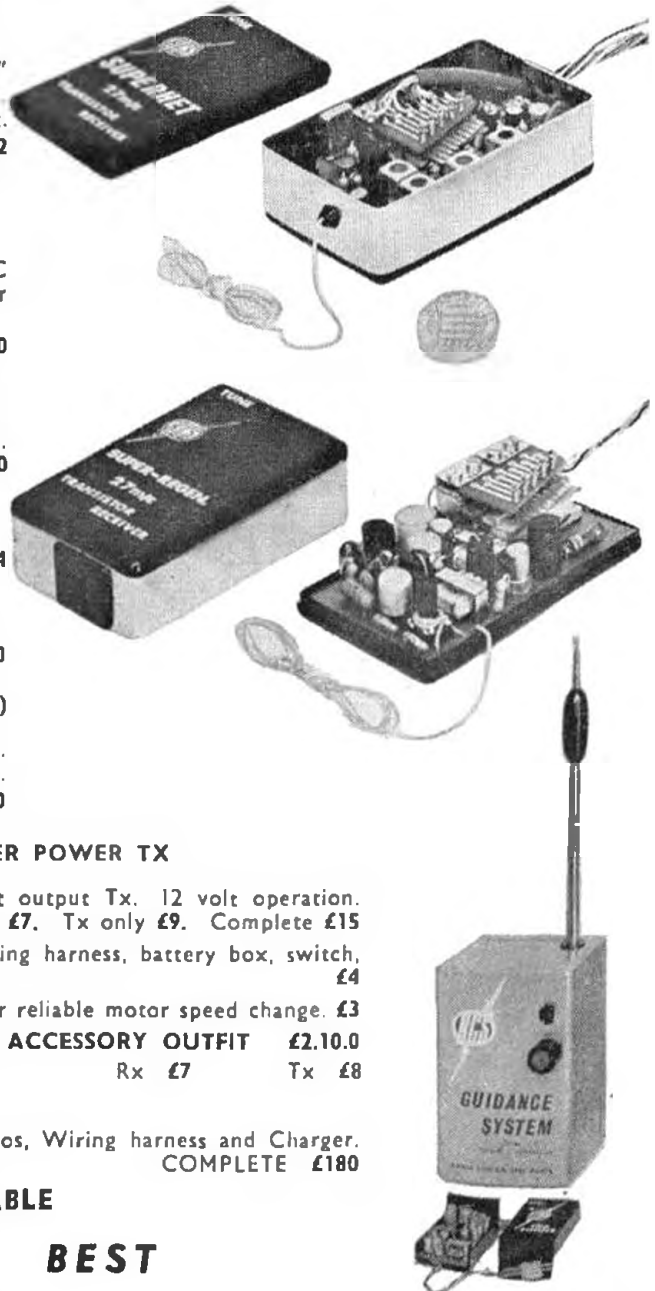
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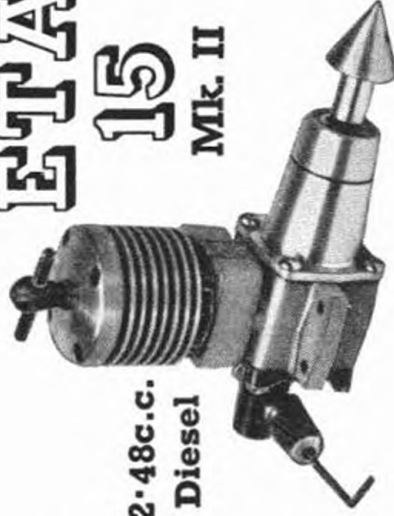


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# £50,000 INSURANCE!

For the first time ever we are able to offer a £50,000 third party insurance to our readers! This magnificent insurance scheme which covers modelling activities within Great Britain, Northern Ireland, Channel Islands and the Isle of Man, has been negotiated with a leading insurance Company to provide exactly the cover which the Air Ministry requires when its airfields are used for model flying. It is also sufficiently embracing to cover all other forms of model activity, and so should be completely acceptable to Local Authorities requiring some cover for modellers using their boating lakes or control line flying circles. It is equally applicable to free flight models, control line models, radio control models, aircraft, boats and cars.

All that is necessary for you to do to obtain the benefits of this magnificent cover is to complete the forms at the bottom of this announcement, sending the first part to us together with your remittance of 2/6d. which covers you for one year, and handing the second part to your usual magazine supplier. Whether or not you already have an order in hand for the regular supply of your magazine, this form should still be handed in and your dealer will adjust his requirements according to whether you are a new customer or merely continuing your old arrangement.

This insurance is the prudent thing for every modeller to take out, but it is a sad fact that until now, although the governing bodies of the hobby have offered this cover to their members, something like 90 per cent of the modellers in the U.K. have never taken up this opportunity and are operating 'without insurance protection'. Those who wish to make the most of flying and other modelling opportunities must be insured not only for their own peace of mind—accidents do sometimes happen—but also because Local Authorities, Ministers and others are showing an increasing awareness of this need for insurance and are demanding proof of adequate cover. By joining M.A.P. 'Modellers' Accident Protection' you come into the world's BIGGEST MODEL CLUB. For your initial subscription you obtain a lapel badge for identification and transfers to put on your model.

Complete your form and send off at once. We will send you back your membership card, lapel badge and waterslide transfers immediately. Insurance period commences on 1st January 1965. Renewals will normally be made from nearest quarter day, and renewal reminder notices duly sent.

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## HEARD AT THE HANGAR DOORS

WE are proud to be able to offer our readers a £50,000 third party accident insurance policy for a trifling sum. We have been concerned for a long time that although the governing bodies of the model aircraft and model boat hobbies have offered members adequate cover, such cover has not been readily available to the lone hand without considerable trouble and the negotiation of a personal policy. What has happened so often has been that our lone hands have just not bothered and have flown quietly on their own private little airfield by arrangement, perhaps, with a local farmer and everything has been lovely until the accident happened! It does not need a great deal of imagination to realise what could be the result of an accident befalling some uninsured person who might find that their savings for years to come were mortgaged in advance to meet some heavy court claim.

Now with our scheme, which offers exactly the same cover that the Air Ministry require for use of their airfields, every single reader who need not belong to any club or have any affiliations can cover himself adequately for 2/6d. a year plus a promise to take the magazine of his choice each month.

Older readers will probably say that this is reminiscent of the pre-war insurance schemes for readers of national daily papers. It may well be—there is nothing new under the sun—but this is the first time it has been attempted as part of a model magazine readership arrangement.

We should pay due tribute at this stage to an earlier insurance scheme which will no doubt still be remembered by many readers. The National Guild of Aeromodellists which, indeed, operated until com-

paratively recent times and was all credit to the man who instigated it—our predecessor, Mr. D. A. Russell.

### Minister for Aeromodelling?

When leading circulation British National daily newspapers, *Daily Mail*, *Daily Express*, *Sun* and *Daily Mirror* feature the weekend activity of Giles Wilson and suggest as in the case of the *Express*, that this son of the Prime Minister may well be angling for the job of Minister of Aeromodelling, then the hobby really is receiving the very best form of publicity.

Photographs published on October 26th showed Giles out testing his Keilkraft Chief glider with Mrs. Mary Wilson helping with the tow-launch at Lyttleton Playing Fields, North Finchley. (Incidentally these same playing fields were the scene of some of the very first control line flights made in Great Britain.)

Prime Minister Harold Wilson has appointed new Ministers for Leisure (other than sport), use of Land and Technology. We see no reason why he should stop at that and ignore the suggestion in the *Daily Express*. After all, many another Government has found value in official encouragement of our hobby. In fact, we tread a very lone path with our totally amateur status in this country.

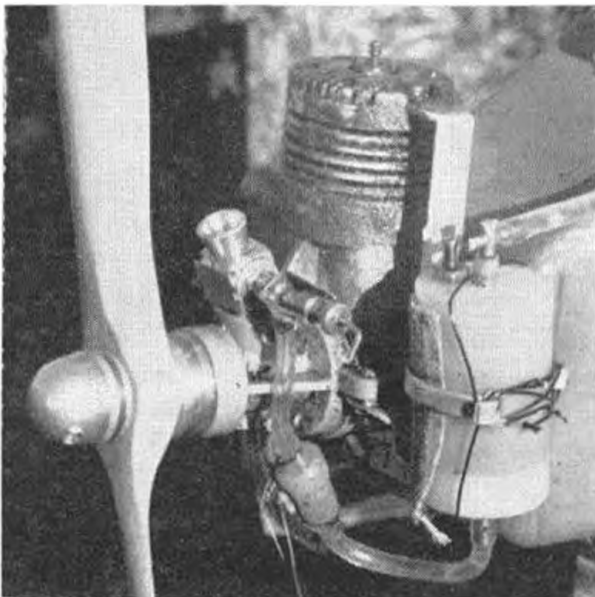
Could Mr. Wilson seek better evidence of beneficial training of aeromodelling than in this very issue where we publish a photograph of a man who is now an aerodynamicist at the Royal Aircraft Establishment, Farnborough and who, nine years ago, was the winner of our own nationally organised "Golden Wings" contest for school age juniors?

### Super Economy

Further information on A.M.A. President, Maynard Hill's 8 hour 52:25 world duration record flight reported last month, commands even greater respect for the achievements of both modeller and his equipment.

The maximum weight limitation of 11 lbs. demands stringent fuel economy and in order to get this, a special fuel formula was employed. During preliminary tests flights as long as 28 minutes were made using only 60 c.c. of fuel! For the actual flight, fuel weight was 4.3 lbs. so that consumption was a mere 7.8 oz. per hour average. It was desirable to operate the Merco 49 at a peak r.p.m. of 6,500 driving a 14 in. x 6 in. Top Flite propeller and in order to get this with a smooth and reliable suction, a K & B .19 throttle was fitted, since it offered a smaller inlet area and gave the required r.p.m. at high speed setting, while it could also be throttled down smoothly to a minimum power of approximately 4,300 r.p.m.

Well cooked Merco 49 carboned both inside and out following extensive duration flying by Maynard Hill culminating in the magnificent almost 9 hour flight. Small tank is fed by main reservoir in Mylar covered wings and figures in text above reveal that Maynard achieved a fuel economy which would be the envy of any team racing operator. Engine is perfectly standard except for use of K & B .19 throttle for improved economy and low speed operation plus a bushed connection rod.



A significant factor in the arduous test of the engine was that following such prolonged runs, the Merco became very heavily carboned, internally and externally—a situation which has obviously done the engine little harm and improved its economy. At one stage when a new cylinder head was fitted the engine simply would not keep running until two weeks of intermittent operation had relined the interior with carbon. Incidentally, petrol is one of the constituents in the fuel formula.

Further information on Maynard's model and another remarkable record attempt in which Dr. Walter A. Good achieved a flight altitude of 14,820 ft. but could not get the model to return to the starting point, will appear in a future edition of *Radio Control Models & Electronics*.

### Unusual Plans

Those flying scale enthusiasts who seek the unusual will welcome the efforts of a new Company in the U.S.A., Obscure Aircraft, P.O. Box 532, North Hollywood, California. Their initial range of plans is for unusual types such as the Sopwith Tabloid, Bristol Brownie, Westland Widgeon and two early monoplanes from Bristol and Blackburn. Average wingspan is 24 in. and structure suits rubber power or small capacity engines. Price of each plan is \$1.25.

### Spy Plane Revealed

Back in October issue we asked for information on a ready-to-fly camera equipped Spy Plane being sold in the U.S.A. Bill Dean, noted kit model designer and aeromodelling journalist, came through with the answer in the form of a full page magazine advert clipping. Pre-fabricated, the 60 in. glider has an expanded foam fuselage in the cabin of which is fitted a 127 film size camera which can be set with up to 40 secs delay after launching. Cost of the U-2 Spy Plane as sold in New York is \$15, or roughly £5/5/0d. A sample taster of the advert copy is, "When you catapult it into the air it soars and banks on thermal currents while its pre-set automatic timer ticks away until it snaps the shutter".

### Not Too Late

Tickets are still available for the Annual S.M.A.E. Dinner Prizegiving Dance, to be held this year at the Mecca Restaurant, Leadenhall Street, London, E.C.3. Saturday, November 28th, 6-11 p.m. Applications together with remittance of 30/- per ticket should be sent to the S.M.A.E. Treasurer, 9 Thornfield Avenue, York.

### Coupe d'Hiver

Plans are being finalised for our Postal Contest for the Coupe d'Hiver class to be run in the early new year and as a result of many requests we are making this postal event open to all comers and all Nations. There will also be an Anglo-French Challenge match arranged between ourselves and Maurice Bayet of "Le Modele Reduit d'Avion", which is likely to be held at an airfield near Paris on February 21st. This is the traditional winter date for the event.



Renowned U.S.A. F.A.I. power model flyer Bob Cherny qualified as West Coast representative in the 1965 U.S. team to go to the World Championships flying his "Orbiteer" design which we featured as a 3-view in October issue. Other team members are announced below.

Applications for details of the postal event and/or the Anglo-French Challenge should be made to the Editorial Offices.

### Surcharge on Imports

The 15 per cent surcharge applicable as of October 27th on all imported manufactured goods will have an extensive effect upon the aeromodelling trade. In brief, one can now expect to have to pay 11 per cent more for any kit, engine, radio control equipment or accessory which has come from overseas. One wholesaler informs us that he will be obliged to establish the retail selling price of one range of kits at 13/6d. for each U.S. Dollar on the American price. Since the surcharge will have been in force for almost four weeks prior to publication of this issue, it is inevitable that many of our advertisers will be obliged to charge prices approximately 11 per cent in excess of the advertised figures in this edition.

### U.S. Team Announced

Following local eliminators and district semi-finals the 1965 free flight team has now been announced. It includes the names of past team members and those who have led their class at National Championships and should, therefore, be a powerful group. The names are: Wakefield—J. Lenderman, F. Parmenter, D. McDonald; Power—R. Cherny, H. L. Spence, J. Robinson; Nordic—N. Ingersoll, H. Langevin, D. R. Wilson. Special congratulations are due to Norm. Ingersoll who was in the last U.S. glider team and said "he'd be back" after atrocious misfortune spoiled his chances in Austria in '62. See page 620 for British teams.



The Editor and Staff send Christmas greetings and best wishes for a prosperous New Year to all readers





WHEN IT WAS extensively described in *FLIGHT* International for August 23rd, 1962, the M.218 was hailed as appearing to be "the most promising British light aeroplane for 30 years". It introduced extensive use of glass fibre, standard automobile components and a general simplification of aeronautical engineering which should, by all that is right, have earned it a place on the production lines. Alas, this design by Grahame K. Gates—well known for his aeromodelling activities on the South Coast, came to nothing. Its demise despite excellent performance and prospects was due to reasons far too tedious to relate and as visitors to the last Farnborough Display will know, the airframe has been reshaped and altered to involved and "acceptable" structure as the B.242.

The beautiful lines of the M.218 simply cry out for scale modelling and who better to produce a prototype model than that doyen Harold J. Towner.

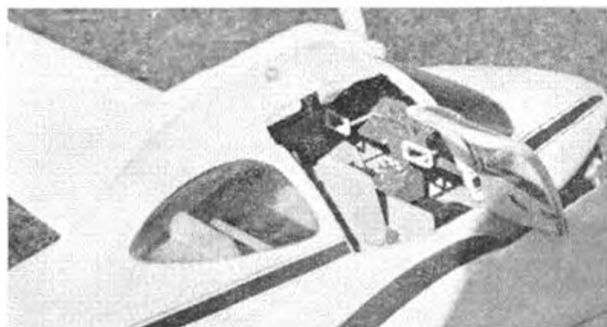
Here we have in one model the opportunity for so many developments. The Sketchpage illustrates an alternative scheme which provides for a retractable undercarriage and this in itself is so much to scale that the layout of the equipment is just as it was on the full-size machine. Next month we shall give more information on a form of engine torque control, which is also incorporated in the prototype for free flight engine synchronisation. Then, again, the structure permits not only free flight but also adaptation to radio control. The cabin interior can be faithfully reproduced as well as all the scale outlines, including the all flying horizontal tail.

Anyone who has built a H. J. Towner design from one of those in the Aeromodeller Plans Service or from those fondly remembered but rather complicated "Astral" kits produced in the latter years of the war will appreciate that this is no ordinary scale model. H.J.T. is a perfectionist. Thus whatever appears on the full-size machine has to be duplicated in the scale replica, but through the application of ingenuity all the frills are turned to good use. Since



## BEAGLE-MILES M.218

An extensively detailed 60 in. span control-line scale model for 2.5 to 5 c.c. engines, designed by  
**H. J. TOWNER**



there would be little point in endeavouring to produce an extensive building instruction sequence in this feature, we are adopting the procedure of issuing full stage by stage instructions with each copy of the full-size plan and will confine ourselves here to the more intriguing features of the model, which will be of general interest to all enthusiasts.

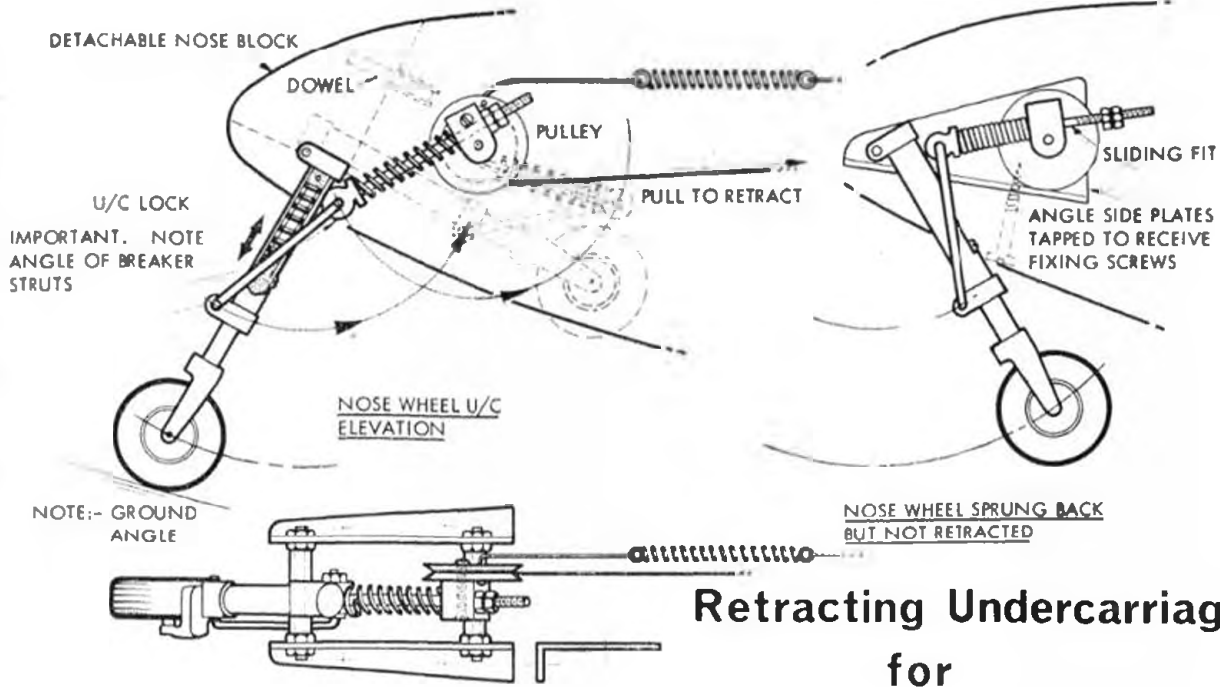
One is tempted with so fascinating a model to begin at the nose and work aft. So we start to the luggage hatch of the full-size, which is equally detachable on the model only instead of luggage we fit nose weight to balance any inconsistencies that might have arisen during construction at the tail end! On the prototype H.J.T. fitted retractable gear as clearly indicated in his own working diagrams which we reproduce opposite. On the plan is a fixed undercarriage scheme, of greater appeal to the average modeller but which in itself still has ample shock absorbing qualities and with the addition of embellishments is just as realistic in appearance.

