JUNE 1955

AERO MODELLER

135

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1'6

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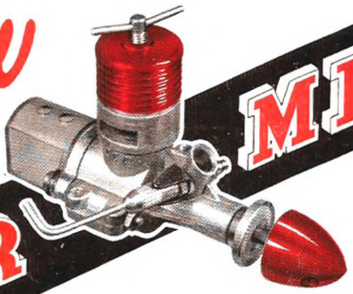

We are proud to present the latest Allbon engineering masterpiece which fulfills the exacting requirements of fastidious modellers the world over. Power, flexibility, easy starting, and long life, are all blended in this outstanding motor which is guaranteed to give many years of faithful service.

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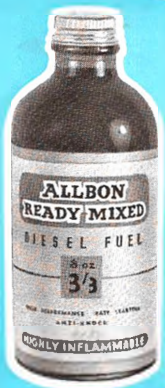

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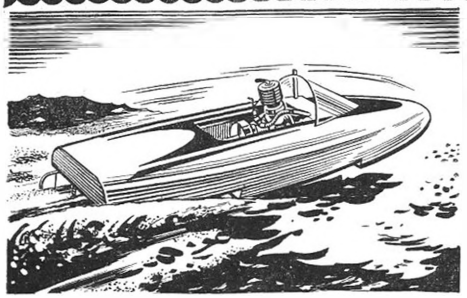

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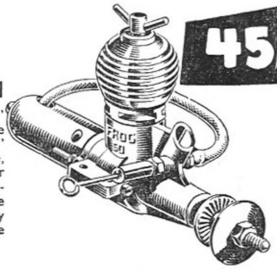

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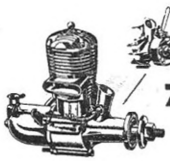

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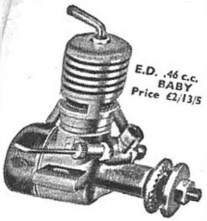

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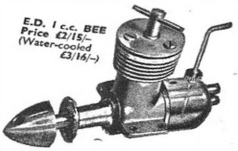

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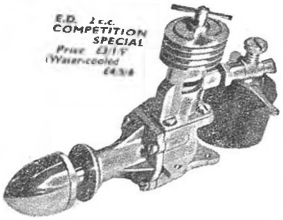

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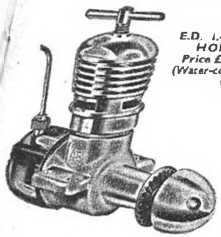

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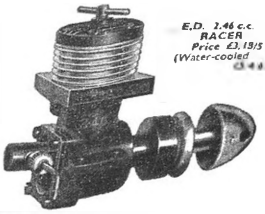

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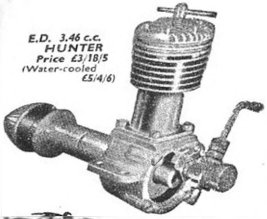

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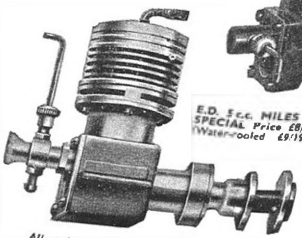

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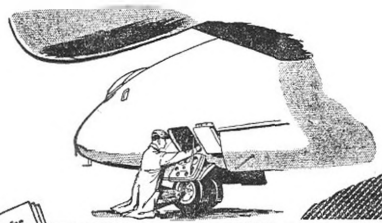

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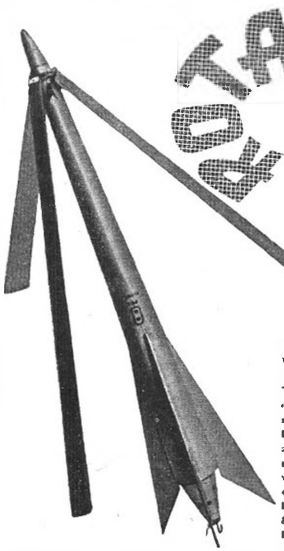

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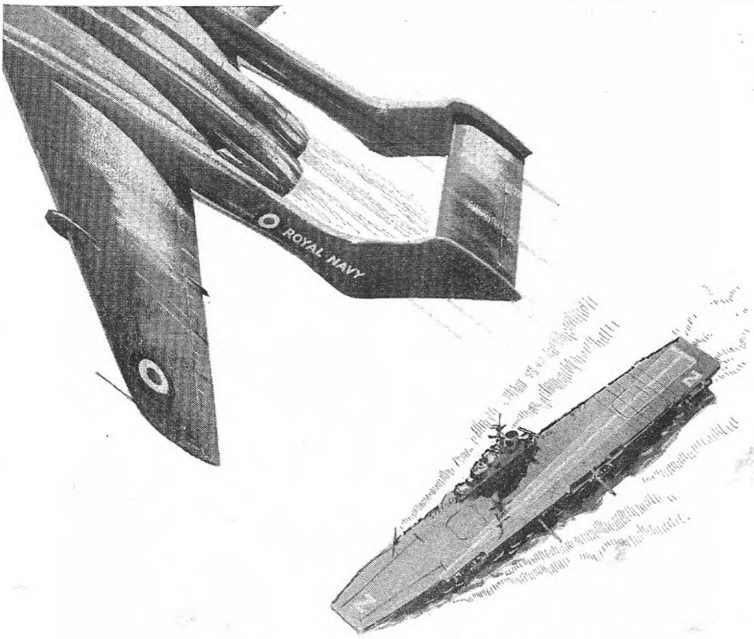

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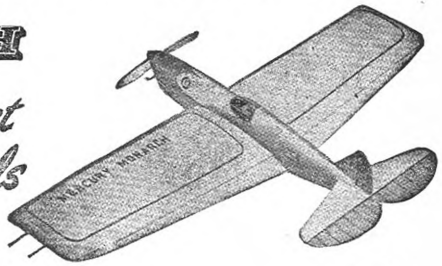
MONARCH

Acclaimed the finest of all stunt models



Everything the control-line stunt-enthusiast wants is in the MONARCH—pleasing, modern proportions; great manoeuverability; and rugged construction. It has contest performance in the hands of experts, yet is so stable that a newcomer can fly it with ease. Coupled flaps and elevators ensure 100% stunt performance. PRE-FABRICATION TO AN EXCEPTIONAL DEGREE SAVES SO MUCH BUILDING TIME THAT YOU CAN BUY YOUR MONARCH TODAY AND HAVE IT READY TO FLY WITHIN A WEEK.