The model is completely equipped as far as instrumentation is concerned, even though it is dummy. Upholstery and controls are realistically arranged and readily available for inspection by opening the cabin doors which are made integral with the fuselage in order to retain curvature.

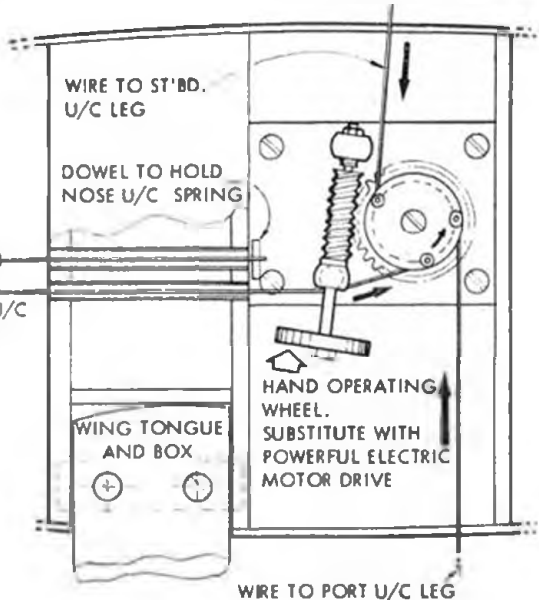
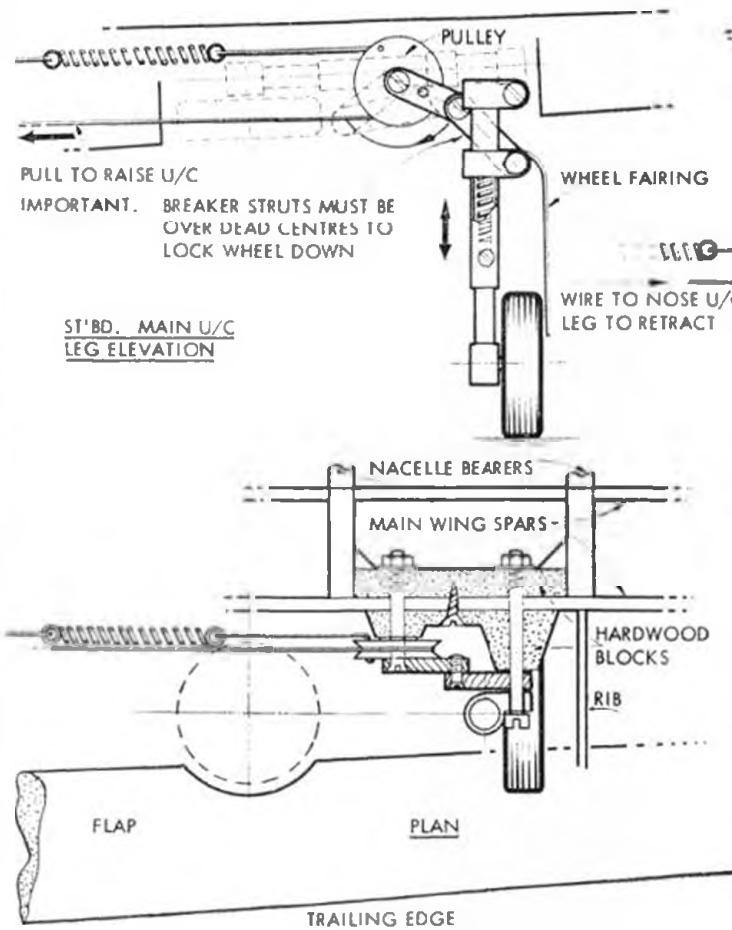
One might query the strength and complexity of detachable wings. Any additional work involved in construction is more than repaid by the facility of breaking the 60 in. model down to three main components and additionally, should one wish to make the conversion to free flight or radio, the knock-off facility is invaluable.

Throughout, the structure of this model has been engineered to give maximum strength for minimum weight and follows full-size practice, although it cannot in the case of the M.218 be absolutely true to Heading shows Harold J. Towner with prototype and two other views illustrate the extensive detail of his flying model. Note the cabin interior, which can be seen through an opened door and also the scale representation of all flying controls although for control line, only the elevator is required. Bright white and rich blue colouring adds to the spectacular effect.



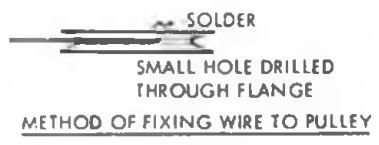


## Retracting Undercarriage for Beagle-Miles M 218



CENTRE SECTION SHOWING HAND CONTROL PLAN

WORM GEAR MADE FROM OLD GRAMOPHONE MOTOR THE FIBRE GEARWHEEL STRIPPED OF OUTSIDE BRASS DISCS AND RIVETED TO PULLEY



SOLDER  
SMALL HOLE DRILLED THROUGH FLANGE  
METHOD OF FIXING WIRE TO PULLEY

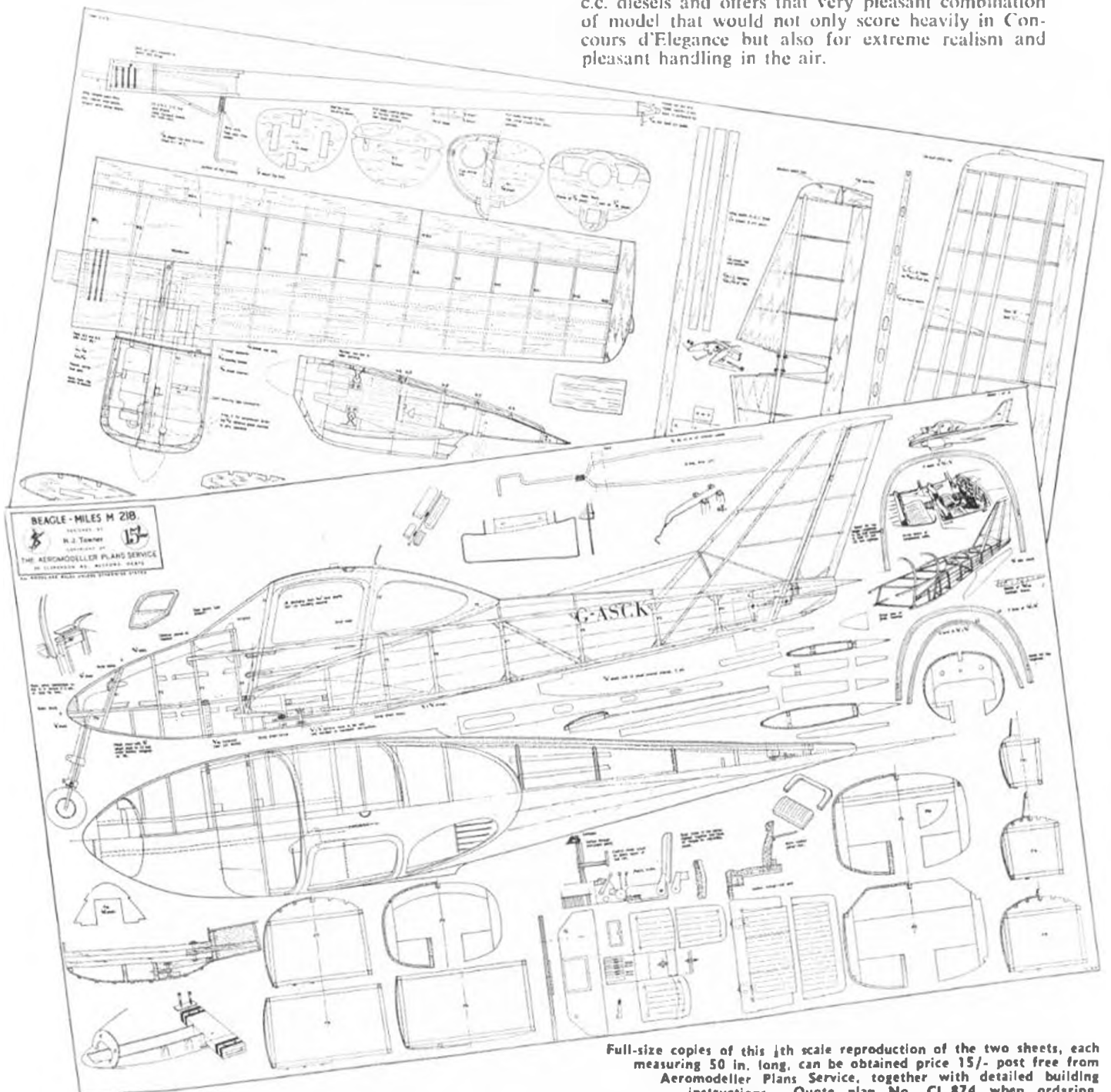


scale because so much of the real machine was made with glass fibre. Structure of the model wing, with its multiple spars and sheeting and the method of incorporating the overhung engine nacelles is particularly good, while the tail surfaces revive a practice which has not appeared for many many years in

Only the facts that there is no pilot in the cabin and that the main landing gear covers are temporarily removed give the clue that this is a model of G-ASCK, the M.218 prototype, airborne on initial flight tests. Pilot Norman Couling reported that just like the full-size, the model M.218 performs wonderfully well.

an A.P.S. design. This is the system of fretting slots in an otherwise full depth spar (for tailplane and fin) and inserting ribs through these slots, then rotating them 90 deg. in order to complete a very strong "egg-box" assembly.

As on the full-size, the tailplane is all-moving and H.J.T. has adopted a system used on full-size aircraft for applying geared motion, at the same time eliminating possibility of flutter. Though it calls for extra care, the sub-bellerank system has proved to be most successful in all test flights. The M.218 cruises in the region of 65 m.p.h. with two Frog 2.5 c.c. diesels and offers that very pleasant combination of model that would not only score heavily in Concours d'Elegance but also for extreme realism and pleasant handling in the air.



Full-size copies of this 1/4th scale reproduction of the two sheets, each measuring 50 in. long, can be obtained price 15/- post free from Aeromodeller Plans Service, together with detailed building instructions. Quote plan No. CL.874 when ordering.



ALTHOUGH SHIFET WINGS are easily built, they can be as efficient as wings made by conventional methods. This simple method will provide strong wings of a very high efficiency, and under arduous contest conditions their advantage over built up wings will become quickly apparent. The ease of field repairs to an all sheet wing is obvious and the robustness of these wings needs little comment. Over the three seasons flown in contests with this type of wing, they had more knocks and bumps than any wings built previously. They have hit the side of a control tower in a howling gale, an out-building, and a hangar and one wing still carries the imprint of a car tyre that ran over it. Repairs were carried out on all these occasions in almost less time than it takes to fly a max. A large section of leading edge which was removed when in collision with the control tower, was simply held in position with pins for the next flight. With pins, Sellotape and quick setting cement you can carry on flying long after you have swept the pieces of a conventional wing into a small brown paper bag.

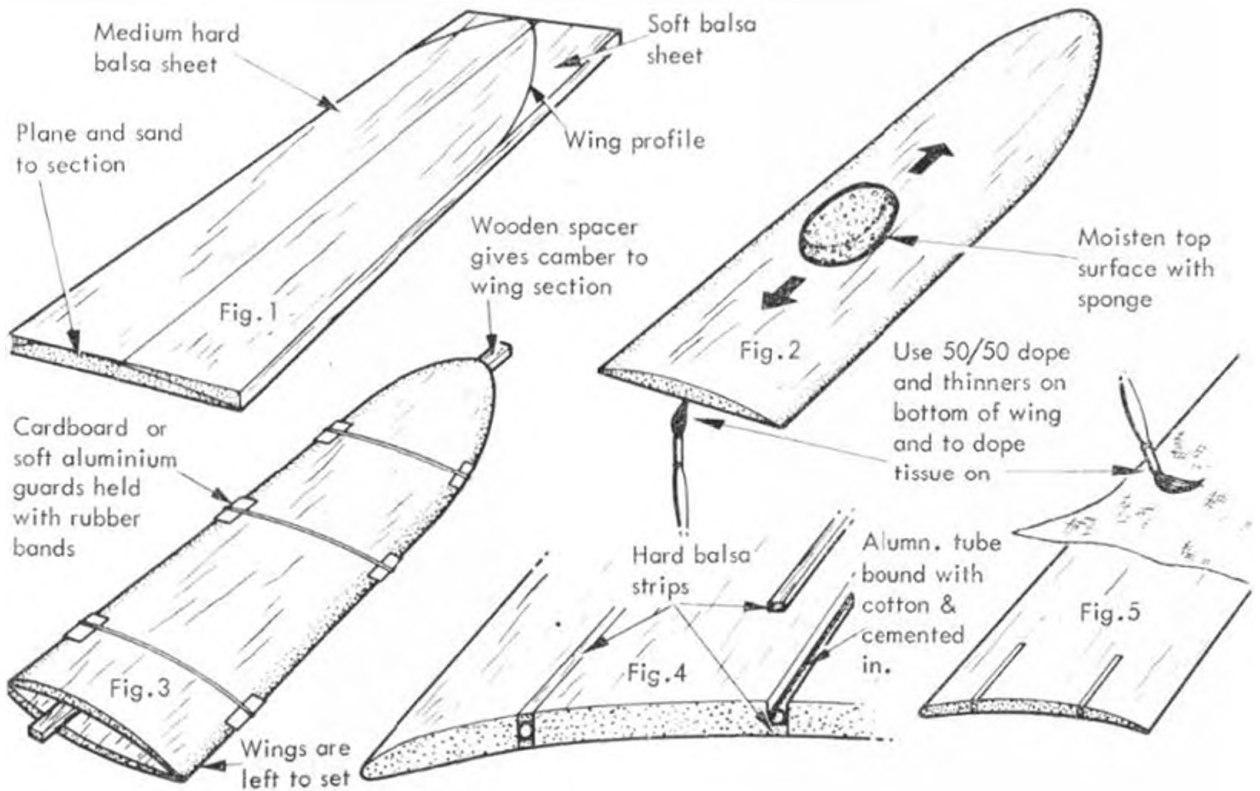
As shown in Fig 1 two sheets of 1/4 in. balsa are cemented together. If possible the sheets could be weighed beforehand, as this would give a reasonable indication of the finished weight of the wing. If medium hard, and soft sheets are used as illustrated, the weight should come out between 4 and 5 1/2 oz.

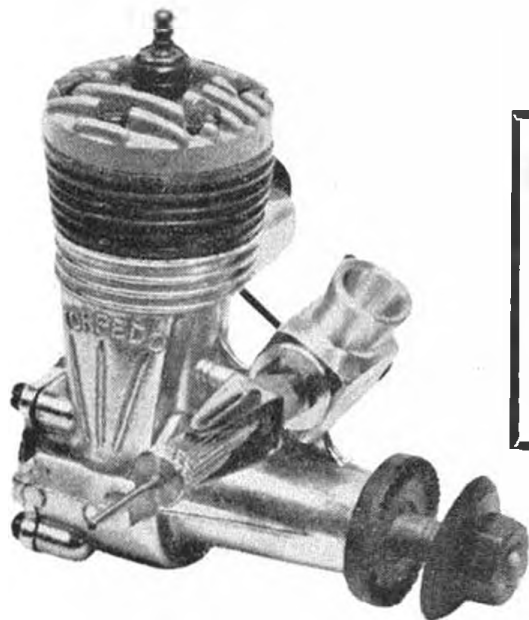
this weight could be reduced somewhat if greater care was exercised in the selection of balsa. A wing made entirely from soft balsa is quite practical, the leading edge of the wing being reinforced by cotton cemented along its length. After the cement has set, the wing plan-form is cut-out, the blank is then planed and sanded to an airfoil shape in the manner one would make large chuck glider wings. If a set of scales are available it would be advantageous to weigh both halves of the wing at this point and sand each panel until the weights are as near to each other as practical.

The next step illustrated in Fig 2 is to dope generously the bottom surface of the wing with thinned dope and moisten the top surface of the wing with a damp sponge. (It helps if you have four arms). The two wing halves are then strapped together using rubber bands and stiff cardboard guards as in Fig. 3 and a strip of balsa to give the required camber slid in between the two wing halves. In my case it was 1/2 in. sq., which was positioned not quite mid-way across the chord, and it is worth while rubbing the balsa strip with candle grease otherwise you will wind up with a dandy control line wing, if the dope has not sufficiently dried when you put the two wing halves together.

The wings are left to dry out for a couple of days while you get on with the fuselage and that's about it. All that is required now is to insert aluminium tubing to fit 10 s.w.g. wire Fig 4, cut slots about 2 1/2 in. long that will allow the tube bound with cotton to be cemented in place, cement the tubes in at the same time using a length of 10 s.w.g. wire to align the tubes correctly, then simply fill in top and bottom with thin strips of wood and sand flush, if done carefully the strip will not be detected when the job is finished.

It only remains to dope on some lightweight tissue, Fig 5; allow dope to dry to the touch and put the wings back in the rubber band jig for a couple of hours between each coat and leaving the final coat for about 10 hours.





### Specification

Displacement: 3.31 c.c.  
(.201 cu. in.)  
Bore: .641 in.  
Stroke: .620 in.  
Bare weight: 6½ oz.  
Max. power: .317 b.h.p. at  
13,400 r.p.m.  
Max. torque: 29 oz.-in. at 9,000  
r.p.m.  
Power rating: .096 b.h.p. per c.c.  
Power/weight ratio: .048 b.h.p.  
per oz.

**Material specification:**  
Crankcase: light alloy pressure die casting.  
Cylinder: mild steel.  
Piston: cast iron.  
Cylinder head: light alloy pressure die casting.  
Crankshaft: hardened steel.  
Main bearing: bronze bush.  
Connecting rod: light alloy forging.  
Propeller driver: steel.  
Throttle unit: aluminium body with steel barrel; steel throttle arm and exhaust flap.  
Spraybar assembly: brass.  
Crankcase rear cover: light alloy pressure die casting.

## K & B 19 R/C

### ENGINE ANALYSIS No. 128 by R. H. Warring

"K & B" IS A TIME-HONOURED name in model engines, and the "Torpedo" range well known to old-time as well as present day modellers typifies the best in orthodox plain bearing glow engine layout, scaled up and down to cover a number of popular sizes. Virtually everything about it is proven by long experience. It is a particularly easy engine to handle, yet remains equally impressive in performance in what remains, basically, the standard layout in the "19", "29" and "35" sizes.

Most Torpedos tend to be relatively fussy about fuel mixture, where optimum performance is the aim. The "19" is tailored to a fairly high nitro content for maximum performance, when the makers claim a peak b.h.p. of .41 at 13,500 r.p.m. Whilst not particularly happy on a straight fuel, we found that 5 per cent nitro or equivalent doping was adequate for smooth performance.

Performance figures extracted on test on a low nitro fuel probably do not do full credit to the possibilities of the 19 R/C, and in any case the specimen run was already well used, having already put in many hours of flying time on the Aeromodeller "Tauri". Data was also extracted on torque measurement with non fan-type loads, which may show a rather higher peak r.p.m. than propeller-type loads. In other words, 13,500 r.p.m. is rather a low "peak" to achieve the manufacturer's figure of .41 b.h.p. and one would expect a running speed several thousand r.p.m. higher to reach such a figure with an engine of this type and size.