Wing Span 42" Length 27". Wing area—382 sq. in. Wt. with A.M. 35—26 oz.

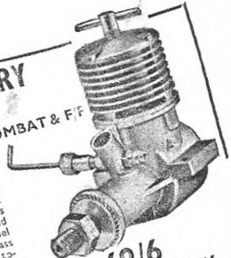
Kit complete except for Dope, Cement and Wheels. Usual high-grade MERCURY Plan and instructions included. RECOMMENDED ENGINES—A.M. 25, A.M. 35, Amco P.B. 35.

34/6

ALLEN-MERCURY 35

FOR C/L STUNT & COMBAT & F/F

A powerful, dependable follow-on to the famous A.M. 25 which is winning support everywhere. Peaks at 12,500 r.p.m. with output in excess of 0.27 h.p. This 3.5 c.c. unit weighs 4 oz. and is characterised by low fuel consumption, and first-class workmanship, making it today's finest value in its class.



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69/6

A.M. 25. The preferred engine in its class for T/R. STUNT COMBAT AND F/F **66/6**

Control-Line Flying in Miniature with the Mercury

"The Baby" that goes right through the book.

Wasp

A STUNT MODEL

Here is control-line flying on a small scale. The Wasp, which builds easily and quickly, is powered by a 0.5 c.c. diesel, and makes an ideal sports flyer and stunt trainer. Usual high-grade Mercury kit with full-size plan and building and flying instructions.

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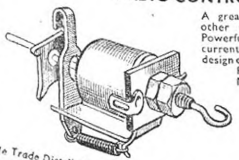

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"Covers the world of Aeromodelling"

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Managing Editor – – C. S. RUSHBROOKE
Editor – – – – H. G. HUNDLEBY
Assistant Editor – – – R. G. MOULTON

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In this issue

Special features

★

Regular features

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AEROMODELLER Incorporates the MODEL AEROPLANE CONSTRUCTOR and is published monthly on the 15th of the previous month by the Proprietors:

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Sid Allen

AEROMODELLERS in general and radio fliers in particular, will be distressed to learn of the death of Sid Allen, on Sunday, April 17th, at the Grove Hospital, Tooting.

Sid had almost recovered from bronchial pneumonia when he suffered a relapse, and as a consequence aeromodelling has lost one of its most successful and popular characters. Undisputed Radio Control Champion, he had an astonishing record of contest successes, winning the S.M.A.E. Trophy once, The Aeromodeller Trophy and the Taplin Trophy twice, and the Ripmax Trophy no less than four times.

We first encountered Sid in the early days of Fairlop, where he undoubtedly put in more flying hours per week than any other modeller in the London area. The familiar Allen tent would be pitched on the aerodrome, on which he camped the whole week-end, for Sid did not believe in wasting flying hours and would be out flying at dawn.

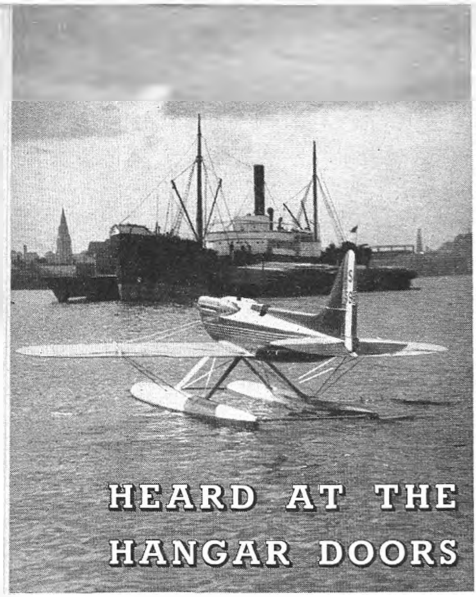
Primarily a modeller, Sid graduated into radio-control flying with "Rudderbugs", "Junior 60's", and countless other designs which he produced at a prodigious rate. One of our favourite recollections is Sid with his free-flight Auster V. Knowing its flight pattern by heart, he fitted it with a dummy receiver, and solemly "flew by radio" calling his turns in advance for the benefit of onlookers. This was but one example of Sid's unfailing sense of humour, which always prevailed in spite of prolonged physical discomfort. He was an inveterate practical joker—as many of us know to our cost—but was at heart a shy man, who, in spite of successes always kept in the background.

In serious moments he made valuable contributions to the technical advancement of radio-control. He was the first to try progressive elevator control for flight trim, and introduced wing tanks for long distant work. This latter scheme proved a great success on the cross-channel flight which he and George Redlich achieved last year.

Like many aeromodellers Sid was a great motor cycle enthusiast, and rode extensively in club meetings before the last war. Few people knew that it was he who started, and owned, Brands Hatch in pre-war days. The failure of this venture due to unprecedented bad weather, coupled with its post-war popularity after he had been forced to sell out, did not tarnish his unfailing good humour.

A true cockney, born and bred within a stone's throw of Blackfriars Ring, he was 42 years of age and leaves a wife and son to whom we extend our deepest sympathy.

His workmates at Electronic Developments: his clubmates; we of the "AEROMODELLER"; and fellow button pushers the world over, mourn the passing of Sid Allen. Of elfin stature, but with a great heart he will remain one of aeromodelling's unforgettable characters.



HEARD AT THE HANGAR DOORS

This classic marine picture shows to full advantage the beautiful lines of the S6B described in this issue. Our cover picture features the S6 with Sqdn.-Ldr. Orlebar climbing from the cockpit after breaking the World Speed Record in 1929

Royal Patronage

As we close for press, we are informed that His Royal Highness, the Duke of Edinburgh, has extended his patronage to the Society of Model Aeronautical Engineers, thus further exemplifying his keen interest in all matters aeronautical, and particularly those which encourage the youth of the Nation.

This royal recognition of the value of our chosen hobby should do much to stimulate mature interest in the art of aeromodelling, for too long regarded as "child's play" by many people, even among the aircraft industry.

International Radio Contest

Announcement from the I.R.C.M.S. is that the International r/c meeting will be a two-day affair with events for boats using any form of power on July 30th at Saltwell Park, Gateshead-on-Tyne, plus separate classes for Yachts and a steering event with bonus points for speed. On the second day, the aircraft events take place in conjunction with the S.M.A.E. Northern Gala at Croft, Nr. Darlington on July 31st, with classes for power and glider.