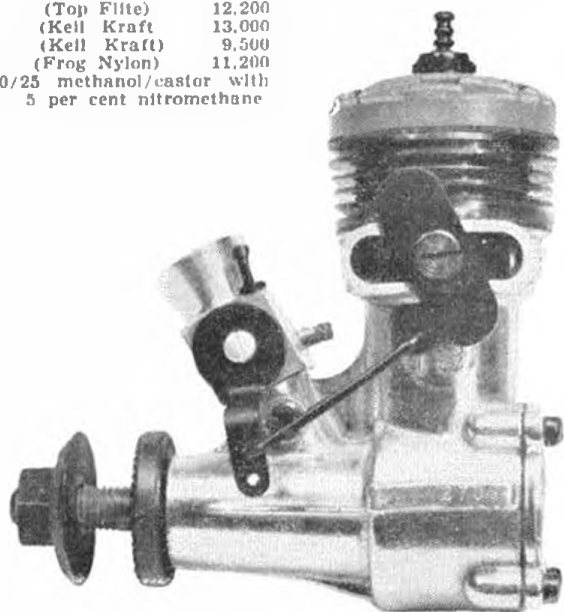
Structurally, the Torpedo "19" embodies a light pressure die cast crankcase unit embracing crankcase, front bearing housing, stub intake and lower cylinder up to, and including, a stub exhaust. This is virtually a minimum size casting as regards external dimensions, although there is an appreciable thickening of the metal from front to rear on the bearing length. The main bearing itself is formed by a substantial bronze sleeve inserted in the casting and reamed and honed to finished size. A large transfer passage is incorporated in the right hand side of the lower cylinder and left "as cast". This actually extends as a trough right up to the top of the casting or well above the transfer port position in the liner

and relies for a seal, on the gasket under the lower fins on the liner being compressed by the cylinder holding down screws.

The liner itself is of soft steel only .7175 in. o/d on the plain bottom length, giving very thin walls (approximately 1/16 in. thick). The top length comprises two very thick large diameter fins at the top and approximately one-third down the length with two thin intermediate fins with the o/d between again taken down to .7175 in. Ports are rectangular in shape with semi-circular ends, cut directly in the liner walls. Transfer and exhaust ports are of approximately equal area, but the exhaust port is wider and slightly shallower. Transfer opening

### Propeller — R.P.M. Figures

10 x 3½	(Top Flite)	10,800
9 x 4	(Top Flite)	12,500
9 x 6	(Top Flite)	10,200
8 x 6	(Top Flite)	12,200
9 x 1	(Kell Kraft)	13,000
9 x 6	(Kell Kraft)	9,500
9 x 6	(Frog Nylon)	11,200
Fuel: 70/25 methanol/castor with 5 per cent nitromethane		



overlaps the exhaust by some 80 per cent. The liner bore is well finished, with a slight amount of taper towards the bottom end. Even after the considerable running time achieved with this engine the fit was still tighter than one normally expects with a standard production glow engine.

The piston is machined from cast iron with a flat top and filleted deflector. The piston is relatively long and slightly relieved in diameter below the gudgeon pin position. Connecting rod is a light alloy forging with plain bearings at each end. The big end bearing is drilled for an oilway. The gudgeon pin is .155 in. diameter, drilled through and fitted with brass end pads. It appears to be made of ordinary steel and is a fully floating fit in the piston.

The crankshaft is of hardened steel, .373 in. diameter over the bearing length stepping down to a  $\frac{1}{4}$  in. diameter threaded length for a conventional propeller nut fitting. The circular web is machined away to provide a crescent shaped counterweight, the degree of counterweighting achieved corresponding to a little less than the con-rod weight. The intake port for front rotary induction is  $\frac{1}{4}$  in. x  $\frac{1}{8}$  in., with the centre hole in the shaft  $\frac{1}{4}$  in. diameter. A shallow stepped length on the shaft immediately in front of the bearing is keyed to take a soft steel propeller driver approximately  $\frac{1}{8}$  in. thick and nicely knurled on the front face.

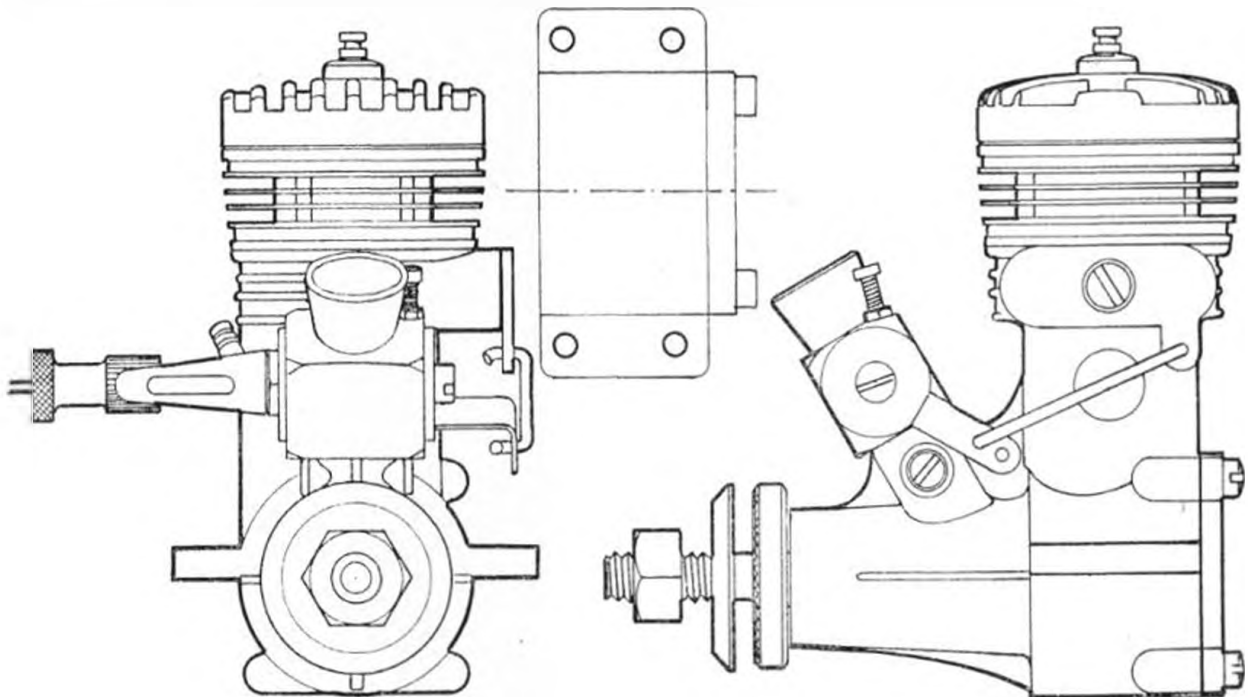
The cylinder head is a pressure die casting incorporating a "solid" section some  $\frac{3}{4}$  in. thick surmounted by thick fins. The portion plugging into the cylinder liner is quite shallow and indeed the shaping necessary to clear the deflector on the piston is cut back slightly into the head itself. The head seats on a thick gasket and is held down by four long screws extending through the liner fins into the crankcase and two shorted screws terminating in the upper fin of the liner. The four main fixing screws are located "fore and aft" and it is possible to replace the liner the wrong way round. (The plug is centrally mounted in the head.) For R/C work a plug with an idle bar is recommended, although this may not be strictly necessary. It is possible to adjust the slow running position of the throttle for a relatively lean mixture by keeping the idling speed fairly high, when

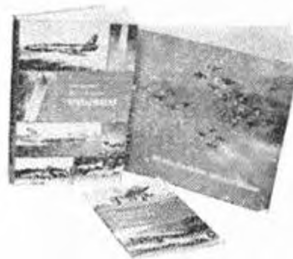
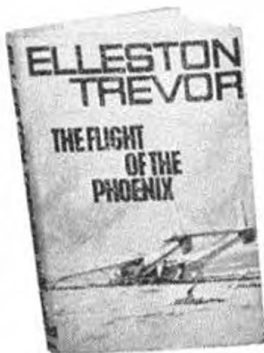
plug wetting does not appear to be a particular problem. However, adjusting for slower idling speed there is a tendency for an over-rich mixture to collect. If excessive this can "douse" a conventional plug and/or delay pick up when the throttle is opened again.

The throttle unit is of conventional glow engine pattern embracing a barrel throttle linked to an exhaust flap. The throttle body is machined from aluminium and consists of the usual "cube and stem" with a tapered venturi intake entry. The "stem" fits into the stub intake tube in the crankcase unit, where it is held by two short grub screws, one each side. The barrel valve itself is machined from steel and held in the body by the same screw which serves as the (adjustable) slow speed "stop"—this screw locating in a groove in the barrel body. A steel lever arm screwed up against the side of the barrel provides the necessary mechanical linkage for barrel movement. This screw is quite short and relies purely on being tight to maintain a friction grip. Personally, we would be inclined to Araldite it in place permanently.

Summarising, the K & B 19 R/C is a most likeable engine, easy to handle with a good throttle response and with power enough to take a "Tauri" size model through a good range of manoeuvres on rudder, elevator and throttle control. It is also an extremely compact and light engine—its weight is only 6½ oz.—but beefed up enough where it usually matters most, i.e., the main bearing. Whilst the cylinder liner is extremely thin walled, this is more or less standard K & B practice and they have enough experience in this type of production to avoid introducing unbalancing stresses during machining. All running fits were good, with the crankshaft fit somewhat on the loose side and tending to run on both ends.

In the case of a brand new engine some 45 minutes minimum running-in time is specified before fitting into a model, which would indicate that initial fits as manufactured are fairly tight—which in turn should mean a reasonably long life. The .19 R/C does, in fact, give the impression of being longer lasting than many other glow engines of similar size.





## Recommended Reading

A selection of recent and new publications reviewed

THE ARGUMENT THAT modern trend in entertainment has seriously affected the art of reading does not as yet seem to be accepted by those publishers concerned with aviation literature—thank goodness! This selected bevy of aero books covers a wide range of appeal and we hope it will help to guide you in making that gift choice in the coming festive season.

It's only natural that being primarily modelling minded, we should devote first attentions to exclusively modelling subjects and what better than that fine bobs worth, the annual **Gamages Model Book**. Here in 100 pages measuring 5½ in. x 8½ in. is a well illustrated catalogue of everything from electric car racing to plastic aircraft kits as available from the famous Holborn store. Tit bits of information add to the interest on most pages. Is it a sign of the times that the aircraft side should only feature one of the leading flying model kit manufacturers? Not that one can complain of restriction—this one range lists 84 different kits outside of engines, accessories and ready-to-fly models. All at your choice in one book price 1/6.

In 96 large 8½ in. x 11 in. pages, Bill Winter has compiled an **R/C Digest** for the U.S. magazine "Model Airplane News" selling in the States at \$2. The material is Bill's selection of the most notable radio control features which appeared in M.A.N. over the past six years and it's not surprising that Ken Willard's fine single channel explanations from .010 indoors to .049 outdoors and Dick Miller's superb installation photos are included. Record reports, retract gear, the Smith Baldwin deltas, Purdy (of Cobb) on servo power and John Worth's "Simpl-Simul" are other milestones well worthy of this collection in one albeit thin card cover. We are used to Frank Zalc's thin orange covers so no complaint here for his latest on **Circular Airflow and Model Aircraft** which Urian Wannop will sell in G.B. Those who expect the traditional all revealing neat style F.Z. three views are to be disappointed for this 152 ½ in. x 8½ in. page volume is for theorists and think type modellers—especially those who relish high speed climb in free flight power duration. Frank has developed his theme to touch upon scale and combat, if only to illustrate his broad outlook, in a stream of reports on practical tests and theoretical analyses. Much of the material will only be of academic interest and no doubt there are many qualified buffs who will readily dispute some of the broad assumptions, but just the same, here at last is one work specifically devoted to model flight theories. Would that Frank build himself a tunnel to test and catalogue the modelling fraternity's favourite airfoils and their derivations—there's a lead for your next F.Z.!

Maybe the title **The Flight of the Phoenix**, published by Heinemann at 18/- with 241 5 in. x 7½ in. pages has little to connect it with our hobby, but for the benefit of readers who will undoubtedly enjoy this expertly written adventure, we shall not disclose the neat twist which comes little more than 20 pages from the end. Elleston Trevor is a modeller (pioneer of electric car racing) as well as a renowned author and when he sandstorms the "Salmon-Rees Skytruck" down on the central Libyan desert with mixed complement of 14 plus a monkey, the situation becomes desperate. From the remains, a nacelle boom fuselage "Phoenix" arises with king post rigged wings to save a parched crew. Aeromodellers will appreciate this one.

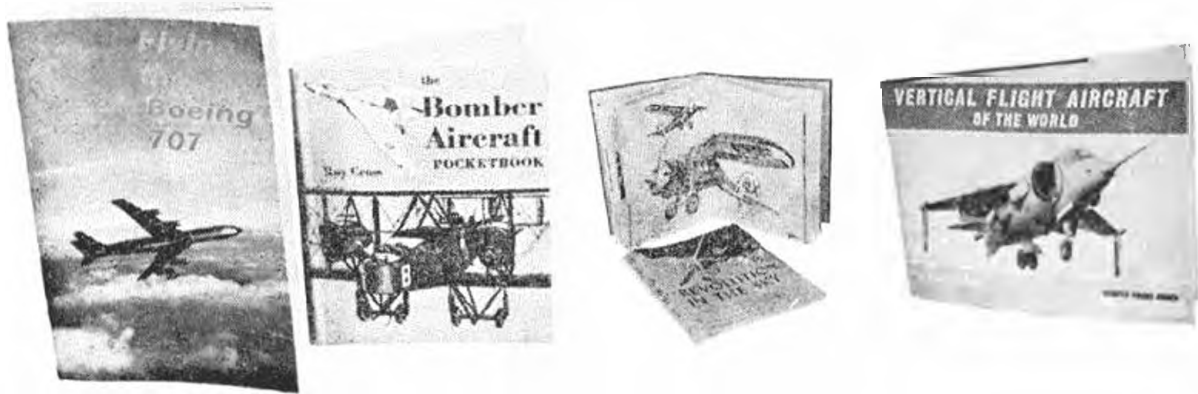
The Swiss Air Force celebrated its 50th year with a magnificent series of displays during 1964. They included well preserved veteran aircraft and to record the occasion in appropriate style a 130, 8½ in. x 9 in. stiff bound volume "**50 years of Swiss Military Aviation**" was issued in German and French languages. Excellent reproduction covers the progress from Blériot to Mirage III, with colour plates to show the latter as well as 21 different Squadron Insignia. Costing approximately £1 in Switzerland this volume is a historian's delight. A smaller (4½ in. x 6½) card cover 64 page book was published by World Traffic Editions of Vevey in 1961 as "**The Swiss Air Force from 1914 till today**" for two Swiss Francs and included many excellent views in 34 pages of photographs.

Diving back even earlier into the annals of European aviation

is Piero Vergnano's "**Origin of Aviation in Italy, 1783-1918** in 140 6½ in. x 9½ in. pages. Graham Scott of 2 The Broadway, Friern Barnet, London, N.11, can supply for 41.2d. by post and with English as well as Italian text, plus one or line 3-views of 21 representative types, it becomes another historian's essential, covering a little appreciated phase in early aviation. Some of the drawings make an ideal basis for flying scale subjects.

Feeling offensive? Bombers have always held curiously fascinating appeal in their development as a means of destroying humanity so that the inexpensive 9/6d. **Bomber Aircraft Pocket Book** by B. T. Batsford Ltd. carries loads to study per penny in its 256 4½ in. 5½ in. pages. Each type, from Avro 504 to TSR2 with foreign diversions including the novel Caproni Ca.73, is described in detail, illustrated, and concluded with factual data. Compiler Roy Cross completes the excellent value with his fine colour cover wrapper showing four types which span the age of aerial bombardment. Those with more to spare will simply relish what is the five star presentation of this review batch, **Bomber Squadrons of the R.A.F. and Their Aircraft** by Philip Moyes (McDonald 75/-). This 384 page 8½ in. x 11 in. tome represents one of the most industrious researches into aviation history we have ever seen. Each Squadron is given its location, equipment, badge with motto and description, plus photographs of typical aircraft in its service. Among the innumerable illustrations there are many little known gems. For example: A noseless Halifax which returned after collision to 51 Squadron; A Lancaster BIII of 97 Sqn. with yellow outlined code letters above the tailplane; Obscured roundels on specially marked Hawker Hind of 107 Sqn. in '38; Camouflaged Blenheim with numerals for 108 Sqn. and individual letter J, prior to the Sqn. code letter system introduced at the Munich crisis of '38; Rearward firing nacelle mounted gun in a 110 Sqn. Blenheim IV; Air Defence exercise Wellington Is with white crossed roundels; Russian based D.11.9. with huge arrow on fuselage in 221 Sqn.; an all-black Boeing Fortress in 223 Sqn. or Wellington Ic ex 311 (Czech) Sqn. in Luftwaffe markings after capture. Perhaps most intriguing of all are the first ever published views of 617 Sqn. Lancaster BIII Dambusting specials "C" and "G". In direct dispute with our own views of the Vickers modifications published last July, these photos confirm the Avro designed drive for the rotating bomb and substantiate the Revell kit details we were entirely wrong to criticise. Beside the collection of histories, a series of revealing appendices includes unofficial badges, code letters, the order of battle for the most formative years to show the growth of numerical strength, award citations and a particularly staggering statistical summary. Would the reader have known that 3,345 Lancasters went missing and a further 487 wrecked? Such figures leave even the war hardened reader impressed with the effort of Bomber Command and its history when so concisely described.

Concentrating his attention on the most famous and extensively used of the British bombers, Bruce Robertson's 216 page 11½ in. x 8½ in. volume on the **Lancaster** (Harleyford 60/-) carries a more human story of the carnage and destruction wrought by war. Intense research effort involved in uncovering de-briefing reports and personal reminiscences has more than repaid itself by adding to the character story of our greatest ever weightlifter. ("Grand Slam" would exceed today's V bomber capabilities.) But overall it is a story filled with so many losses that one begins to reflect on claims made not so long ago that one explosive attack was more devastating to the allied forces than it was to the enemy. The extensive listing of what happened to each and everyone of over 7,300 Lancasters almost proves such a point. Whatever the outcome of that argument, this book dutifully conveys the development from unsuccessful Manchester through to Lancastrian, Lincolnian, York and eventual Shackleton. Special Lancaster duties including the Dams and Tirpitz raids are of course included, and a publishers' note takes us to task for our sketches of the Dam bomb mounting. It was largely through Bruce Robertson's persistence that Avro



information became de-classified so that we too could enjoy release of hitherto secret drg AM1602, part of drg Z2352 to show an outline of the Avro installation. However—to repeat—our choice was to illustrate the Vickers modification on which more structural information happened to be available. The photos of "G" George in "Lancaster" and "Bomber Squadrons" which have never been available to us, now show the Avro installation very clearly and of course this can now be added to our own scale drawing NST 2781. Apart from this controversy, the "Lancaster" book will also establish many little appreciated facts concerning the great aircraft, from the devastating losses of a daylight raid on Augsburg to the numerical strength of 680 being used in a single raid on Berlin. Backing up a text which matches his fine earlier work on the Spitfire, Robertson has called upon that expert W.W.2. diarist M. J. F. Bowyer to provide a type by type supplement complete with markings diagrams. All the 1/44th scale drawings are authentically toned with official camouflage patterns as applicable but do lack underside detail which modellers would have needed. Long awaited, the Lancaster book will not disappoint and augments a range now famous for its style and treatment of military subjects.

When the Loughhead brothers, Alan and Malcolm, along with John Northrop and Anthony Stadlman (and later joined by Gerard Vultee) devised a method of wooden monocoque fuselage construction in 1918 they could hardly have foreseen the tremendous implications that were to influence aircraft streamlining in later decades. In his simply magnificent study of the Lockheed Vega, Air Express, Explorer, Sirius, Altair and Orion, Richard Sanders Allen has produced 232 7/8 in. x 10 1/2 in. absorbing pages to tell the tale of *Revolution in the Sky*. Published in the U.S.A. by Stephen Greene Press of Brattleboro, Vermont, and selling at 80/- in G.B. distributed by Hugh Evelyn Ltd., the volume includes 222 photographs and drawings to illustrate the more famous of an illustrious breed. No modeller worthy of the name could fail to be inspired by the colourful markings of these elliptical fuselage cantilever winged beauties, especially the unique "Flying Trademark" for Stanavo oil which after many record flights ended in the Siberian Tundra on a Found-the-World solo of 1933. The Winnie Maes play their part in the story which incidentally includes Glen Kidson's Vega G-ABGK and Kingsford-Smith's ill-fated G-ADUS "Lady Southern Cross". Dotted with famous engineering and piloting names, this book typifies the diligence of those American technical authors who so rarely seem able to obtain support of a publisher, which makes this one all the more worth the seeking.

Third of the series of Koosaburra Technical Manuals which are distributed by Beaumont Aviation Literature now of 11 Bith Street, London, E.C.1, at 7/6d. each, is larger than those for the Hurricane and Boomerang. It covers the Lockheed P-38 Lightning in 24 6 1/2 in. x 10 in. stiff art pages, 74 of which deal extensively with the various shapes and markings in which this famous twin-boom fighter appeared. Described by Roy Cross, and including credits to the most esteemed specialists on this American fighter which excelled in the Pacific yet virtually failed in Europe, the monograph offers the scale modeller the full benefit of collective research far beyond the means of the most ardent individual researcher. Tony Shennan's drawings to 1/72nd scale leave little to the imagination and select the P-38E as the main subject, of which almost 4,000 were made. Altogether a remarkable gallon within the volume and for the mere price of a quart. The detail in the drawings is an object lesson to many

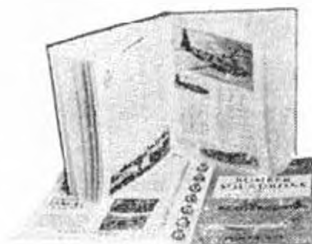
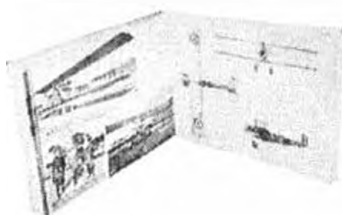
another publisher.

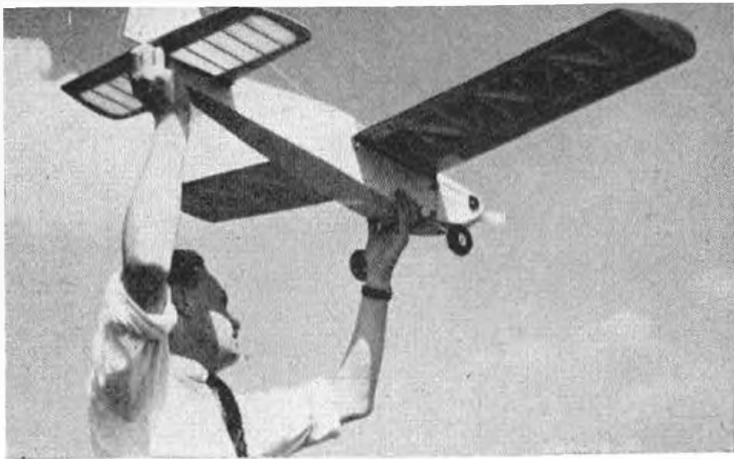
Volume III of the Air Britain publication *Impressments Log* by Peter W. Moss might well be termed a most impressive catalogue. Printed for private circulation among A.B. members, this Vol. covers all, and we really do mean "all" aircraft from D.H. 90 Dragonfly G-ADNA to Westland Wessex G-AAGW when taken into service during the last war. Their activity and eventual fate (or salvage) is duly recorded in the 7 1/2 in. x 10 in. pages 100-152 which add to the earlier Vols. (10/- each) and we understand that when Vol. 4 appears, the whole will be made available in bound form. There is a strange fascination in discovering that Sabena generously gave 24 Sqn. 00-AVII and AVI but we returned the former and not long after it went into service for Germany!—and the latter was shot down into the channel within a few days of acceptance. Or who knew that 271 Sqn. took over Ford Tri-Motor G-ACAF as X5000 (what an original serial) until it was ditched in Co. Down? Or what happened to the gracious HP.42s, Hannibal, Horsa, Hadrian and Helena—pictures of two of them show their Service markings? Or the incredible series of mistaken serials and altered civilian registrations that appeared on Messerschmitt B1108 G-AFZO? Or what happened to Short S.17 Scylla? A photo shows her camouflaged but alas inverted by strong winds at R.A.F. Drem to conclude a famous career. All of which may or may not appear to be of some interest to the average acrophile but for our money makes absolutely fascinating material for browsing away the spare hours of a winter's night, especially when we discover that the aircraft in which we so comfortably slept away many a fire-watch duty on a certain R.A.F. Station was once the property of King Ghazi of Iraq.

Those having Walter Mitty type imagination with aspirations of becoming a full blown jet liner captain can enjoy the experience in print at least by reading the two of the new series thus far produced by Wolf Publishing entitled *Flying the V.C.10* and *Flying the Boeing 707*. Each of these 48 page booklets, measuring 4 1/2 in. x 7 in. sells for a modest half crown and takes one through the complete pre-flight briefing to landing pattern stages. Reproductions of many photos and diagrams are of high quality on heavy quality paper.

Almost every aviation book involving historical research reviewed in these columns, carries the name of Gordon Swanborough in the list of credits for material provided. This researcher's life-time of experience in the study of aviation progress always produces a most authoritative and concise product. Latest in his series of collective works published by Temple Press Books is the 128 page (7 1/2 in. x 10 in.) *Vertical Flight Aircraft of the World* (25/-). Over 300 photographs of VIOI. aircraft cover everything from helicopters to deflected-thrust aircraft and are backed up with description and data to make this an ideal reference volume. More than 80 aircraft from nine nations are described, including some prototypes which have since made successful first flights after the book was written. A striking impression given by the content is the comparatively small effort made by British manufacturers in this field as compared with those in the U.S.A.—perhaps the progress minded new Labour Government will change this and sanction the cost of more VIOI. prototypes.

As we conclude this review yet more new publications arrive, among them we are pleased to note C. H. Barnes' much awaited work on *Bristol Aircraft since 1910* (Putnam) containing hitherto unpublished reminiscences and details of little known types from this famous Company.





## Getting started in Radio Control

PART SIX OF THIS SERIES FOR NOVICES  
BY E. F. BRYANT PREPARES FOR

### First Flights

THERE COMES A TIME when the model is at last finished, the last lick of paint is dry, and all that remains is for the aircraft to become airborne. It is at this time that danger lurks for the inexperienced. This is when, so often, all that patient work, not to mention the hard cash involved is placed in jeopardy, and when the modeller, beginner or not, often seems to take all leave of his senses and damages in a matter of minutes the model he has been at such pains to construct.

Many is the fine model that has not even been given the chance to show what it can do, but has been hurled willy-nilly into the air, the resulting flight or otherwise depending on pure chance. This is the time, therefore, when patience and more patience is at a premium.

Let us consider what we want our model to do. First and foremost, it must be capable of steady, stable flight both under power and on the glide. Secondly, we want it to fly *straight*. Because we have the radio, and can thus control direction, there is no point in having the model trimmed to fly in circles as a free-flight model. Thirdly, we want a model that, because we are going to use the rudder, will recover fairly quickly from turns. Finally, it must be capable of landing in a reasonable attitude, so that it does not nose over each time it hits the ground, so risking damage to our precious radio gear. At this point the reader may well be thinking that surely these factors are decided by the design of the model rather than the pre-flight trimming, and, of course, he is perfectly correct, but only up to a point. All the characteristics mentioned can be affected by the trimming procedure, which, as can now be realised, will make or mar the first flight.

As a general statement, it can be said that any model can be made to fly in various states of balance. That is, the centre of gravity could be moved backwards or forwards quite a bit, and the model still fly, by balancing out with forces generated by wings and tail. This, however, is not what is wanted here, because in these "false" balances of forces, much stability is often lost.

Bearing all this in mind then, we must "hasten slowly" one step at a time, and our reward will be success.

At this stage it may as well be said that any notions of "test glide over long grass on a calm day" might be put firmly out of mind. In the first place, hand launching a radio model over long grass will often only result in the model "nosing over" each time it lands, because the wretched grass gets in the way of the landing gear. As for the calm day, a gentle *steady* breeze will make the initial tests a lot easier. So now we must find a suitable spot, and a suitable day, and we can begin. A hard, smooth surface is ideal for our needs, and this is best found on a disused aerodrome runway.

Assuming that the day is right, and the place has been found, the tests can now begin, but remember, *no* flying until everything is just perfect.

First assemble the model as for flight, put it on the ground, then stand back and take a good look at it. The eye is a remarkably efficient instrument for detecting small differences in angles and distances, and any discrepancies in these will become easily apparent. Check the dihedral angles of the wings, the squareness of wing and tail on the fuselage, the straightness of the tailplane, and the vertical line of the rudder. These should, of course be perfect, having been checked many times during the assembly of the aircraft, but another look will do no harm. Now to check the wings for warps. This is terribly important, as even a very small warp on one wing can throw the whole model out of balance. Hold the model in one hand at arms length, with the nose towards you. Now tilt the nose up and down slowly until you can just see the trailing edge of the wing merging into the line of the leading edge. Unless there is a deliberately built-in warp of which you should be aware, the lines in view should be exactly parallel. If they are not, the wing is warped, and no further testing can be done until this has been rectified.

Small warps can often be corrected by heating the wing gently before an electric fire, and twisting in the opposite direction. Serious warps can only be properly treated by rebuilding the wing. Tabs can be added to the trailing edge as a corrective but they are not the best answer and produce drag. The same sort of test is carried out on the tailplane, and on the fin and rudder. The latter, of course, should be in the dead neutral position.

Next check is for the position of the centre of gravity. This will have been marked on the plan, and a note should have been made as to its precise position. It is best checked by placing the fore-fingers under the wing spars, and lifting the model off the ground. The aircraft should balance there, in a very slightly nosedown attitude. Easiest way to achieve this is by distribution of the battery load which is shifted fore and aft until the ideal spot is found.

Having achieved perfection in the visual checks, it would now be extremely helpful if some rough idea of the gliding speed could be gained, and the way to do this is as follows.

Hold the model in one hand, grasping it firmly by the fuselage directly under the C.G. Now raise it at arms length above the head and, pointing the nose slightly downwards (the same attitude as when testing the C.G.), begin to walk into wind, keeping the wings level. Gradually increase the forward speed to a trot and then, if necessary, to a run, until the lift under the wings becomes apparent. When it is judged that the lift is just supporting the weight of the model, this will be the gliding speed. Naturally,



one cannot get any accurate figure for this, but it serves as a very good guide when hand launching, which is our next item on the agenda.

This is done by propelling the model forward at its correct gliding angle, and, as near as possible, its correct speed, and watching what happens. It should be remembered that if the preceding tests have been correctly carried out, and as long as the model is not grossly over-speeded, it is unlikely that any damage will result from hand launching.

Holding the model as before, begin to move into wind, but do not go faster than a slow trot. This should now culminate in a smooth forward launch of the model, still in its correct slightly nose-down attitude when the arm is brought forward with a good follow through action, and the model released along its natural glide path. Alternatively, with models of over 4 ft. span weighing over 3 lbs., a two handed launch is desirable. Support the model under the balance point and at the tail. Trot until the model tends to lift, then thrust forward with the hand at the tail to launch. Now stop and watch carefully. The model should continue smoothly along the glide, hitting the ground in the same attitude in which it started, and gently dropping its tail as the speed drops off. Most models will have a slight "flare-out" when very near the ground, but this is due to ground effect and is not important. What is important, however, is any sign of "kiting", manifested by a lifting of the nose while gliding, which means that the model is tail heavy. This is a dangerous state, particularly for the radio model, and must be avoided at all costs. We must not, however, jump to conclusions, but test glide over and over again until we are sure, and then make our correction little by little, by shifting the weight forwards and testing again until the glide is just right.

Now, was there any sign of a turn on the glide? We do not want one, and so, if the model turns, we must correct it. Again, it is unlikely that any gross duration will be present, and small adjustments are best made by using a trim tab somewhere on the fin. On no account must the whole fin assembly be moved to achieve a correction. This will alter the relative position of rudder and escapement crank and can only lead to trouble later on. In fact, to complete our directional check, we must now turn the rudder crank through half a revolution, and see that

Heading opposite shows the "shove" method of hand launching fairly heavy models of about 4 ft. span and over. Support under the C.G. with one hand and grasp at the rear of the fuselage with the other. Move forward until the model tends to support itself and lift away from the free hand then push forward from the rear. Below left, a good assessment of how to obtain correct C.G. position can be made when airframe is constructed by planning battery disposition, as seen in this view. Moving batteries back and forth saves use of unwanted ballast. Below right, elementary tuning procedure, in this case on a hard valve receiver using a meter in the circuit to indicate current change when the micro-switch on the transmitter is keyed.

the model glides straight with it in that position. The rudder *must* be central with the crank in *either* of its two neutral positions.

Assuming that all is now acceptable, our final hand launches will show a nice long, flat glide, with no soaring or floating, no turning or "hunting" and with, perhaps, just that tiny "flare-out" immediately before the wheels touch the ground. Very satisfactory, so now can we have a flight? Definitely not!

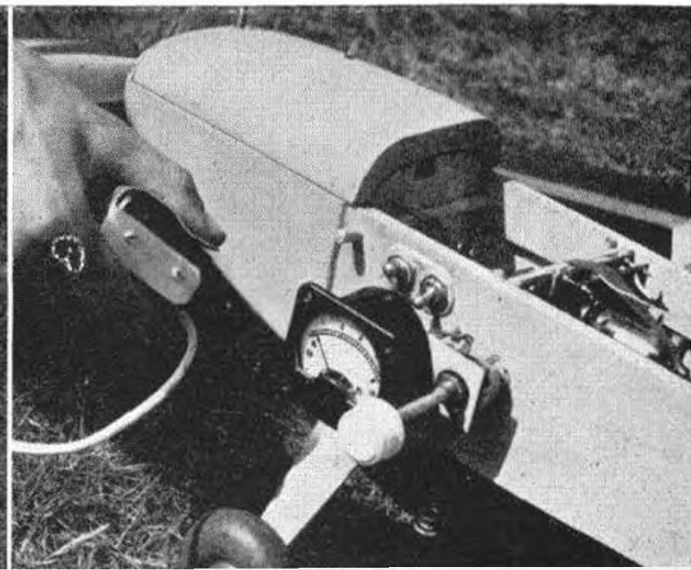
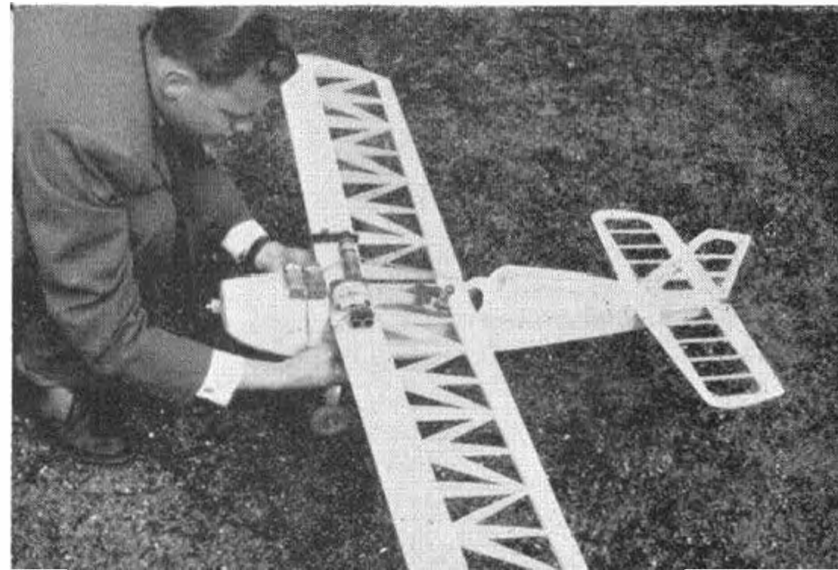
### The Radio

If it is assumed that the radio gear installation has already been thoroughly tested for correct operation, following the manufacturer's instructions, as, of course, it should have, it would now be expedient to do a range check. There is a possibility that the glide tests we have just completed may have moved something, or somehow put the receiver off tune. Naturally, this should never happen, but especially for the first flights, we must be absolutely sure. A range check needs two people, and a pre-arranged set of simple hand signals. One takes the model and the other the transmitter, and they separate up to 200 yards, operating the radio at suitable points in between. A ground range of at least 400 yards is the ideal, and this should present no difficulty at all for any of the modern sets on the market today. A strong signal at that distance will, in most cases, ensure a ground-to-air range of at least 1,000 yards, ample for our purpose. Again, the maker's instructions are the only ones to follow, and, if any receiver tuning is to be done, it should be simple to carry out.

If all is well, the final and most exacting test will be a thorough test of the radio with the motor running. This will ensure that there is no chatter of the relay if one is fitted, and no skipping of the escapement. The only thing to watch here is that, in doing this test, the transmitter is not near enough to swamp the receiver, thereby showing apparent faults which do not really exist. However, if any part of the check is suspect, we must not fly until all is well.

While doing this last test on the radio, we can kill two birds with one stone by making sure that the motor runs smoothly, and will run the tank out. Nothing is more frustrating than to have the motor cut before the model has gained any height, precipitating, at best, a heavy and undesirable landing.

*Next Month: Making that first flight with radio control.*



# Graupner

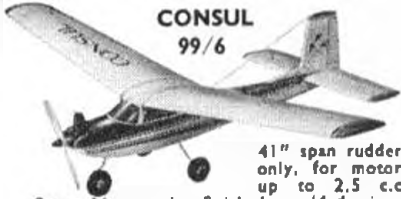
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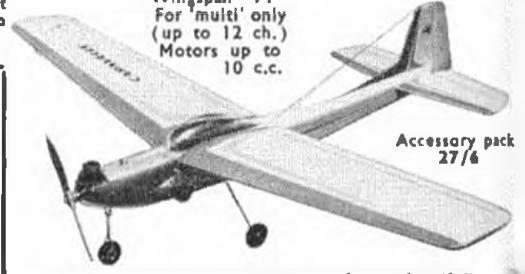
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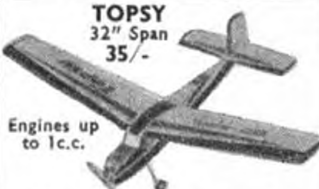


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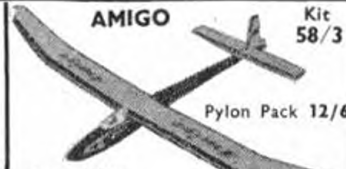
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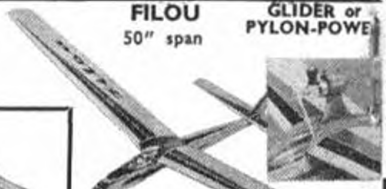
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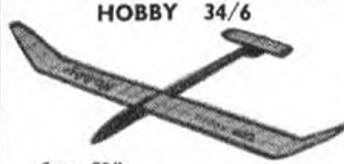
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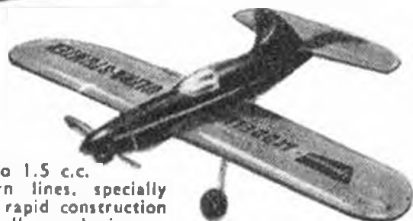
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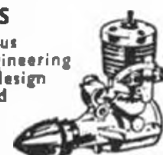


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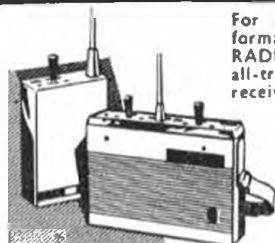