C.M.A.C. Enterprise

That is the title of a princely vessel made by the Cheltenham lads and which will be transported at no little inconvenience to the Northern Heights Gala, Halton on June 26th. As far as we are aware it is the *only* model aircraft carrier in the country and it is hoped that carrier borne demonstrations will take place during the sunny (we hope, as usual!) day. All are invited to bring deck landing models of up to 40 in. span, suitable for 30—50 ft. lines. Carrier is 32 ft. long, 4 ft. wide and 18 in. high, with full arrester gear. Engine speed control is desirable, and a landing hook capable of taking ten times the model weight, and drooping 3 in. below the u/c line will be needed to snatch the wires.

British Railways Festival Express

Organisers of the PAA Scottish Festival have negotiated with British Railways, for the running of a Special Train from London to Prestwick, for the convenience of Competitors and other Visitors to the Festival, and the latest details are as follows:

The number of stops the train will make between London and Prestwick has been reduced, therefore enabling B.R. to allow a further reduction in Return Fares. Passengers may now board the train at the following stations:—

LONDON, LEICESTER, NOTTINGHAM, CHESTERFIELD, SHEFFIELD, LEEDS, CARLISLE.

Passengers may also join the Festival Express travelling at reduced fares throughout, commencing their journey from the following stations:

YORK and MANCHESTER — Join the Express at Leeds.
LIVERPOOL — Join the Express at Carlisle.
BIRMINGHAM — Join the Express at Leicester.

The Express will leave London on the evening of FRIDAY, SEPTEMBER 16th, 1955, arriving at Prestwick on the morning of SATURDAY, SEPTEMBER 17th, 1955. The train will leave Prestwick on the evening of SUNDAY, SEPTEMBER 18th, arriving in London on the morning of MONDAY, SEPTEMBER 19th as near to 8 a.m. as is possible.

The special Reduced RETURN FARES are: LONDON to Prestwick: **88/3d.** LEICESTER to Prestwick: **68/6d** NOTTINGHAM to Prestwick: **64/5d.** CHESTERFIELD to Prestwick: **58/3d.** SHEFFIELD to Prestwick: **55/5d.** LEEDS to Prestwick: **47/6d.** LIVERPOOL to Prestwick: **48/8d.** MANCHESTER to Prestwick: **49/3d.** BIRMINGHAM to Prestwick: **65/3d.** YORK to Prestwick: **53/-.**

Bookings are now being accepted for seats on this Express, and should be sent to THE FESTIVAL MANAGER, 13 PATMORE ROAD, SHEFFIELD 5, accompanied by a P.O. for ONE SHILLING (for seat reservation) crossed and made payable to The P.A.A. Scottish Festival of Model Aviation, NOT later than JUNE 30th, 1955. Ticket Deposits will become payable (one-third return fare) between JUNE 30th and JULY 31st, remaining two-thirds fare payable between JULY 31st and AUGUST 31st,

All tickets per-leeeese!

Announcement that the speed team eliminators were to take place at Radlett by kind permission of Sir Frederick Handley Page seemed to be accepted by some in the London area as a signal to take a host of models and go fly anything on the airfield. Fortunately for the sake of aeromodelling and future well-being betwixt the Radlett factory and

our hobby, the Company Police worked strictly to rule and only allowed those with (A) Speed entries and (B) S.M.A.E. membership cards past the iron gates. Thus there were both keenly interested spectators and hopeful enthusiasts who had to return home without sight of the runway. The point is this: if a large and very important base is obtained for a certain purpose—it will only be used for that purpose, and if people are foolish enough to think they can join in a free-for-all they are labouring under a misaprehension. We trust that this will be warning enough to those who think R.A.F. Odiham will be "open house" for all and sundry during the free-flight eliminators on June 18/19th.

More Aeromodelling Stamps

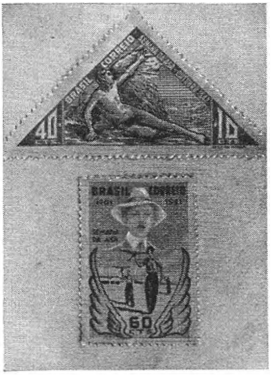
Jose Ribeiro de Mendonca, a keen aeromodeller in Rio de Janeiro writes to bring to our attention a Brazilian stamp first issued during Wings Week, October 1951, depicting the famed Santos Dumont and three lads about to launch model gliders. This was in honour of the 50th Anniversary of Santos Dumont's experiments with flying machines. A second stamp, triangular in shape, also appeared in '47 to honour Aviation and the national Wings Week, this time portraying a Brazilian artist's impression of "Icarus's Dream".

We had no idea so many Postal Stamps had been issued with illustrations depicting aeromodelling. We now have examples from Switzerland, Hungary, Holland, Brazil—any more?

Solids Competition

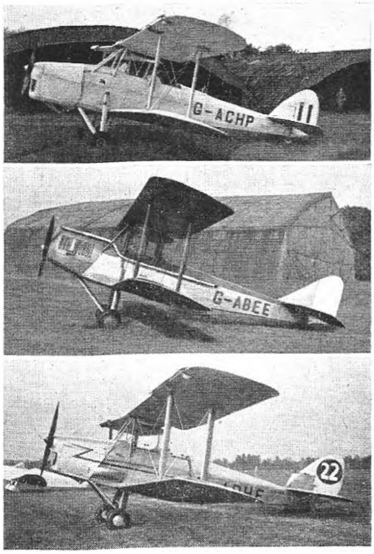
Incentive is a great thing and the Vintage Aeroplane Club believe in giving plenty to members of its new aeromodelling section. Members have facilities to inspect at close quarters and to fly in certain vintage aeroplanes that they model. A competition is being run for 1/72 scale solids of vintage aircraft with free flights among the prizes of which another is a £3 gift voucher given by Arcade Model Supplies, Uxbridge. The competition will be judged at the Club's Garden Party to be held, complete with flying display, on July 24th at Denham Aerodrome, Bucks, and the loan of all types of models of vintage aeroplanes is requested for exhibition on this occasion. Some of the vintage machines on the Club's books are Hawker Cygnet*, Hart*, Whitney—Straight*, Wicko*, Tipsy Trainer, Aeronca 100*, B.A.C. Drone*, Avro Cadet*, Miles Nighthawk, Miles Falcon*, Hawk Speed Six*, Cirrus Moth*, Moth Major, Puss Moth, Leopard Moth*, Spartan Arrow, etc. Because of its rarity the last Hurricane*, which belongs to Hawker's is considered "Vintage", but the Tiger Moth is not because it was in production during the war and still exists in numbers. V.A.C. membership is open to all and costs one guinea per year, so modellers of old-timers intent on winning a ride in a genuine vintage aeroplane should contact:—Miss Joan Barker, Hon. Sec., The Vintage Aeroplane Club, Stanway, Denham Green Close, Denham, Bucks.

* *Drawings of these aircraft are included in the A.P.S. 1/36th or 1/48th range, only the Hart being available to 1/72nd scale.*



Right, the aeromodelling stamps sent by Senor Jose Ribeiro

Below, George Cull provided these pictures of suitable aircraft for the Vintage Aeroplane Club competition. From top to bottom they are the Avro Cadet, the Avro Avian IV and the D.H. Moth Major



Popular lightplane
in miniature . . .

Bébé JODEL

designed for
. 5—1 c.c. diesels

by HOH FANG-CHIUN

LIKE MANY ardent scale modellers, Ho Fang-Chiun, a Chinese resident in Sweden was greatly attracted by contributor George Cull's description of the Jodel Bebe in our issue for April '54. Rough calculations showed that a ten-times enlargement of the 1/72nd scale plan would give 275 sq. in. wing area and a span of 38½ in.—making it an ideal project for engines of ·5 to 1 c.c. Webra diesels are freely available in Sweden, so one of the little Piccolo ·8 c.c. radially mounted engines was selected for the prototype.

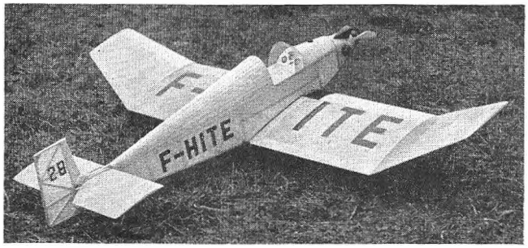
After early flight tests when dihedral was increased slightly more than scale, the Bebe was soon delighting the residents with its smooth and very scale-like mannerisms in flight. Ho Fang-Chiun boldy eliminated all thought of a pendulum operated rudder and had no trouble at all with the soft aluminium tab adjustment shown on the plan. However, to satisfy the many British modellers who prefer a pendulum rudder as a margin of safety, he provides alternative details of such a rudder, using the system already proven so successful on the popular A.P.S. Dart Kitten. Similarly, the drawing caters for the more common beam mounted engines, whilst Piccolo operators can still use the main bulkhead F.2 as a base for their radial mount.

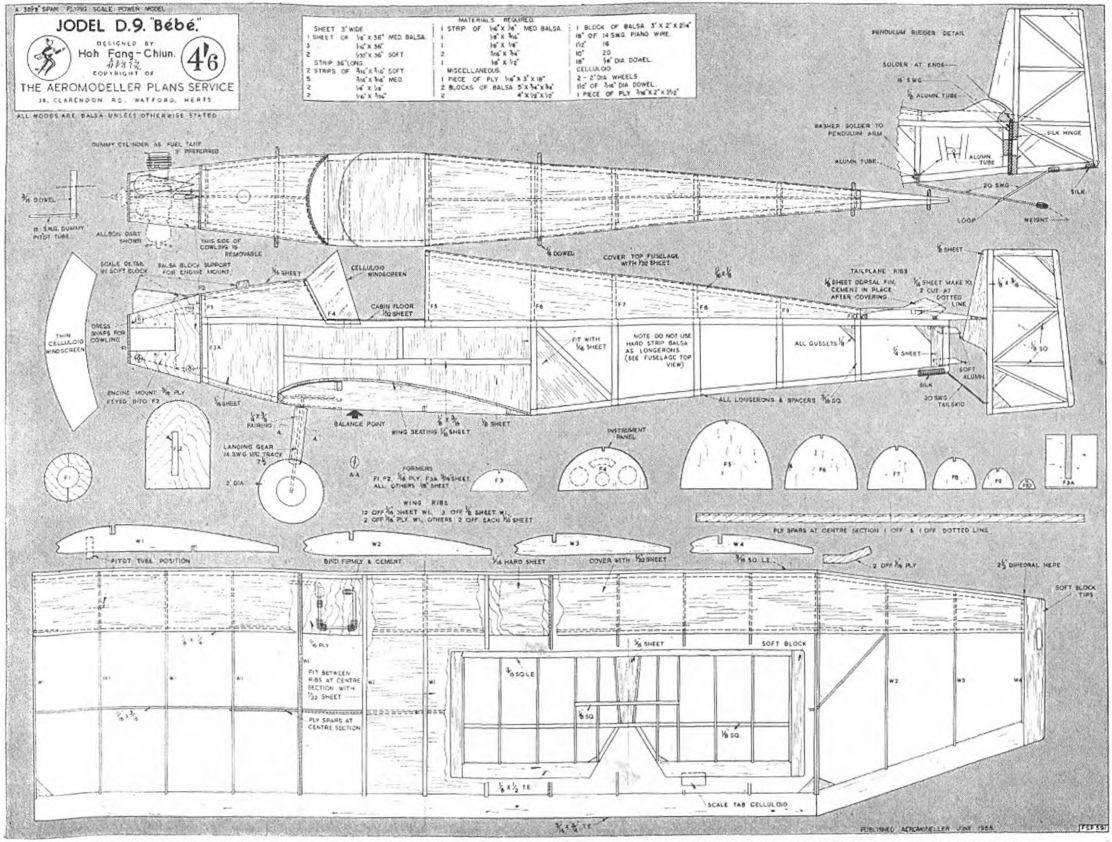
Start building with the **wing,** making the large flat bottomed centre panel first, not forgetting the ply and thicker centre ribs, then adding the tip portions with indicated dihedral before applying any of the leading edge sheet. When the wing set is firm, add the u/c on its ply plates, then the hard $\frac{1}{16}$th sheet for this u/c panel on the bottom surface, and all $\frac{1}{32}$nd sheet on top surface. Between centre ribs it is let in, though if you prefer, these $\frac{1}{8}$th ribs could be cut $\frac{1}{32}$nd undersize. Add soft tips, and cut out the hand holes as on the full-size.