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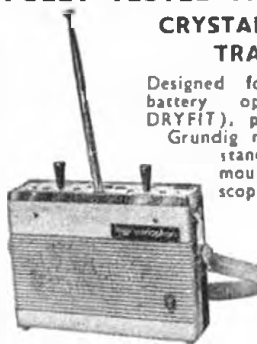
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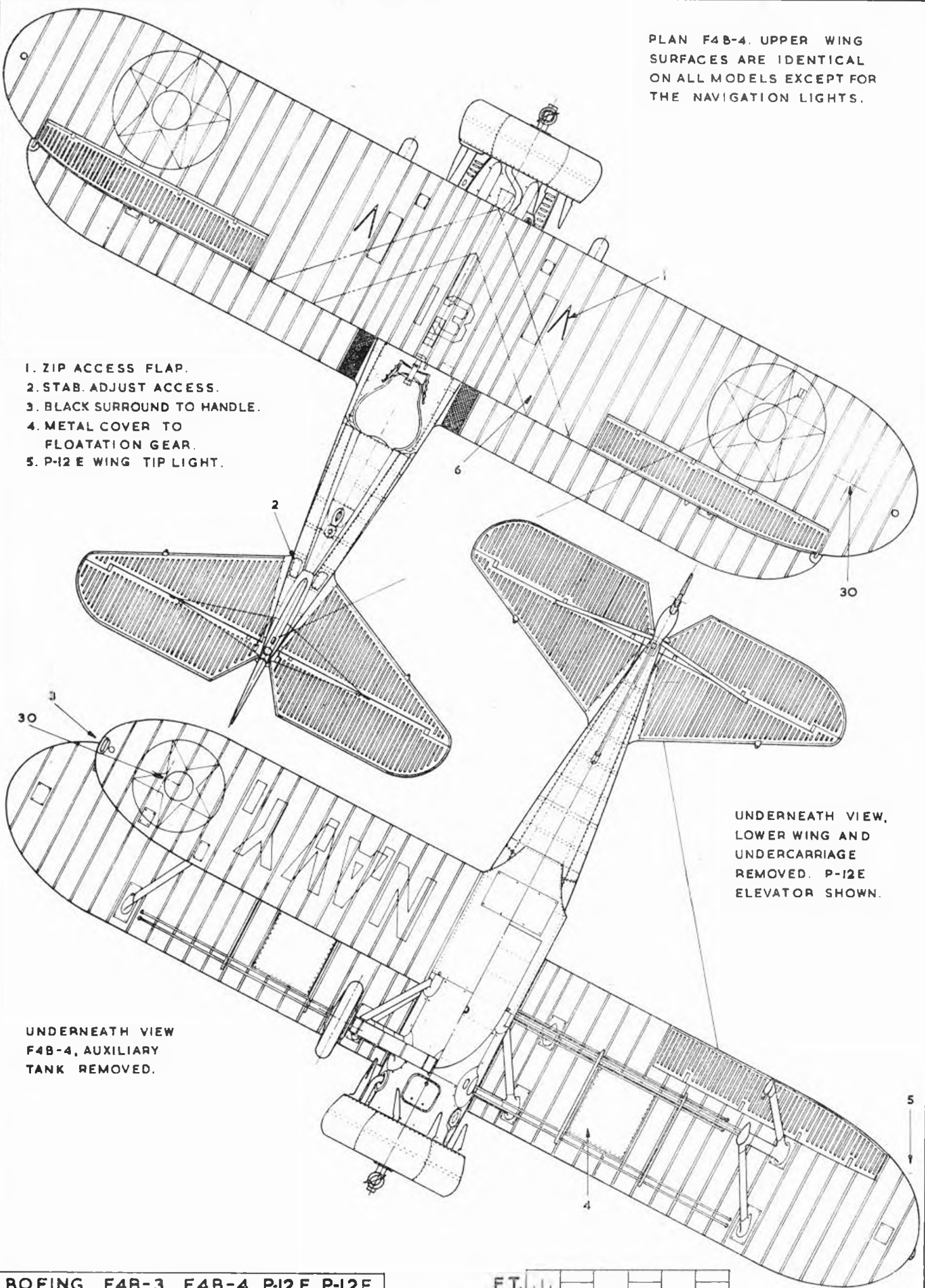
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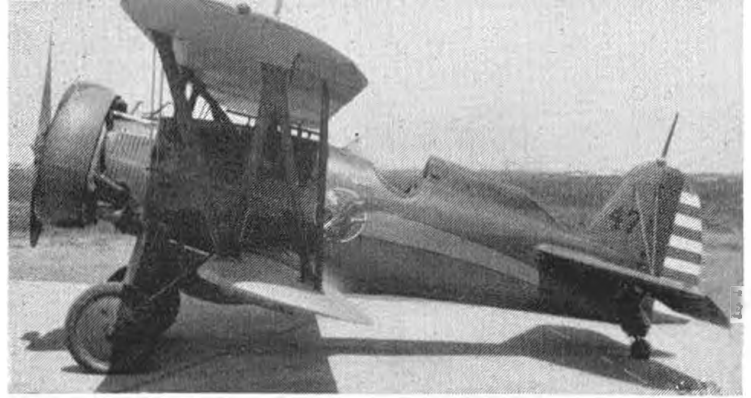
described and drawn by G. A. G. Cox

THE MAINSTAY of American fighter strength in the early "thirties" was the Boeing P-12/F4B; indeed, by comparison orders for other types of aircraft in that period approached insignificance. In performance the Boeings were almost identical to their British contemporary, the Bristol "Bulldog" but in appearance they were distinctly American with their radial engines, straight upper wings, short fuselages and long landing gear, giving a trim and perky air. This, with the flamboyant colour schemes of those days, has made the Boeing "Pursuit" a lasting favourite with model builders. It is probably true that success with this design at a time when other companies were suffering the effects of the economic depression contributed as much as any other to the solid foundation upon which the present Boeing complex was built.

Built in 1928 as a private venture, the prototypes bearing the factory type numbers 83 and 89 were delivered to the U.S. Navy for evaluation as fighter-bombers and were designated XF4B-1. The method of construction represented a logical step forward from the earlier F3B design while incorporating some of its features, including the corrugated metal tail and ailerons. Radical for its time, however, was the fuselage structure of bolted square alloy tube instead of the then currently favoured welded steel. The wings were of all wood construction, each being built in one piece around two mahogany and spruce box spars.

All models were fitted either with two .303 calibre machine guns or one .303 and one .50 calibre gun. A variety of bomb loads could be carried, up to a maximum of 720 lbs. The last naval variant, the F4B-4 had a gross weight of 3,124 lbs. and with the Pratt and Whitney R-1340-16 "Wasp" engine of 550 h.p. had a maximum speed of 188.4 m.p.h. and a service ceiling of 25,200 feet.

In the summer of 1929, 27 machines were delivered to the U.S. Navy as type F4B-1, the first going to the "Red Rippers" squadron VB-1B aboard the U.S.S. *Lexington*. In the same year, five commercial versions were sold, including a two-seat model for Howard Hughes. On the strength of the U.S. Navy's testing of the new machine, the U.S. Army Air Corps ordered a batch of 10 machines, designated P-12. One of these was modified, and as the XP-12A had an N.A.C.A. cowling, Frise ailerons and a shorter undercarriage; it was destroyed shortly after delivery but the last two distinguishing features were incorporated in the next 90 machines for the army which were delivered during the following year as P-12B.



It was in September 1930 that Boeing's radically improved Model 218 first flew; this was, in proportions virtually the same machine, but the fabric-covered fuselage was replaced by an all-metal semi-monocoque type as shown in the drawing. The landing gear was changed to a shorter, divided cross-axle type and an anti-drag ring was fitted to the engine. The Type 218 was tested by the army as the XP925, and then sold to China.

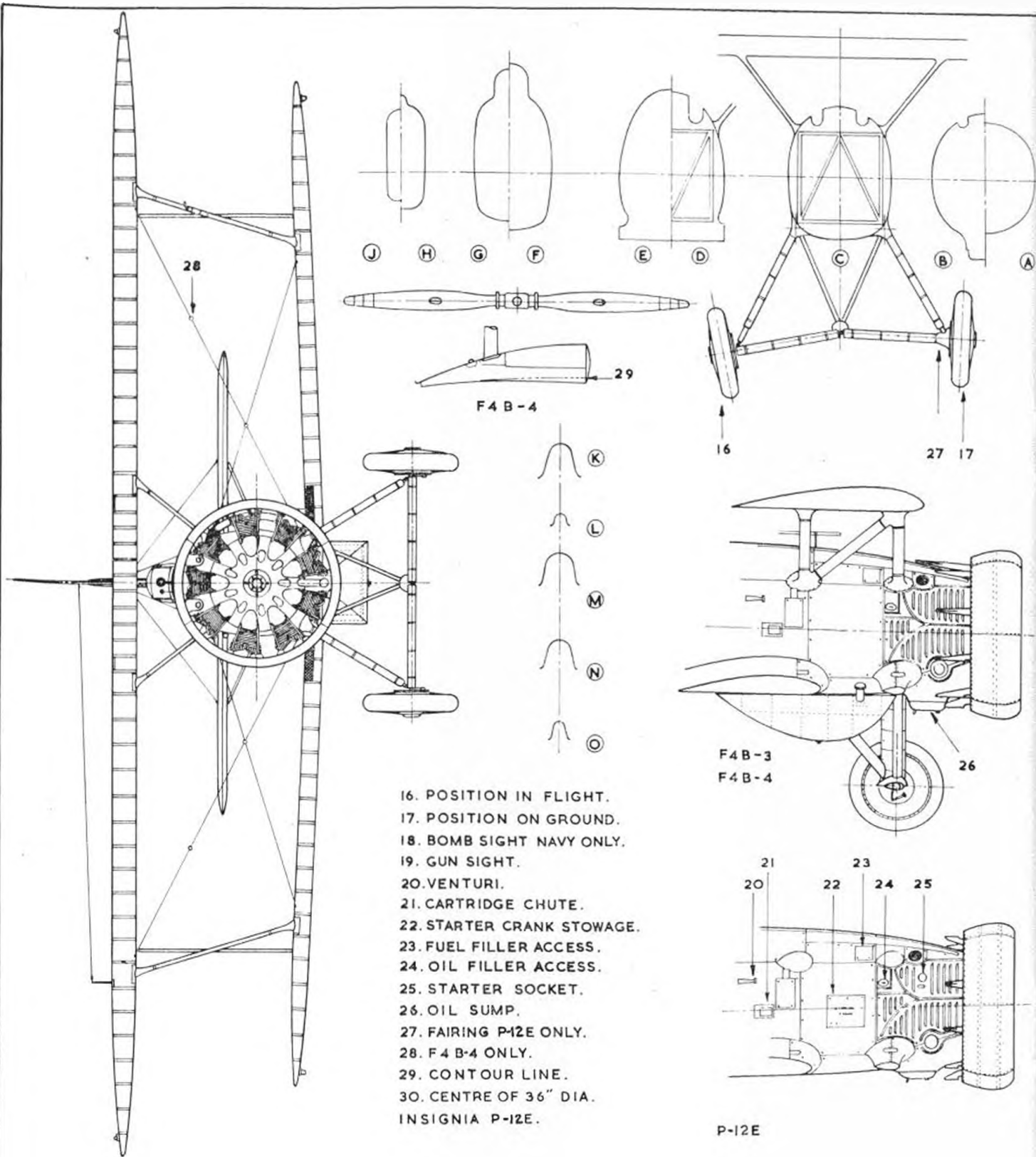
1931 saw the production of 131 P-12C and -D machines which retained the fabric-covered fuselage of the P-12B, but which had the undercart and engine cowl of the Type 218. The naval equivalent of the P-12C and -D was the F4B-2, of which 46 were built in the same year.

The first production models based on the Model 218 were a batch of 135 P-12Es and 21 F4B-3s built between September 1931 and March 1932, the last 25 army machines being converted to the improved (but externally identical) P-12F standard. All P-12E's were fitted in the factory with tailskids, but these were replaced when in service with tail wheels. The F4B-3 and P-12E have always been assumed to be identical except for special military equipment (e.g., the carrier arrester hook) but one remarkable difference has come to light which has recently been confirmed by Mr. Robert Parks and a colleague who have searched the Boeing historical records for proof of the fact that the bulkhead behind the pilot's seat slopes more acutely on the P-12, giving a bigger cockpit opening. It is tempting to speculate on the relative girths of pre-war navy and army pilots, but the reason is more credibly the disposition of military equipment inside the fuselage. The last big order for the Boeing biplane fighters was for 92 F4B-4s, the last being delivered on February 28th, 1933. This final model was substantially an F4B-3 with a larger fin and a larger headrest to accommodate an inflatable life raft. Two similar machines were sold to Siam under the factory designation 100E, and 23 more were sent to Brazil. Fourteen of the Brazilian machines were F4B-4s intended for the U.S. Navy, but the remaining nine were specially designed light-weight models.

There were further P-12 variations, but all beyond the F type were experimental conversions to test new power plants. The XP-12G was the first P-12B with a supercharged engine, while the XP-12H was a P-12D with a geared Wasp and the rounded vertical tail surfaces of the Type 218. This machine was reconverted to P-12E standard, as was the XP-12J. Seven P-12Es were fitted with fuel injectors and designated YP-12K but all reverted to standard form.



586 of Boeing's last Biplane Fighter were made. Heading shows P-12F of 27th Pursuit Squadron with orange/yellow tapered stripe over olive drab fuselage. At left is a restored F4B-4 with some touches of modernity added. Others are preserved in museums at Bangkok, Siam and Claremont, California. Markings are for Sqdn. VF-1 which served on U.S.S. *Saratoga*. Further information on U.S. Navy Markings is available as special leaflets from A.P.S. "U.S. Navy Markings" price 1/- per set.

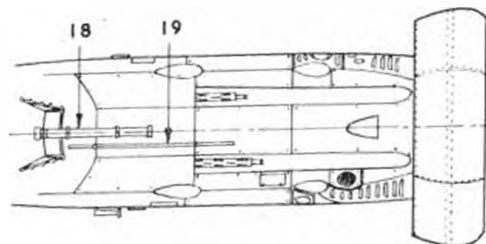


**NAVY AIRCRAFT**

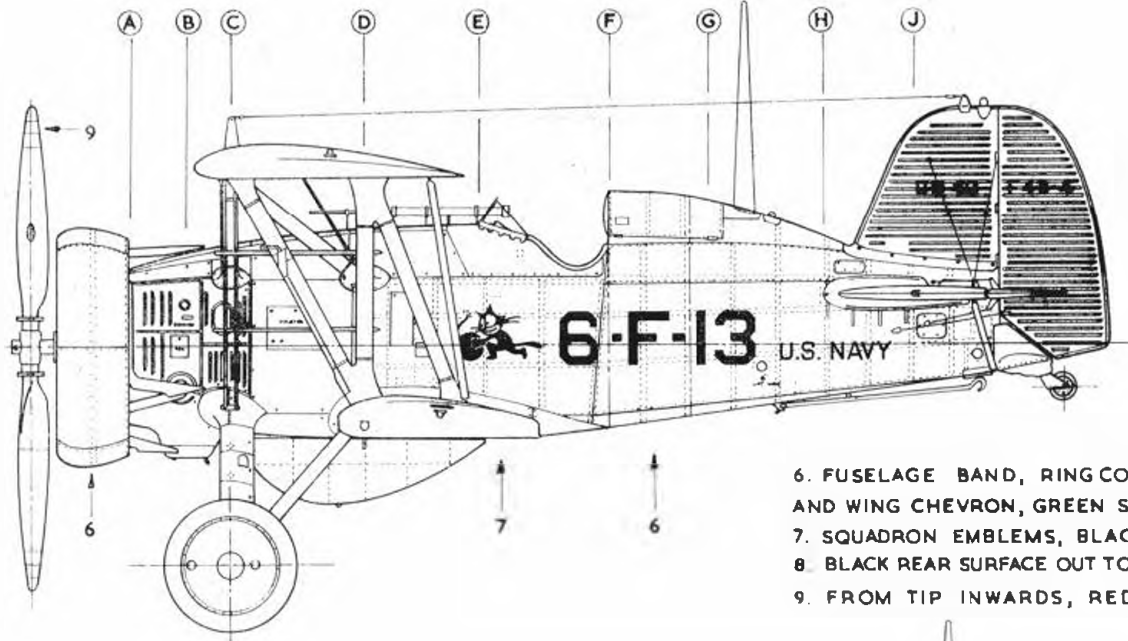
FUSELAGE, ALL STRUTS, WHEEL DISCS AND METAL SURFACES: LIGHT GREY  
 WINGS FABRIC COVERED SURFACES: SILVER, EXCEPT UPPER SURFACE OF  
 UPPER WING, CHROME YELLOW. FOR TAIL COLOURS, SEE SIDE VIEWS.

**ARMY AIRCRAFT**

FUSELAGE, ALL STRUTS, WHEEL DISCS: OLIVE DRAB.  
 WINGS AND TAIL: CHROME YELLOW EXCEPT FOR BLUE VERTICAL AND  
 RED AND WHITE HORIZONTAL STRIPES ON RUDDER.



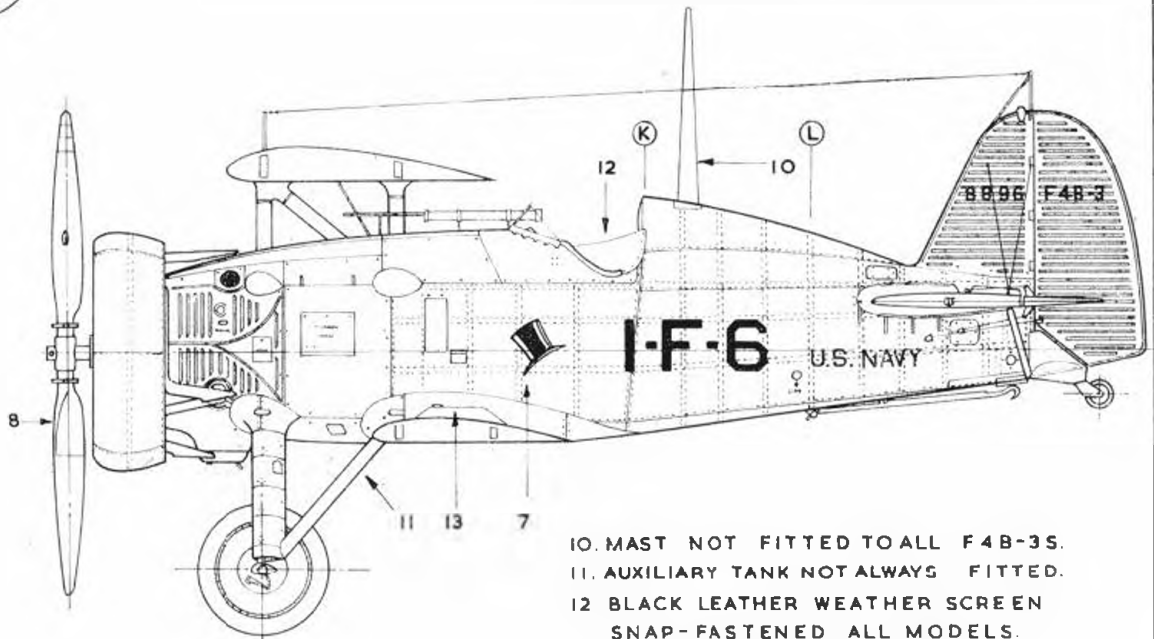
F4B-4



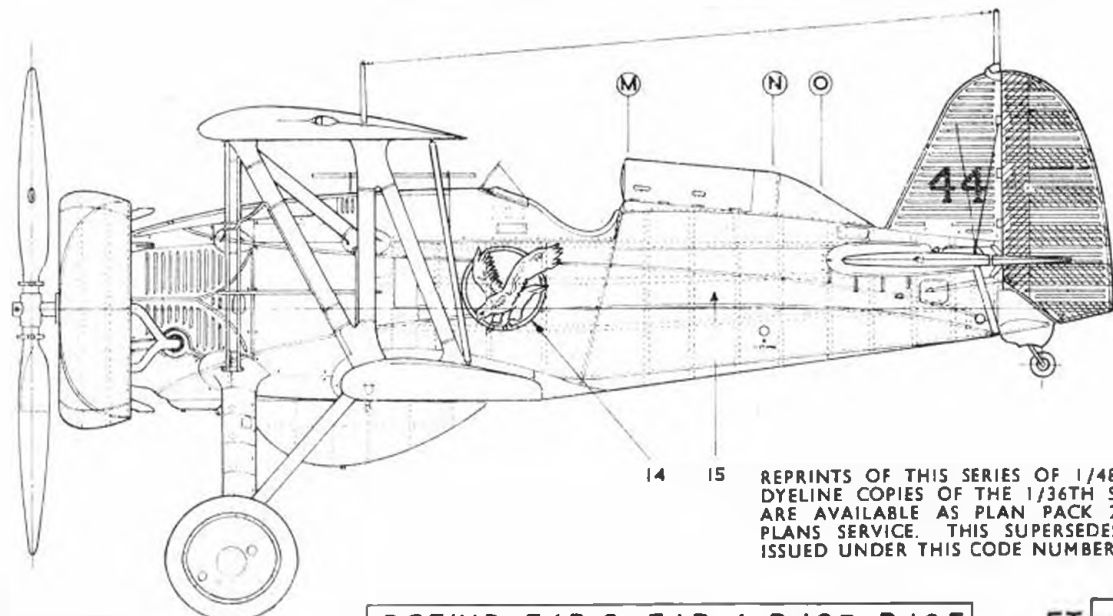
LEFT SIDE F4B-4  
SQUADRON VF-6  
ABOARD THE U.S.S.  
SARATOGA. TAIL,  
INCLUDING FILLETS,  
ALL WHITE.

6. FUSELAGE BAND, RINGCOWL, FRONT COWL,  
AND WING CHEVRON, GREEN SECTION COLOUR.  
7. SQUADRON EMBLEMS, BLACK AND WHITE.  
8. BLACK REAR SURFACE OUT TO COWL RADIUS.  
9. FROM TIP INWARDS, RED YELLOW BLUE.

LEFT SIDE F4B-3  
LEFT WING, STRUTS  
& WHEEL REMOVED.  
SQUADRON VF-1  
ON U.S.S. SARATOGA.  
ENTIRE TAIL RED.  
WING CHEVRON, LOWER  
HALF OF RING AND  
FRONT COWLS, WHITE.  
ALL LETTERING AND  
NUMERALS BLACK  
EXCEPT WHITE ON  
TAIL



10. MAST NOT FITTED TO ALL F4B-3S.  
11. AUXILIARY TANK NOT ALWAYS FITTED.  
12. BLACK LEATHER WEATHER SCREEN  
SNAP-FASTENED ALL MODELS.  
13. BATTERY HOUSING  
14. FALCON PROPER, RED DISC, WHITE OUTLINE  
15. ORANGE-YELLOW WITH BLACK OUTLINE



LEFT SIDE P-12F.  
UNDERCARRIAGE IN  
FLYING POSITION.  
27TH PURSUIT SQDN.  
P-12E SIMILAR,  
SOME WITH F4B-3  
TYPE HEADREST.

REPRINTS OF THIS SERIES OF 1/48TH SCALE DRAWINGS AND  
DYELINE COPIES OF THE 1/36TH SCALE ORIGINAL DRAWINGS  
ARE AVAILABLE AS PLAN PACK 2673 FROM AEROMODELLER  
PLANS SERVICE. THIS SUPERSEDES THE PREVIOUS DRAWING  
ISSUED UNDER THIS CODE NUMBER.

## Your TWO full size plans . . . **GiGi**

She may have straight lines but this GiGi is no slouch when it comes to performance for the sportster. In our view John Barker's latest creation is a perfect power mate for his earlier and very popular LuLu glider.



GiGi HAS BEEN DESIGNED as the minimum piece of equipment to get a motor safely and pleasantly into the air! It has several features which are valuable to the beginner, which may be disguised by its stark simplicity. Firstly, it has a low wing loading which makes it simple to trim and gives a good glide which ensures soft landings. Secondly, the motor assembly is stuck on to the front of the fuselage. This is amply strong for all normal flying and helps to prevent damage to the motor in a bad crash, and probably the rest of the fuselage, by breaking off cleanly. Thirdly, it is very simple. The author strongly dislikes flying without an engine timer but, bearing in mind cost and the fact that most commercial timers do not run long enough for a model of this type, none was fitted. To compensate for this the tank is placed outside where it can be seen until the moment of launch. Also a dethermalizer is fitted and should be set in most weathers. This gives much better chance of recovery in the event of an over-run. The undercarriage is not just decoration. Take offs are a pleasure that had fellow clubsters yearning for the old days of R.O.G. contest and it does allow the model to be placed on the ground for starting the motor.

Construction is very simple but a few notes may be helpful particularly as far as the sequence is concerned.

It is best to start by building the wing and tailplane as the motor position can then be adjusted to give the best balance. The wing follows the usual method of building the centre panel over the plan and then propping up the centre whilst the tips are built on in turn at the correct dihedral angle. One point about this method which is not usually stressed is that the propping up must be done accurately otherwise the wing will be warped. The tailplane may look weak and prone to warp but in fact it



built true and covered evenly the structure is balanced and tailplanes of this type will stay flat for years. The thin strip of tissue is removed from the centre of the tailplane, for fitting the fin, after doping.

Commence building the fuselage by taking two lengths of bearer material of a greater length than will finally be required. Drill these, bolt the motor in place, and measure the width across the bearers. The formers may now be cut to suit the bearer width. Former F1 is the same width, and formers F2, F3, F4 and F5 are  $\frac{1}{8}$  in. more than the width across the bearers.

Bend the undercarriage wire and fix it to F2 either with "Araldite", as used on the original, or make some small holes in the former and sew in place with strong thread. Groove the back of F1 to fit the wire and glue F1, F2 and F3 together.

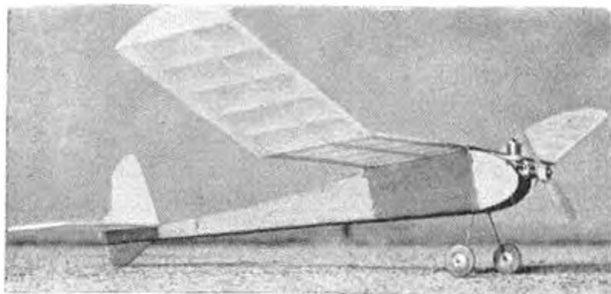
Cut the  $\frac{1}{8}$  in. sheet fuselage sides to shape noting the correct cutting line to allow for the top and bottom sheeting. Stick the  $\frac{1}{8}$  in. sq. longerons on to fuselage sides and make sure that you make one right hand and one left hand. Taper the longerons at the rear as shown in the plan view. Join the sides by formers F2, 3, 4 and 5, check for squareness

## and NIKOLINA

(Detailed instructions included on plans)

First contest to the Coupe d'Hiver specification organised by the German Aero Club was won by 15 year old junior flyer Uli Schmid from Reutlingen (picture below) flying Ehmann's Nikolina.

Nikolina offers a smaller wing area approach to the contest class than our established "Garter Knight" and has been chosen as one of our free full-size plans in response to requests for more C. d'H. models.



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This design, with slight modification, as shown in *Fig. 4*, will be accepted as a final development for some time. Before going on to this, some interim developments will be of interest.

**Detail changes**

The second 1963 A/2 (as shown in *Fig. 2*) was meant to be an improved and toughened version of the earlier model. It was certainly tougher but was also overweight and inferior in performance.

Changes were:

- (a) Increase of aspect ratio.
- (b) Re-arrangement of spars to suit tongue fixing.
- (c) Much stronger and shaped fuselage.
- (d) Slightly changed wing section.

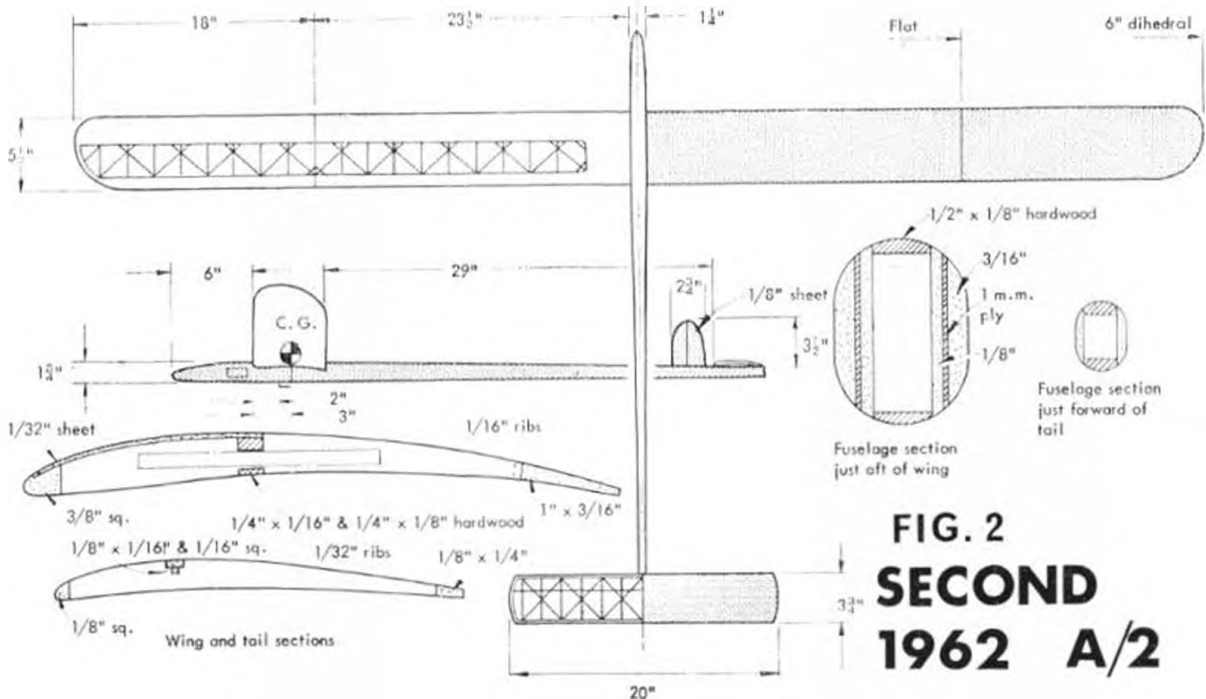
This one was kept as something to fly in conditions when I daren't fly anything else!

loped 1962 A/2, appears as shown in *Fig 1* where modifications from the original were:

- (a) The new fuselage construction.
- (b) Slight change of chord with 2 in. increase of span to bring it back to area. (Some area lost when the wings were transferred to the fuselage top.)
- (c) Top of fuselage wing mounting.
- (d) The addition of some undercamber to the wing section.

**Performance record**

Full competition results including failures were:  
 K.M.A.A.: 1st London area, 4th Country, S.M.A.E. Cup unplaced; Woking Rally: 1st; East Anglia Rally: 3rd; 2nd Eliminator: 1st London area, 2nd Country; Nationals: 5th; First Trials: 3rd; Pilcher: 6th; Trials Overall: 2nd; Northern



**FIG. 2  
SECOND  
1962 A/2**

A far more involved model (the first 1963 A/2 in *Fig. 3*) was next built. The very light Warren girder and longeron fuselage construction was used even though it did not result in minimum cross sectional area at the rear. Much thinner wing and tail airfoils were used. A decision was made that no spanwise interruptions should be present on the wing surface in an attempt to achieve as good a glide as possible. This applies especially to the undersurface where geodetic ribs and spars normally create ridges, the upper surface usually having a sheeted leading edge. This led to the Continental practice of passing the spars through the ribs, which in turn led to the use of capstrips. The problems now most evident were wing fixing and warp prevention. The latter was tackled with multiple 3/8 in. sq. braces, and the only possible wing fixing to keep the wings at the fuselage sides with some "knock off" facility was the wire brace type, as there was insufficient room for a tongue. This proved successful.

This model took two weeks to build using half the available evenings and it was no better (nor worse) than the design first mentioned. Hence, the deve-

**All drawings are to 1/16th scale with airfoils half full size.**

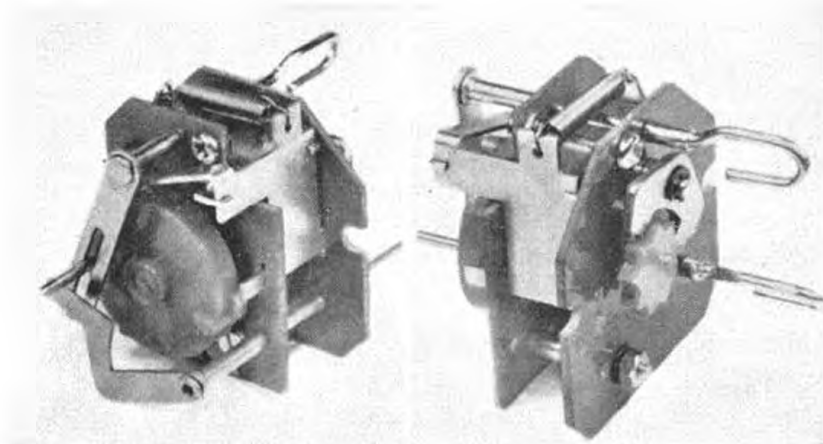
Heights Gala: unplaced; World Championship: 38th; Croydon Gala: 3rd; South Midland Rally: unplaced; Hornchurch Gala: unplaced; Blackheath Gala: 2nd; Surbiton Gala: 5th; East Anglian F.A.I. Contest: 2nd; St. Albans Gala: 2nd.

Analysis of the above led to the following conclusions:

- (1) The few dismal failures were always caused either by a repaired or a new model being not trimmed to perfection.
- (2) Although there was an amazing consistency, there were few "jackpots". This is put down to (a) very rare "re-entry". (b) not using the tactical approach of towing up under models already in lift. Since this latter approach is being used by several people, it will now be used with no compunction (when I can be bothered), despite the personal feeling that it "isn't quite playing the game".
- (3) The basic design left little to be desired for



# TRADE



Two views of the new Elmic "Compact" compound escapement show the rudder torque bar and moulded plastic drive disc at the 2nd rudder position with elevator striking bar set to be kicked when 3rd position is selected. Rattler speed control in rear view can be changed for Hi or Lo rates of operation. Below, left, "Camloc" wing fasteners at 15/-, set imported among many other novel accessories by S. H. Grainger, Wasall. Next, K.10 glider kit measures 38 in. over box length to give an impression of size and contents spilled in this photo. Bottom left, the Haltrac tool rack makes a useful workshop tidy for aeromodellers.

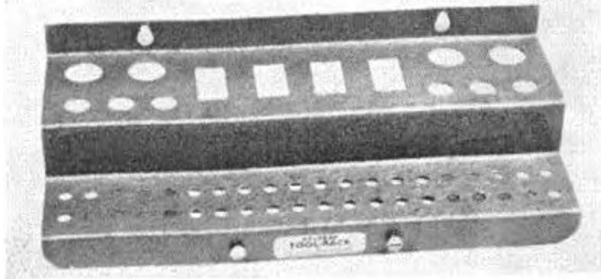
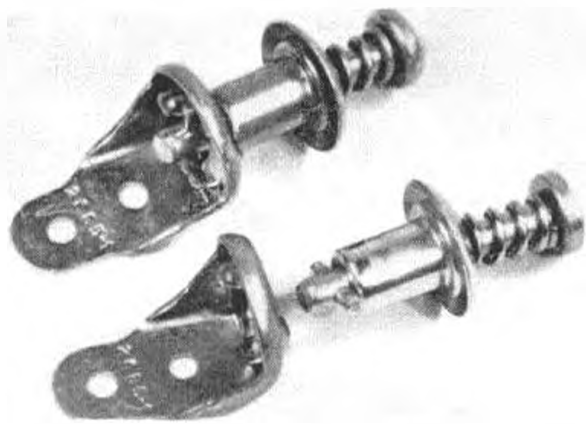
Some time ago Dennis Elmes of Scorpion Precision Co. Ltd., better known by their Elmic trade name, showed us the result of his long experiments in producing the smallest practical size compound escapement for single channel operation. We are happy to report that all the jig and tool work is now completed and the "Compact" which measures 1 1/2 in. x 1 1/2 in. over the broadest dimensions of its fibre mounting plate should soon be available for approximately 65/-. Several new conceptions are

incorporated. First impression is that nothing has been sacrificed in strength or power of operation despite the miniaturisation. In other words though small enough for the diminutive 18 in. span, .010 powered lightweights, it will be equally serviceable for a .35 powered Keilkraft Super 60. Selective three position operation incorporates quick flip trigger for secondary motor control escapement and clever designed kicking bar for the third position hold to allow up elevator. Practical features include a resistor wired in as a current economiser so that battery drain is reduced to the lowest possible and external wiring can be locked through the printed circuit contacts to avoid vibration break-away. Each Compact will be sold with an alternate rattler for speed control, which is easily changed so that the modeller can have fast or slow operation according to his particular technique. Construction, design, efficiency and capability all make this new Elmic Compact one of the most impressive rubber driven escapements we have ever seen.

Other R.C. accessories coming to our notice this month through S. H. Grainger of Wasall are the Camloc wing fasteners (15/-), Mylar hinges by de Bolt (5/-) and the latest American glow plug known as the Fireball (5/-). Syd Grainger also carries those clever brass Tatone hinges at 3/6d. per pair, as reviewed in June 1963 issue.

The Top Flite range of kit propellers and accessories are now coming in through Messrs. Ripmax, including the most useful nylon and wooden propeller sizes as well as moulded nylon control horns and bellcranks. Another very important introduction through Ripmax is the Grundig Superhet receiver, available in any of five different channels. This has proved to be very successful for simultaneous flying in its native Germany and updates the Graupner/Grundig R.C. equipment to cope with its increasing popularity and avoid having to queue for air time where several units are in use on one field. Although our initial review of the K.10 R.C. semi-scale glider by Graupner appeared back in March 1964 issue, the kits have taken their time to come through but we must say that the quality of the contents in the large box for the K.10 make the wait seem worthwhile. Designed for 2-6 channels, it is 78 1/2 in. span and comes with ready moulded expanded polystyrene fuselage, die-cut ply and sheet parts and the most explicit plans and instructions, which also give information on the full-size sailplane. Bearing in mind the recent increase in interest in slope soaring, we feel that the K.10 will become a popular kit. It is specifically designed for Graupner/Grundig R.C. equipment and therefore, call's for ingenuity if any larger gear is to be used but will accept most commercial units in the recess moulded into the fuselage. A power pylon is available to fit over the wing if you happen to live in a flat area.

An ingenious tool rack, which costs only 9/9d., has been released by Haltrac Ltd. with slots and holes prepared to store 54 tools of various shapes and sizes. We feel that this handy workshop aid will appeal to aeromodellers, not always the tidiest

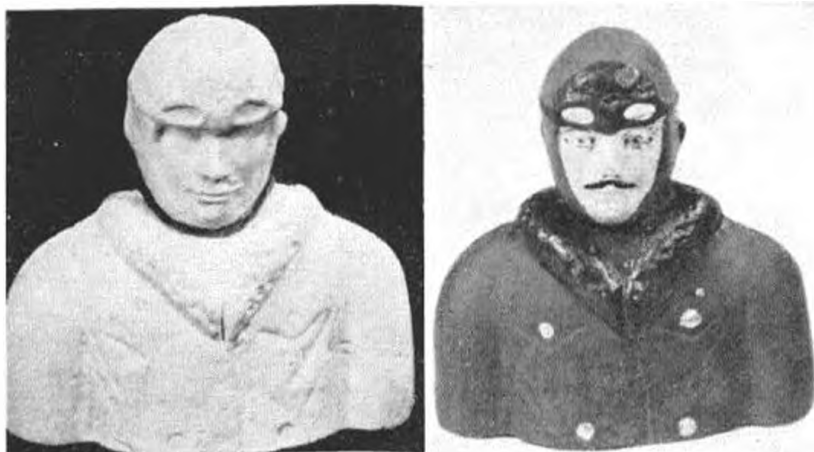


## HEGI Frechdax



# NOTES

New line in moulded pilots by Darnell Models to 1/12th scale, 3/- plus 6d. packing or 1/12th, 2/6d. plus 6d. suits all early bird models as seen on finished item at right. The pilot comes in two vacuum formed halves ready for assembly and enamel painting. Below right, Airfix Catalina in Canadian markings is camouflaged as advised in kit, a remarkable 7/6d. worth. Below it, the Frog Bristol 138A showing marking details we mention in text—an unusual and attractive model. Bottom right, first of the Blazon series of aircraft portfolios. The Hawker Hart, colour printed on stiff heavily varnished card with description and other views on rear face.