The **tailplane** is of lifting section with flat bottom and built simply on the plan. Likewise the **rudder** for either pendulum or "permanent" trim.

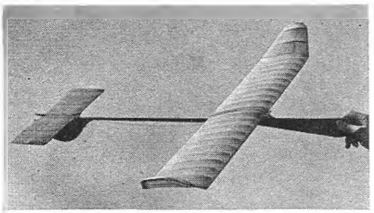
Two **fuselage** sides are made over the drawing with sheet inserts added to come flush with each respective side. Use medium to soft balsa for the longerons as the top view curvature is rather sharp about the cockpit. When the sides are thoroughly set, assemble fuselage upside down on the top longeron over the plan view. Join cockpit area spacers first, then add F.3A at the front, and bring together at the rear. When the box frame is complete, remove from the plan and add top formers, sheeting, dowels, and pendulum detail.

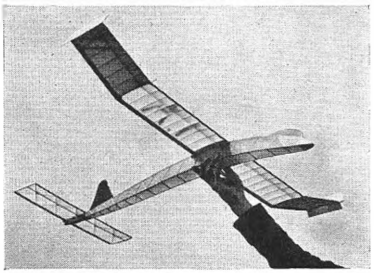
Engine mounting plate in $\frac{1}{16}$th ply is keyed into F.2 and supported by a triangular section block. Fixed cowl between F.1 and F.2 also supports the mount, whilst the port side of the cowl is made detachable by using four dress snaps. Tank can be fitted in this compartment, windscreen, pitot tube and wheels added, then the whole model covered in lightweight Modelspan and clear doped. The original was finished all-white with black letters.

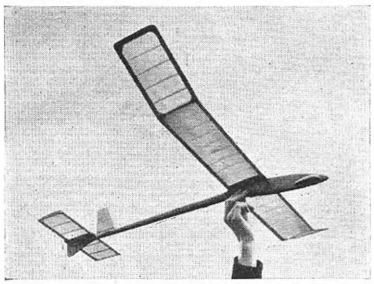


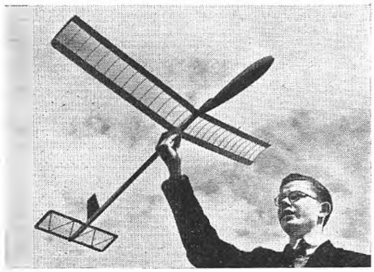


FULL SIZE COPIES OF THIS 1/4th SCALE REPRODUCTION OF THE A.P.S. DRAWING CAN BE OBTAINED PRICE 4/6. POST FREE FROM THE *AEROMODELLER* PLANS SERVICE.









For club contests or sport flying . . . HAVE

. . . suggested by R. G. Moulton

YES, WHY NOT? this hobby of ours needs a good shot in the arm now and again and what with the gloom and despondancy that emanates from so many clubs facing the increasing small field—big model problem, it's about time that something was done to encourage the smaller model—and the junior flier. For there is a lot less at stake when a 40 in. A/1 floats off the line into a thermal and goes away forever, and there's just as much fun—and duration to be had out of this smaller size of model.

Anything you can build for as little as 5/- in material, and get a steady 90 seconds out of without undue wear and tear on either the model or the modeller, is a worthwhile proposition and it is rather surprising to me that a class which has been in existance for some ten years in Scandinavia, should take so long to come in our direction.

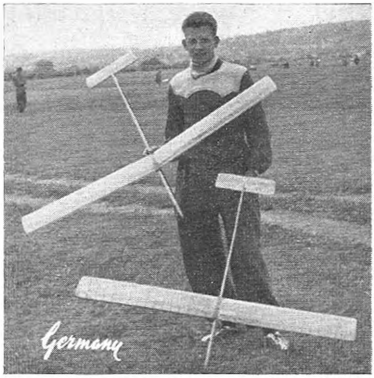
When the Nordic rules were first framed in 1945, the now popular A/2 class was only part of the story. Other divisions were A/1 and A/3, the latter being those oversize of A/2 (40–150 sq. dm.), and the A/1 being simply for gliders of 18 sq. dm. maximum projected surface area, and loading of 8 grammes per square decimetre minimum. This in our parlance means 279 square inches total for wing, tail and the parts included thereof inside the fuselage, while total weight must be more than 5·08 ounces. Anyone wishing to get an F.A.I. merit certificate has to boost the weight to normal F.A.I. standards and a minimum of 7·618 oz.

Thus it is a class for roughly half-size Nordic A/2's, with an allowance for an extra 17 or so square inches lifting area, and a favourably reduced wing loading some two-thirds of our normal minimum. It means a model of around 42 inches span, 5½ inches chord, and fuselage length 32 inches. Such could hardly be inconvenient for transporting to the field—even in those districts where bus conductors and fellow travellers are particularly obstreperous.

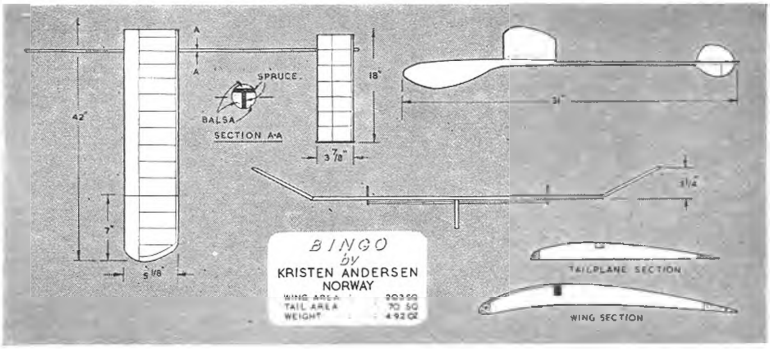
When tackling a new class of model, the safest manner in which one can ensure success with the first venture is to undertake a study of all that has gone before, and in particular, those designs which have distinguished records on the flying field. For this reason we have in these four pages, photos and three-views of the fourteen leading A/1's to date. They hail from Denmark, Norway, Western Germany, Eastern Germany, Italy, and yes, even England.