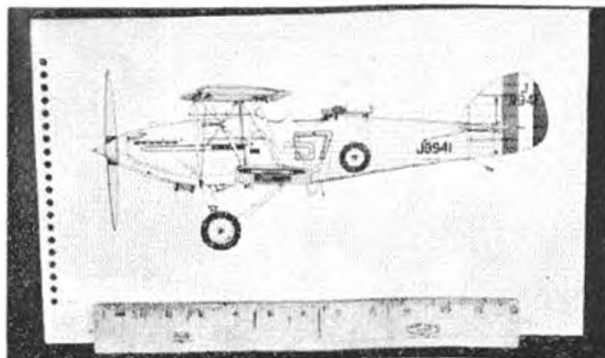
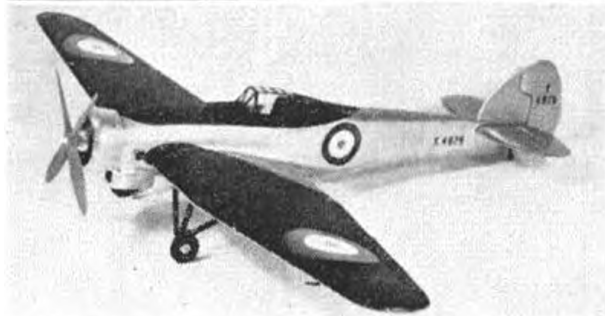
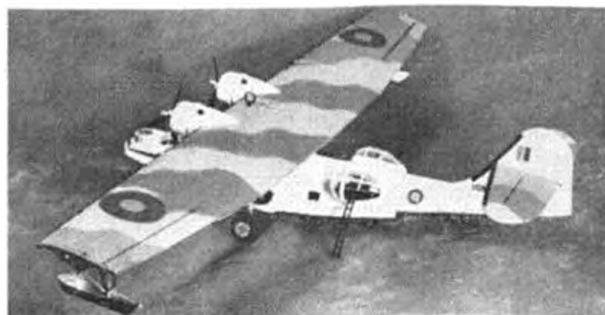
among the do-it-yourself breed. It might be a good idea for the girl friend to buy at Christmas time to save those wasted minutes lost when looking for the drill you need among the balsa shavings on the bench.

Another most useful piece of workshop equipment we've discovered is the new Steadfast Versafle. This robust rasp has a detachable, reversible plate and sells for 12.6d. with spare blades at 3.6d. each. It is extremely well made and for our money is one of the best tools we have found for roughing out block shapes and carving propellers.

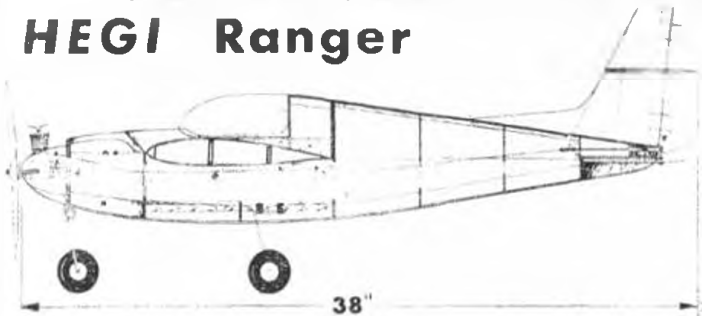
New plastics of the month are unusual subjects. Frog released the Bristol 138A in their "Trail Blazers" series and this builds up into a great little model of the famous World Altitude record breaker of 1936/7. Its achieved altitude of 53,937 ft. established on June 30, 1937, by Flt. Lt. M. J. Adam was a tremendous effort of that time and the model is very impressive for its unusual shape and black and silver colouring. The kit could well do with a little more explanation concerning the colouring, especially the attractive shape of the black upper wing surface decoration as it laps over on to the fuselage at the leading edge. Only the engine cowl, supercharger cover and front of the nose section should be bright polished silver. The main body of the fuselage, tail surfaces and wing undersides have semi-matt silver finish and the undercarriage should be black, not silver. Ardent scale enthusiasts will soon detect that the pilot is approximately half size but apart from these criticisms, we very much enjoyed making up the model and know that for a modest 4.6d. it will remind many younger modellers of British aviation achievements in the past. The Airfix offering is a Royal Canadian Air Force PBV-5A Catalina (or Canso), a model which goes together beautifully to make a large display subject rather akin to the popular Airfix Sunderland. One of the very few failings of the kit is that inevitably one is left with a model which simply will not sit properly on its tricycle landing gear. There was no stand provided in our kit although mentioned in the instructions, and so one has to use the ladder as a form of prop. Airfix are, of course, not alone in overlooking this point and we are sure that modellers would appreciate a mention in the instructions to the effect that nose weight should be added during fuselage assembly. The markings are unusual and the suggested camouflage pattern quite strange to our eyes. The Catalina lends itself to a wide range of bright colourings in various Air Force markings and will be a very popular addition at only 7.6d.

Two Schuco kits from Germany for radio control designs, the Heigl "Frechdax" (Sausage Dog) for single channel and Heigl Ranger for up to 6 channels are on our work bench being constructed for future tests. Each is a practical, well kitted model and in particular we like Frechdax for its robust approach to single channel sport flying with the scale-like appearance of a Piper aircraft. More about the airframes and flight performance of these later (also the prices when the import tariffs have been

applied) but for the moment the really big announcement in connection with these kits and their distributor F. Allen is the establishment of a new partnership. This is Messrs. Allen-Scott, combining the talents and enthusiasm of two well established and respected traders in the North West, Roland Scott and Frank Allen. As this issue appears on the news stands they will have opened two new shops, one in Shude Hill, Manchester, and another down south at 581 London Road, Isleworth, Middlesex. Roland Scott Ltd. will continue to operate from the established address in Bolton and F. A. & F. Allen Ltd. at Poynton Model Centre, Cheshire, where they have established a most efficient radio repair agency and distribution centre for Metz radio control.



## HEIGL Ranger



38"

# ROUND THE RALLIES

(Detailed results available on request from Editorial Office)

IF ANYONE DARED forecast that from August to beginning November, almost every model meeting was to be blessed with fine, sometimes idyllic weather, he would have been open to ridicule. Yet the facts are that only the first two and the ninth rounds of the free flight (appropriate!) Trials to select British teams could be said to be ineluctant and of those fine meetings, results are below and pictures overleaf. First in this round-up we flash back to August 23rd now that more information is through on the **Woking DMAC Gala** at Chobham. Though only R. May made a full score (in rubber) this was a very pleasant and satisfying meeting with the honours widely spread about the country, O'Donnell placing 2nd to G. Kent in Coupe d'Hiver and beating Dave White down from York in Glider. Portsmouth lads Carrimore and Head took the lead in power, and Dave Hipperson collected another JA win.

Most busy weekend was September 26-27th. Lacking in numbers (about 100 present) but distinctly 'up' in quality—especially in radio-control, the **RAFMAA Championships** at RAF Debden were notable for their encouragement of A11 Glider and a 'Scramble', which are otherwise shunned by rally organisers. A11 performance with a 7:14 win by Sgt. French and others only sees, behind prompt the thought that others are missing something. Sgt. Anderson collected sufficient prizes to become Victor Ludorum—he's pretty well 'traced' with all those models... 'Cole trane', etc.—why not 'Eye's trane' Andy? Thanks for a fine meeting Wing Cdr. Baddeley, F/Lt. Jones and Co., the Championships is invaluable for the way it brings everyone together, and all of them ready to learn something. Civvy intruders Godden (Cambridge), Dixon (B/H/M) and Woodhouse (Norwich) took first three placings in the 'Thurston' for Wakefields, which accounts for their absence from the two other rallies on the same date. Down at Gt. Buckwood Farm, the **Crawley Club** were host to a mainly southern entry for seven events covering free flight, Combat and Radio Control. Pride of place in the honours list goes to 'Stoo' Holland who for the 3rd time running collected the B.E.A. 'Trident' trophy for Combat with 'Flindie Bunt', which will appear in an early issue. Fred Boxall used one of his 'newer' (1959) models to make the only full max score (Rubber) to win the BUA 'Safari' Cup, and appropriately

named Dave Glue took the Bowthorpe Cup for Glider. Croydon members dominated in Power (Cornell with his O.D. 'Dynamic' 8 c.c. and 'Super Fury'—winning open, and Hipperson adding another JA to his list) while, wonder of wonders, the Junior Champion K. Taylor of Sussex is not a club member—some-one per-lease snap him up quickly! Crawley's clash of dates with the **South Midland Area Gala** at Cranfield was regrettable unavoidable due to airfield availability. (Next year, South Midland will be September 11th and Crawley, September 19th.) At the College airfield, more onlookers and entrants turned up for fewer organising personnel, but only in Team Race was the hospitality below par—thanks are due to Novo's and Hinckley members for seeing F.A.I. through. Twelve events, with fly-offs for 12 in Rubber (won by R. Lennox at 5:31), four in Glider (A. Turner of Southampton winning; but J. O'Donnell unluckier through having his dt timer race away when the model was going up in lift), three in Chuck Glider (won by P. 'The arm' Bayram of Lincoln), and three in Power (see picture of P. Perry) were amply supported. Sign of the times is that 32 entries actually flew in the free-style multi R/C event, and a further 19 in single control. The R/C turn-out was one of the biggest ever seen in the U.K. Tom Jolley led C.I. stunt, R. Sibald the well run (by Luton DMAS) Combat and Dave Balch JA T/R in 8:30 for the final, though Pacey Howarth had a 3.52 heat (Fiber Cub).

October 4th was another date clash. At Ivinghoe Beacon, the calm defied attempts by heavyweights to slope soar for the **Luton DMAS** events, but offered a spectacle for onlookers who basked in the warmth of an unusual day. Nightingale and Teakle, R/C winners, were a delight to watch and must have inspired many

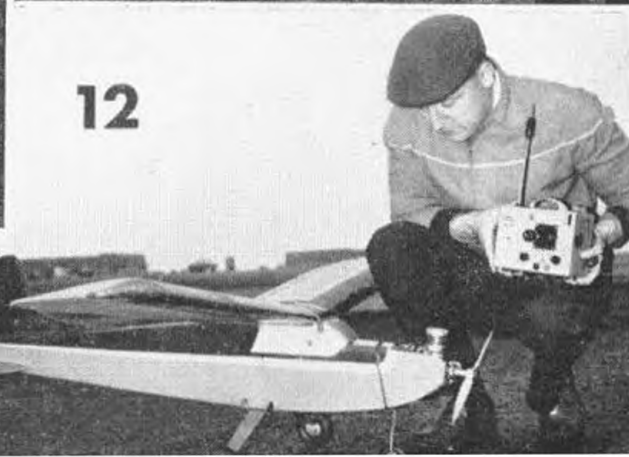
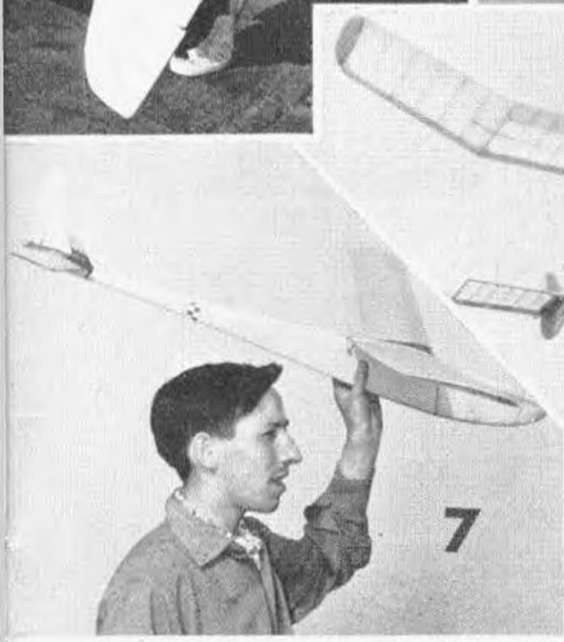
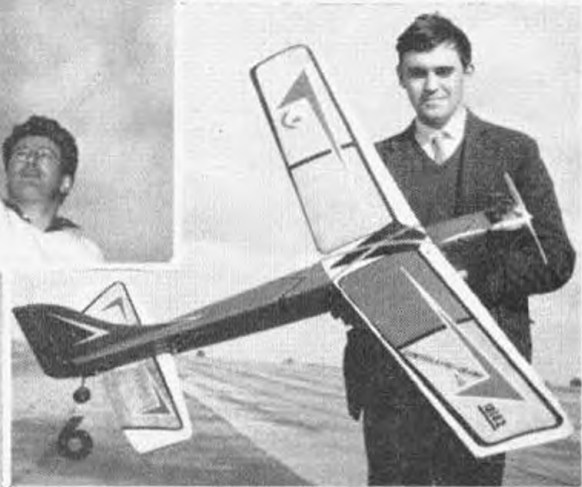
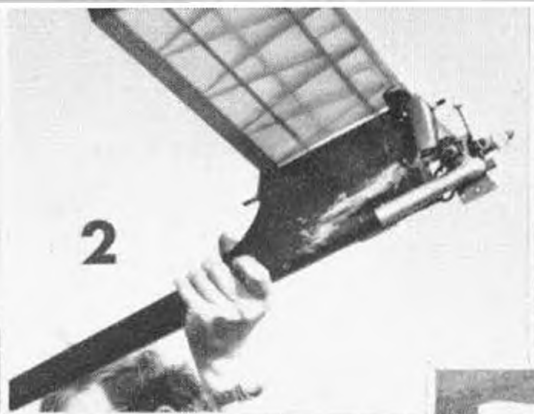
more to 'have a go'. Free flight was a triumph for St. Albans' Don Edwards and his swept wing 'Super Woggis', a 70 in. lightweight of 22 oz. which had been made in 22 hours and enlarged from his 34 in. all-sheet design used by C. Booth to win the Chuck Glider event Pendulum Controlled nose vane is used. Down near Eastbourne, the **South Coast Radio Gala** at Golden Cross offered multi-channellers another five minute 'free choice' schedule with Frank Knowles leading followed by Ed Johnson who also won pylon racing (1:48). A miss of only 6 ft. 8 in. by Wanstead's Roy Campbell (see picture) won single control spot landing.

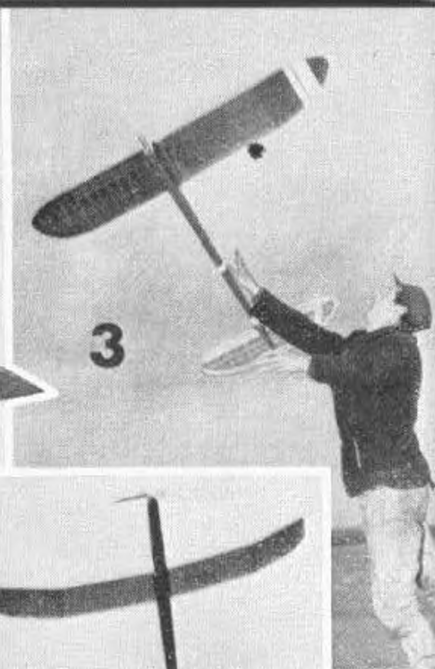
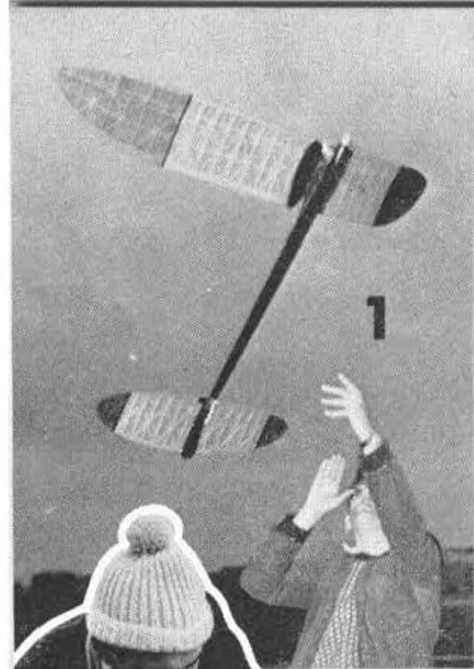
Meanwhile, way off at RAF Hemswell, the **SMAE Area Championships** attracted teams from only five Areas, and one of those (Midland) only fielded team racers. Clear leaders yet again are the Northern Area through powerful individual performances by Pool (2nd Rubber), Taylor (2nd Power, 6th Glider), Wiseman (4th Glider, 3rd Rubber) plus Horton (3rd) and Long (4th) in Team Race. Only the North West gave them real competition with Picken (1st Rubber), Savini (3rd Power) and Millachip (2nd Glider). Perhaps the proximity of Trials had its influence, but we doubt it, these Area Champs. seem to lack attraction, even when held in perfect weather, little breeze and cloudless skies with disasters like Walsenholme's rubber explosion to offer dubious entertainment. The rear peg came adrift, the motor flew out complete with prop., breaking the fuselage in two so that a wingless tail and a tailless wing were able to descend as 2nd and 3rd components of a destructive exercise.

1 Roy Campbell of Wanstead, winner of spot landing at Golden Cross with Cox powered Junior Falcon. 2 First silenced free flighter seen is George Cameron's cigar canister fitted Enya 15 at S.M.A.E. Area Championships. 3 Unusual team racer shape by Hinton/Waterland of Hunts M.A.C. is "Teamwork IV" with Eta 15 seen at South Midland Gala. Even more unusual is 4 by Dennis Nixon (Hinkley). This "Rara Avis" is 27 1/2 in. span, 19 in. long for pusher Eta 15 with cabin in nacelle. Dennis was co-opted into organising so did not fly. 5 In South Midland glider fly-off D. Rose (Leicester) placed 2nd using modified A.P.S. sheet wing "Daedalus". 6 Single control winner at Cranfield, Bob Tom of South Wales R.C.M.S. used four out of Contralire 10 ch. Superhet in Merco 35 60 in., 4 1/2 lb. design. Bob won by a large points margin. 7 At Luton Slope meeting, Geoff Fellowes of Kidderminster was 3rd in single channel. 2nd in multi, flying manually pulsed McQue lightweight model. Geoff was our Golden Wings trophy winner back in 1955. 8 Winner of multi slope soaring was P. Teakle (Western) flying modified A.P.S. "Aries" with lifted tail and F & M Matador/Midas using 4 channels for rudder/elevator. Model weighs 2 1/2 lbs. and was being flown for first time. 9 Open power winner of fly-off at Cranfield, P. Perry (Birmingham) with Cox Tee Dee Special. 10 Cranfield T/R winners in F.A.I., B. Langworth and K. Carvosso (West Essex) with long range Oliver powered entry completed 10 miles in 10:37.5. 11 At R.A.F. Championships Sgt. Brian Emery piles on open rubber turns with F/Lt. Norman Parker holding. Brian placed 3rd. 12 Impressive demonstrations were made during R.A.F. Champs by F/O J. D. Armstrong from Basingstoke with McCoy 60 powered Keilkrantz Super 60 controlled by R.C.S. Tetraplex proportional, a number of which we have seen being used in recent competitions. Model placed 2nd in pylon racing.

## SMAE TEAM SELECTION TRIALS FOR 1965

WAKEFIELD		1st					2nd		Total
Name	Club	Trial	1	2	3	4	5	Trial	
1 G. Lefever	Norwich	13:14	3:00	3:00	2:25	3:00	3:00	14:25	27:39
2 B. Rowe	St. Albans	12:25	3:00	3:00	3:00	3:00	3:00	15:00	27:25
3 D. Morley	Lincoln	14:01	2:16	3:00	3:00	3:00	2:05	13:21	27:22
4 A. Armes	Hays	12:37	3:00	2:51	2:37	3:00	2:51	14:19	26:56
5 J. O'Donnell	Whitefield	11:46	3:00	3:00	3:00	3:00	3:00	15:00	26:46
6 R. Godden	Cambridge	12:42	3:00	2:34	2:31	3:00	2:52	13:57	26:36
A/2 GLIDER									
1 D. Tipper	St. Albans	14:21	3:00	2:59	3:00	2:08	2:09	13:16	27:37
2 A. Young	St. Albans	10:54	3:00	3:00	3:00	2:43	2:26	14:09	25:03
3 J. O'Donnell	Whitefield	10:53	3:00	3:00	3:00	1:46	3:00	13:46	24:39
4 A. Wisler	Croydon	11:57	3:00	2:45	3:00	1:07	2:18	12:10	24:07
5 R. Godden	Cambridge	11:06	3:00	1:33	2:37	2:10	3:00	12:20	23:21
6 E. Black	Scotmac	9:30	3:00	1:47	3:00	2:50	3:00	13:37	23:07
F.A.I. POWER									
1 J. Savini	Wallasey	13:46	3:00	3:00	3:00	3:00	2:58	14:58	28:44
2 M. Gaster	Surbiton	12:47	3:00	2:51	3:00	3:00	3:00	14:51	27:38
3 P. Manville	Bournemouth	12:46	2:51	3:00	3:00	3:00	3:00	14:51	27:37
4 D. Posner	Surbiton	12:33	3:00	3:00	3:00	2:32	3:00	14:32	27:05
5 G. French	Essex	11:34	3:00	3:00	3:00	3:00	3:00	15:00	26:34
6 D. Wiseman	York	11:40	3:00	3:00	2:40	3:00	2:36	14:16	25:56
RADIO CONTROL (Second Trials only)									
		1st	2nd			3rd		Best 2 Flts.	
1 S. Foster	Lincoln	1505.0	1684.5			1814.0		3498.5	
2 C. Olsen	C.M.	1654.0	1707.5			1694.5		3402.0	
3 F. v. d. Bergh	Bromley	227.5	1709.0			1661.5		3370.5	
4 P. T. Waters	South Wales	1707.0	1471.0			1634.5		3341.5	
5 G. Pike	Nottingham	1219.0	1469.5			1490.0		2959.5	

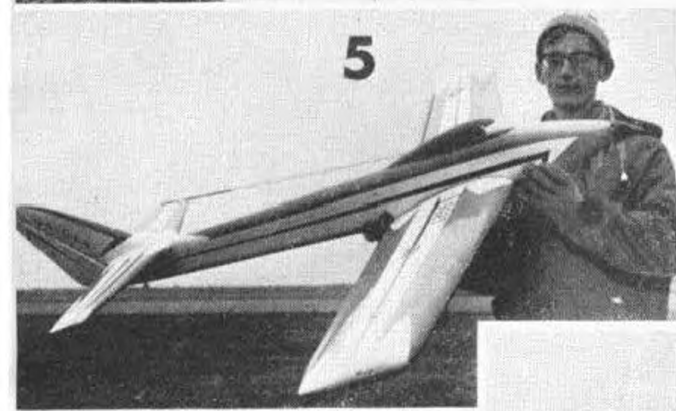




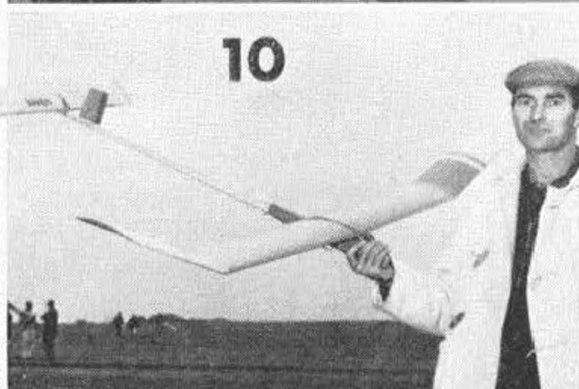
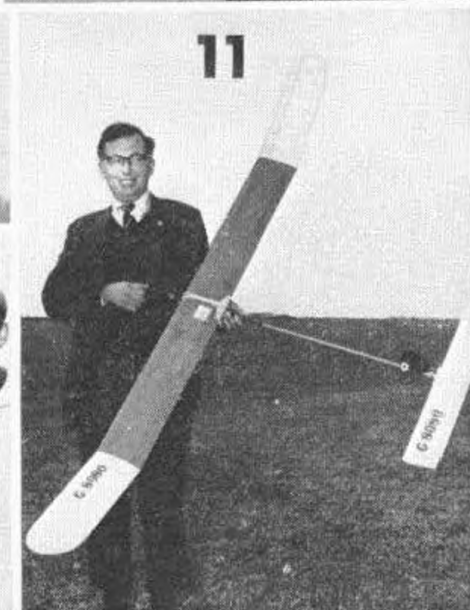
**2nd BRITISH TEAM SELECTION TRIALS**  
(R.A.F. Hemswell, October 10th/11th)

**POWER.** Most impressive engine of the meetings was Mike Gaster's home constructed glow 2.5 using Cox style twin transfer twin exhaust system with E.D. racer general dimensions and type of crankcase. Mike's "Gastove XX" (photo 1) only dropped 9 secs in last five flights to continuously ho'd 2nd place. Identical performance was established by Peter Manville (Bournemouth) seen with his uncle in photo 2 who maintained 3rd place only 1 sec. behind Gaster. Clear leader, in pic. 3, was Joe Savini (Wallasey) now hastily applying for British naturalisation papers. Joe's "Faital" led throughout and flew as though on rails with new Super Tigre G.15. Should Joe fail to become a Briton, Dave Posner fills his place from a close 4th position.

**RADIO CONTROL.** Dominated by young Stuart Foster's (Lincoln) performance, who led both trials with Orbit controlled Merco .61 powered "Nimbus" seen in pic. 4. Closely chased by Pete Waters (South Wales) in pic. 5 with new short nose, extra thick enlarged fin version of Merco 61 powered 6 1/2 lb. "Altair-2", who was really out of luck when obliged to fly in rain. In overall performance of the two trials, Chris Olsen with F & M equipped "Uplift" narrowly edges out Frank v.d. Bergh's latest "Stango" (Orbit-Merco 61) into 4th place. **WAKEFIELD.** Coming through as in '62 from 8th in the first trial, Bruce Rowe (St. A'bans —pic. 6) returned a



perfect 15 minutes score over his last five flights to gain an honourable 2nd place in team. He was led by Geoff Lefever (7) who hovered from 3rd to 1st place throughout, having highest, fastest climbing Wake on the field also only single blade prop! After leading first trials Derl Morley (8) slipped to 3rd place and had incredible luck after propeller detached to give him 2nd chance in a bad flight. He had mistakenly made up a motor into 16 strands! **A/2 GLIDER.** (9) leader from start to finish, Dave Tipper (St. Albans) led fellow club-mate Tony Young in 10, where sheeted wing surface with turbulator is in evidence. John O'Donnell (11) finally edged out Al Wisner for 3rd place.







# Club & Contest NEWS

## Display Brings Cash in at Leicester

Well known for their excellent club organisation Leicester M.A.C. surpassed all previous efforts with production of a neat 20 page booklet titled "Aero Modelling with the Leicester Model Aero club". For a nominal 6d. the reader finds a great wealth of information detailing all types of models in simple everyday terms. Distributed on their stand at the recent "Leicester Home Life Exhibition" where the club arranged an extensive display of models and engines, ranging from a microfilm covered indoor model to an 8 ft. span radio job, over 1,500 copies were sold. To educate the public "how it's done" a glider was constructed during the show and raffled when completed. Over 900 small models were sold to visiting children. Result is that the treasurer reported the exhibition a great success for boosting the club funds, not to mention excellent local publicity.

(See photo above)

## On the Spot at Watford

Annual Radio Control Spot Landing Contest for members of Watford Wayfarers, was held at Croxley Moor on October 18th. Under almost perfect weather conditions nine members flew three rounds each. It was rich for Roy Bale to show the rest the way home with a landing error of 10 ft. 3 in., flying a Pee-Wee powered 20 in. version of all-sheet "Ti-Dee" (R.C.M. & E., January '64). This tiddler flies a treat with Kraft Rx and Conquest escapement. Other popular single channel spot landers are the Graupner Topsy, Wildfire biplane and Veron Deacon. Local modellers are invited to club meetings at Derby Road Primary School, Watford, on the last Friday of each month at 7.30 p.m.

## Battle of Britain Show at Biggin Hill

Five members of Bromley R/C Club gave a display of radio control flying during the R.A.F. flying display at Biggin Hill. Frank van den Bergh nearly "shot down" a Piper Aztec taking off on a Joy Trip, when having a practice flight, and Bill Lowe crashed his Super Tigre .56 pylon racing delta only to have a full size crash tender race off to retrieve the remains! Apart from these thrills the enormous crowd enjoyed an aerobatic display with proportional as well as reed gear which should have left a favourable impression of the hobby.

## Essex Capers

Though not often mentioned in this feature, Colchester M.A.C. have been active contest entrants this season. Herman Ramsey made second to J. O'Donnell in glider at Cranfield and the Wright/Chaplin team came 5th in JA T/R. Brian Phillips pranged an F.A.I. team racer by cutting the "up" control line wire when thoughtlessly launching his power model. Just unwind from the control line circles. Result, instant team racer rubbish. (Cries! this was Clubman's fastest F.A.I. racer). Winner of the Annual JA Combat Contest was Roy Bloomfield who beat Brian Phillips in lively final.

## Lady Members

Urmston & D.M.A.C. recently held its A.G.M. and it was revealed that of the 35/40 membership eight lady members were "fully paid up" and of these, six are active control line flyers, hoping to beat the male club section at their own game (modelling of course). We are informed that most of the lady members have been in the club some years and this is no passing fancy!

## Whitefield Go Ready-to-Fly

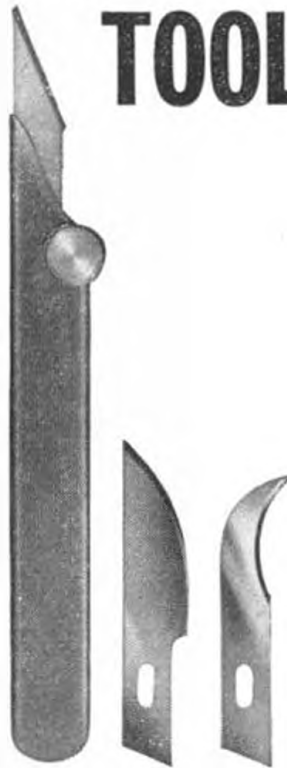
A club comp. for ready-to-fly sheet halves rubber model's sold on the field, produced a large entry in Whitefield M.A.C. Winner was control line stalwart Cliff Coffey making 76 seconds (best 3 of 9 flights). Leading single flight came from Eliot Horwich with a 30 second hop after the contest when taking a rest from his radio control flying.

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# UXBRIDGE

## Control line Rally

Held on October 11th, Uxbridge Combat and Rat Race Rally had a cold weather start. In the first round of combat "Stoo" Holland flying his "Flügel Bunt II" was knocked out by S.bald of Sidcup after a hectic bout. Luton Combat team were present in force and had the largest number of entries from one club to get through the first round. In the semi-final "Moggs" Morris from Northwood just managed to come out on top of D. Sirmur from Sidcup. Pete Tribe also won his semi, defeating King from Luton. This resulted in an all Northwood final between Pete Tribe and "Moggs" Morris, starting in semi darkness. Within a few minutes Pete Tribe came off second best in a mid-air collision losing his tank in the process. After a frantic search for it by the pit crew in poor light, they gave up and fitted a new one. Moggs Morris was the winner. Of 30 entries in Rat Racing 21 recorded times in the first round. There was one F.A.I. team racer entered by Alan Dell and this managed the third fastest time of 3:57 against many engines over twice its size. Ray Meekins (Hatfield) made second fastest time of 3:53. The final was between D. Balch, R. Meekins, S. Skitt and D. Day. All four models got away to a good start, Ray Meekins ran into bad luck on his 115th lap with an airborne shaft run. Dave Balch went on to win with R:18. Combat (52 entries), 1 M. Morris (Northwood), 2 P. Tribe (Northwood), Rat Racing (30 entries), 1 D. Balch (Fletham/Hayes), 2 S. Skitt (Wolves), 3 D. Day (Wolves), 4 R. Meekins (Hatfield).

# LONG EATON CELEBRATION

Long Eaton D.M.A.C. celebrates its 10th year in November and their latest venture, an exhibition in a local library was a success. Everything from chuck gliders to a six channel radio model was shown and the total was forty models on display. Plans and display cards detailing various aspects of the hobby hung in the main lending library and a display cabinet with home built and commercial engines was also on show. The new East Midlands Airport project was represented by a model of the proposed terminal buildings.

## Radio in the Hills

The Cotswold Radio Control Society is still an expanding club. Multi-rigs both superhet and super-reen are increasing in number and even "Tetraplex" is in the offing (as it happens for the club treasurer). But the die-hard single channel button pushers still have their place in the club, who fly everything including "Waveguide, Robots, Soraco's and Viscounts".

Whilst an "Uproar" and a "Soraco" were making a simultaneous take-off, the Soraco with steerable nose wheel made some very peculiar gyrations just after release. It collided with the Uproar which proceeded to execute a barrel roll over the Soraco at zero feet! Result was an Uproar with a smashed wing-tip, a broken spray-bar but a completely unscratched Soraco. Another pilot practising low level passes with another Uproar decided to show just how skilled he was, by flying at 45 m.p.h. under the open back doors of a parked van, losing all three wheels and his undercarriage legs, also bending his panic button in the process.

live-part demonstration in under 30 minutes. The first part of the demonstration is the flying of a scale 6 ft. wingspan North American Mustang. This model really attracts the crowds for the second part of the demonstration which is a 70 lap rat-race with three 2.5 c.c. models. The third part of the display is that of stunt flying by Stan Robinson. Fourth part is balloon bursting followed by an exciting fifth and final part of a World War 2 combat duel between a German Focke Wulf 190 and a Mk. 14 Spitfire.

## New Enfield

Enfield and D.M.A.C. have now reorganised themselves and regained some of their old enthusiasm as well as an excellent local flying field where all types of models are flown. Their club meetings are now held on the second Monday of each month at the George Spicers School, Southbury Road, Enfield. In the contest field, Johnny Beer gained a 1st at Ivinghoe and a 3rd at Clywd in the recent radio control slope soaring.

It has been suggested that the club should run one of their Control Line Rallies again, but they are uncertain about the suitability of running team racing over grass.

## COSMO DEMONSTRATION TEAM

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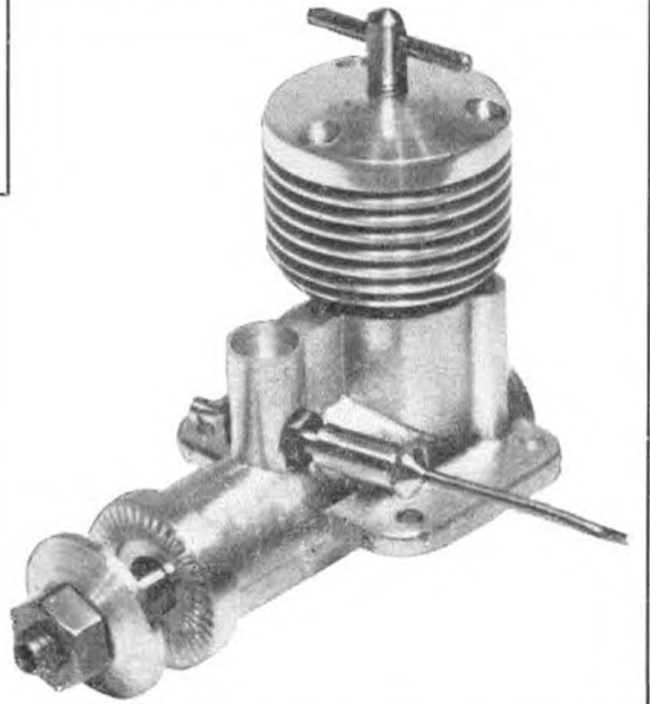
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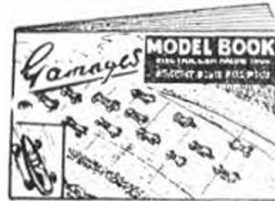
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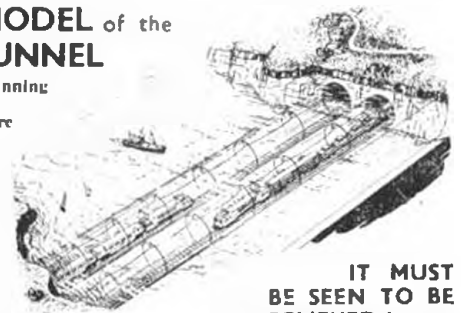
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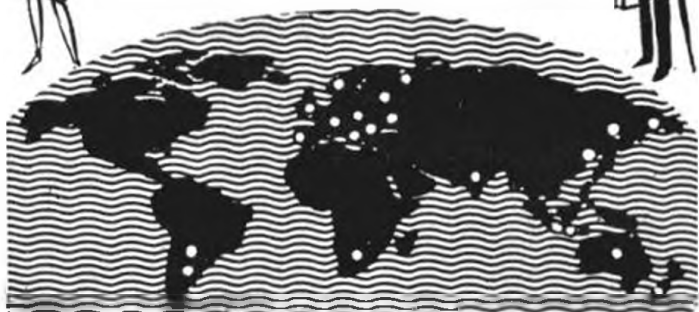
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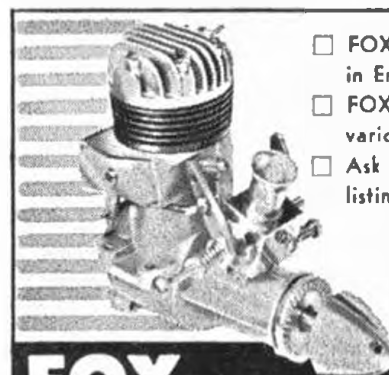
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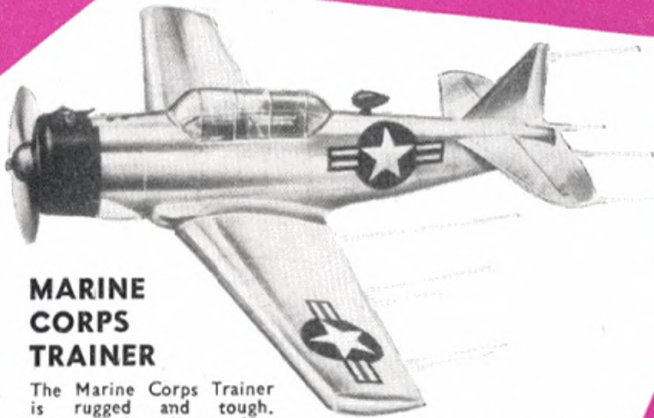
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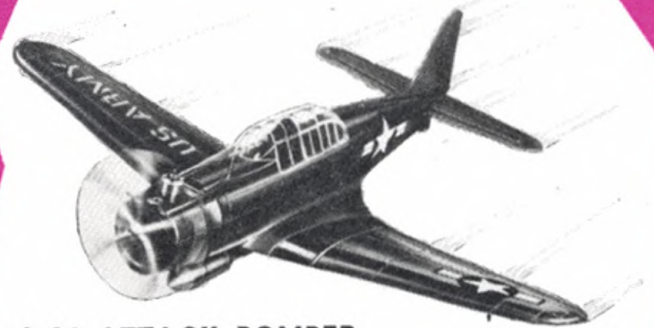
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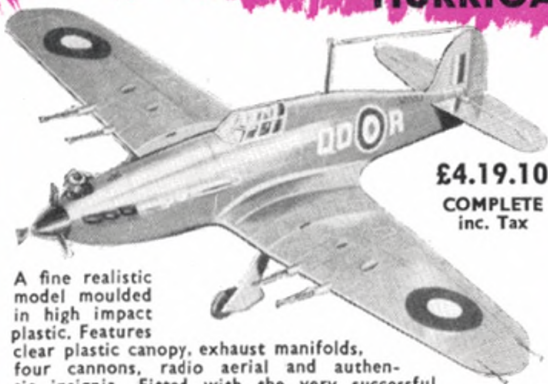
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