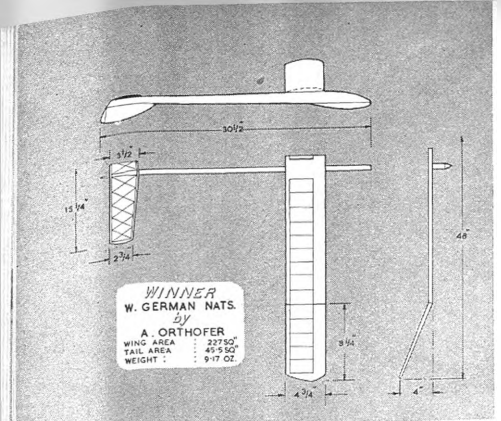
Left: Test A/1's on which this article is founded. Top: Author's Fidusia, a Danish Kit. Next: Martin Bridge's lightweight with banana fuselage and tip fins, only 2½ oz. all up. Next: The Italian Junior V, with cockpit cover ballast boxes either side of ⅛ in. sheet fuselage. Bottom: David Wiles' 3¼ oz. A/1 with solid block pod nose, CGo. 417 section and turbulator. Span 40 in. Chord 5 in.

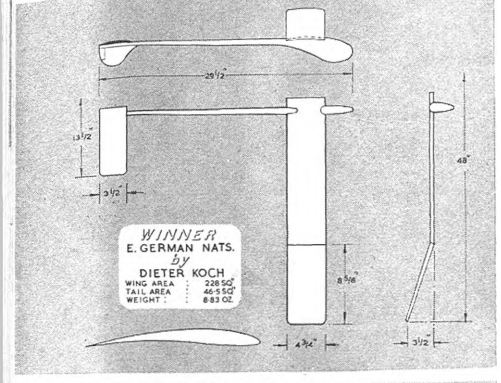
FUN WITH A1

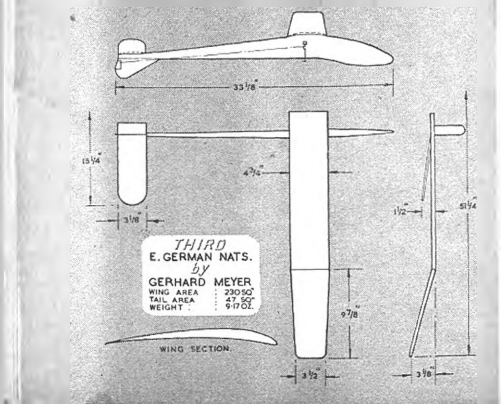


Left: Danish Erik Knudsen at top and Borge Hansen, bottom with typical A1's. Above are German examples, top one displays small tail area, lower is a beginners' design by Ing. R. Reichelt of Bremen









For during the past six months our local Watford club has been running "half-A/2" contests on their restricted flying field, and despite four formidable boundaries, a canal, an electric railway line, a large factory and a paper mill, they manage to total up to 8 minutes in a five flight event.

So we know a little of the subject, and can speak with experience of many flight tests.

Almost without exception, the Scandinavian A/1's are 99% spruce construction with ply used to plate the foremost part of a pod and boom fuselage. One popular Danish kit designed by Fritz Neumann, a member of his country's A/2 team, uses balsa only for the few tailplane ribs and yet just tops the scale at the 5½ ounces mark. Ribs for the "Fidusia" are beautifully die-cut in $\frac{1}{16}$th hard-wood sheet and building time from start to finish took no longer than five evenings. The only snag was that I had become so used to big structures on F.A.I. power and A/2's that over-exuberance with covering and doping resulted in some degree of "cow-horn-hedral" on both wing and tail. Despite the curvature, it was truly inspiring on first hand launch tests and surpassed A/2 glide in distance by no small degree. I expect to get 24 paces or more from a shoulder length launch with any A/2 trimmed near the stall—yet Fidusia baffled me with a consistent 36 paces, more than 100 ft. from 5 ft. 6 in. The answer was of course, the lighter wing loading, faster flying speed and the fact that more energy could be put into the launch, for the rate of sink was actually the same as for the much bigger model.

Flying off the towline was not quite so easy. After being used to the pull of a full-height tow with A/2, the Fidusia was more like a feather on the line, and any weave out of wind was very hard indeed to correct. How they ever managed with 328 ft. of line will forever remain a mystery to yours truly—for I have yet to get full use *consistently* of the 164 ft. (50 metre) line permitted today.

Once off, at heights of 120 ft.–150 ft. the Fidusia rotated tightly in 50 ft. circles and quickly took advantage of any lift. The d/t soon became a prime essential for every flight, and average time in reasonable conditions, ranged about 1 : 40.

The query then arises—how can we get better towline stability? Perhaps the pod and boom arrangement has something to do with this, but in view of its tremendous popularity over the years, the Nordic fliers appear to have no trouble with such an arrangement. Only the German and single Italian designs use something more akin to a fuselage, and of these, Alfons Orthofer's winning A/1 from the Schleswig-Holstein Championships has greatest attraction. In four out of five flights it totalled 9 : 52, and was well over the F.A.I. loading with a total weight of more than 9 ounces.

The Italian model is sold in kit or plan form by "Aviomodelli" of Cremona and is called the Junior V.

No attempt is made to promote it as an A/1; but it has the right area and fills the bill for the Italian "Junior" class. The one made up for our tests scaled 5¼ ounces, whilst the Italian rules apparently specify F.A.I. loading, for design weight should be 7·7 oz., which calls for a ballast box. It presented little towline difficulty: but as with Fidusia, a full-height tow is a rare occasion.

With experience and use of lightweight towline, the towing business will ultimately resolve itself, just as it has done with A/2. After all, how many British fliers could claim an overhead launch with an A/2 in 1950?

We turn now to design detail. First and foremost, if we have 5 ounces to play with, let us use it sensibly. The wing can be one piece, have liberal anti-warp geodetic rib arrangement, sheeted leading edge, hardwood spars and stout trailing edge, either all together or as independant features. We can afford the weight, though heavy tip weight is to be avoided. Now the section. It would seem that the schoolboy's delight, Go 417 Curved Plate or "Banana" section is for some peculiar reason a first choice with own-designers in this locality and also the East Germans. Not only is it hard on the brainbox for creating the structure and getting the wing built: but also it shows little advantage in the air. I prefer sections of Isacson or Benedek genesis, as these give depth for spars of reasonable proportions and give the high performance we desire. There is a lot to be said for Fritz Neumann's section on Fidusia, where both leading and trailing edge are flat on the building board when the wing is assembled.

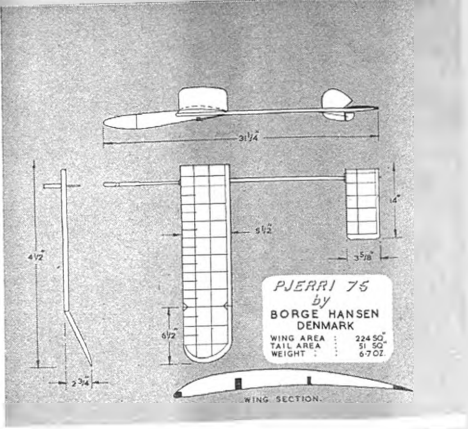
The tail surfaces should be a blend of lightness and anti-warp structure. Orthofer's criss-cross ribbing has much to commend it, whilst a thin sheet fin can be used as the area needed is relatively small. Fuselage is optional. A basic 3/32nd sq. frame with sheet covering would be ample, solid $\frac{3}{8}$ in. sheet could be used with a pod and boom shape, or a flat profile of $\frac{1}{16}$ in. × $\frac{3}{8}$ in. built up and sheeted with surface platforms would be very simple.

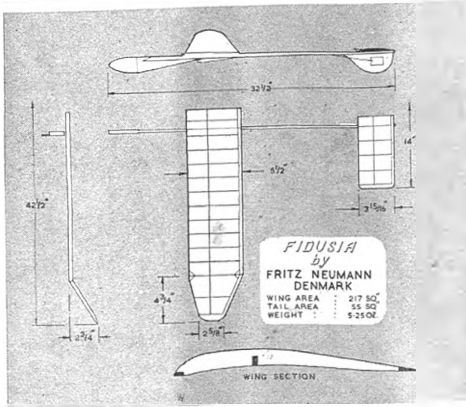
There we have it, and over to you. Opinions, vitriolitic or sugar-sweet would be welcomed by me at Watford offices, for it is nice to know what you, the reader thinks of something new.

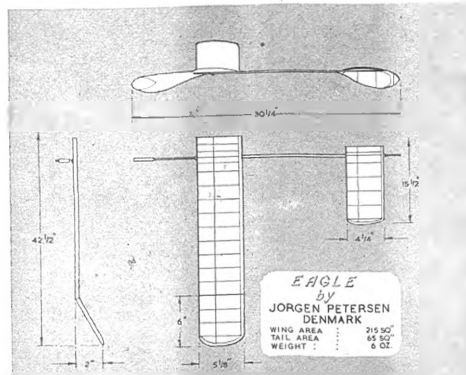
Make no mistake—this is no suggestion for a new International, or even National class. It is for you in the small local club to ponder over, and perhaps follow for local events in that all too small flying field you are privileged to use.

One last cheering thought; the new Veron kit for the "Cirro-Sonic" may be under-size by a few sq. in. but it's an A/1 just the same, and may it be the first of many.

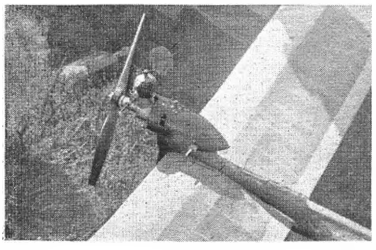
Next Month watch for further news of the A/1 class, including an ideal junior's design and details of an "AEROMODELLER" organised contest to promote further enjoyment of your model flying.







Above, pair of Mexican pictures show charming assistant holding Phil Guilman's 66 in. A/2 and "Paco" Gallegos with well finished r/c model. Below: two views of remarkable engine mounting for Webra on Julio Soares' model from Oporto



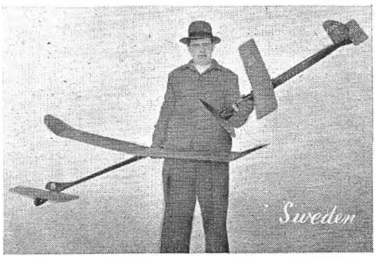
NEWS OF F.A.I. International events is that the r/c meeting for La Coupe du Roi des Belges is not to be at Cologne; but at Essen-Mulheim instead. Date is May 21/22nd. French meeting for the c/l Championships at Poitiers is as we intimated last month, part of a large Festival of Aviation including Parachuting, Lightplanes and Sailplanes, that date is July 1/2/3rd. Other F.A.I. news includes confirmation of New Zealander Frank Bethwaite's 3 hr. 2 min. r/c duration record and Bob Lutker's 138 m.p.h. in 5 c.c. speed, subsequently beaten by W. Wisniewski of Pomone, California with 142·2 m.p.h. on 5th September, '54. Not bad going for a plain bearing Torpedo 4·35 c.c.!

Turning from records to Nationals, the **South African** Nats were held at Easter in the Cape. It was quite a meeting we gather, with highlights including H. Heydenreich's 152·6 m.p.h. with a McCoy 60 despite a dented wing and only half a cowl. Superb scale models of the Corsair and Hunter, the latter having a Dynajet and no less than 43 coats of dope sprayed and rubbed down, and the performance the "wing" NO-body combat design made the 2,000 mile round trip for Transvaalers worthwhile. One of these long distance travellers was the personality of the meet, and we are likely to hear more of him in future. He is 15 yr.-old Jeff Bindon of Pretoria. Flying a *Swiss Miss* he won F.A.I. power, with a *Nebula* he won A/2 and with a Torpedo 15 he even eclipsed the Oliver's by winning Class A t/r with 85 m.p.h. for 56 laps per tankful. Monty Malherbe, the senior Champ was in England for a brief week after these Nats and told us that Jeff's brother who is also good, will be coming to England, possibly the Bristol area. Local clubs had better grab his membership!

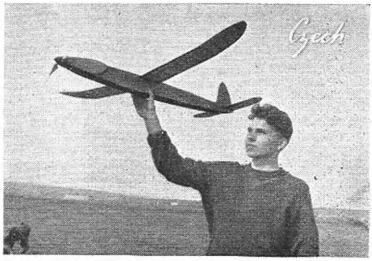
Correction from Montevideo, **Uruguay,** comes in regard to our Sam Hodd feature on Model Names, March issue. Sam called their S. American wind Pamero—should read PAMPERO as they know too well out there, for it's the cause of most of their prangs!

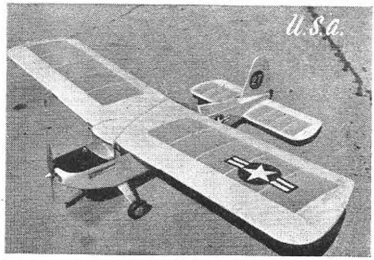
The **Czechs** are still on with their Elims for the National teams, and item of interest is that in 2·5 speed they are just breaking the 100 m.p.h.

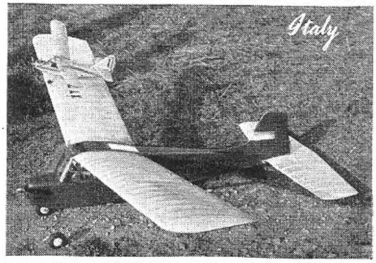
A. Hakansson, 1st in Wake, 2nd in A/2 at Swedish Winter Nats



Unique "2 in 1" winder for geared motors by M. Odvarka of Prague, drives on prop. At right, top Czech Wakeman, Emil Rex, also "54 Nats" winner. Below him is Harold de Bolt's Symmetrical airfoil r/c stunter with Schmidt 6-channel Rx, weighs 4 lb., flies on Torp 15. Next is Italian r/c model with Bambi powered miniature on top of wing. Bottom, charming group of Burmese modellers at Myoma







mark with the new long lines, this using the new officially produced 2·5 racing engines.

In **Sweden** the winter Nationals found a record number of 125 hardy entrants to fly in the below freezing conditions. Comps were on a three-flight basis and in Wakefield this made it a 5 man fly-off with Anders Hakansson of Malmo coming out top. He also placed second to Lars Gustafsson in A/2, whilst to keep it in the family, Per Hakansson won power. All this winter activity makes our British movement look like a fair-weather flying organ-station!

In **Yugoslavia,** like the Japs, they appear to prefer circulating clockwise with u/c for stunt, new design is built that way in "Aero-modelar". Same issue contains full summary of conditions to be expected at Brunswick airfield—a pity that it is unlikely that the A/2 finals will be held there now! Even told where downdraughts and thermals could be located!!

Spain: Full date of F.A.I. team racing definition published in "Avion" shows interest in t/r there. Mention of a Byra 1·5 c.c. diesel for the first time adds to the mystery surrounding the 2·5, one of which we witnessed at high speed in the Hague last year.

France: A gentleman by the name of Tichkinsky (wonder what his nickname is?) won the famed M.R.A. Winter cup for rubber with quite a conventional model. Marc Cheulot made up for this by flying a model with Handley Page Victor type tail assembly mounted *inverted* on the fuselage! It still placed halfway up the field at 37th.

Norway: Smartest of all the hand printed (Roneo'd and such) publications is "Hc-Ti-Ke", and that includes many from U.S.A. and G.B. has kind words for the Elfin 1·49 Reed valve, unlike Aussie comments. Includes a speed round-the-pole rubber design (who said they were dead?) and yet more on the popular A/1 glider class.

A 40" WINGSPAN CONTEST MODEL FOR ½ C.C. ENGINES.

Y - BAR

DESIGNED BY
A. J. Brooks

4'6

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THE AEROMODELLER PLANS SERVICE

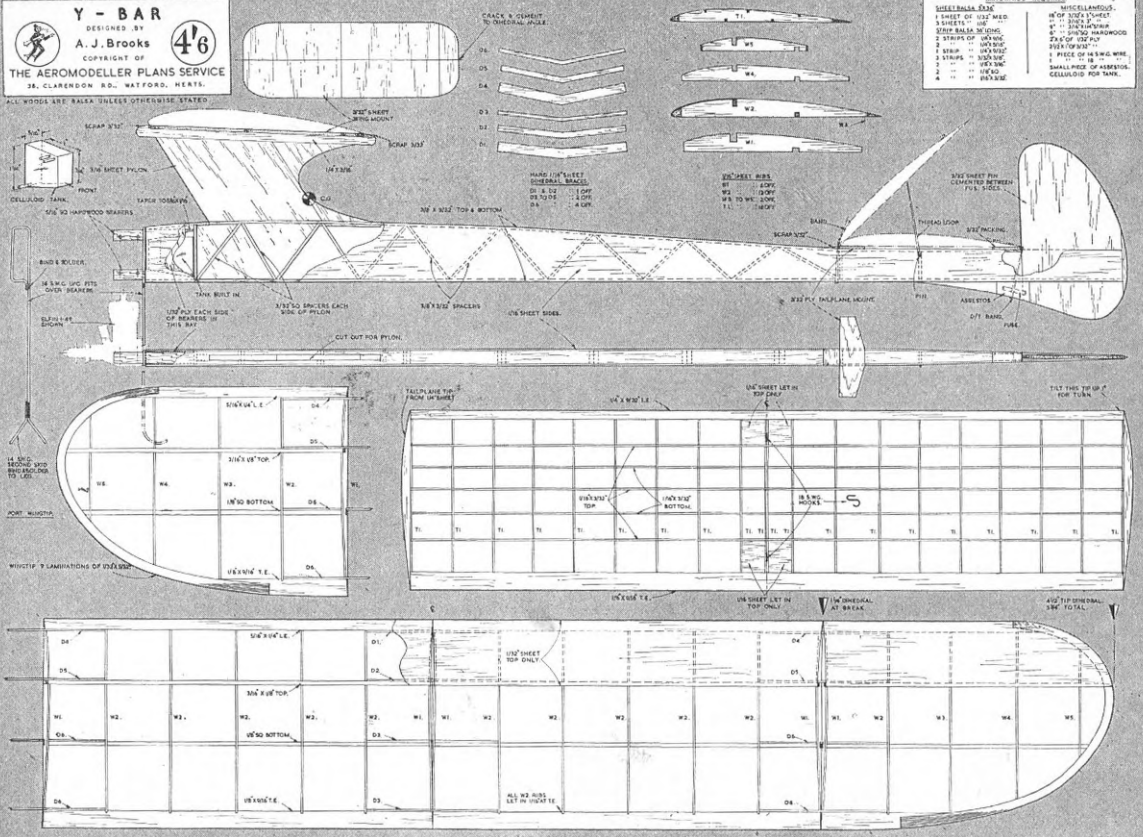
38, CLARENDON RD., WATFORD, HERTS.

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

MATERIALS REQUIRED

SHEET BALSA 3"x36"
1 SHEET OF 1/32" MED.
3 SHEETS " 1/16" "
STRIP BALSA 36" LONG.
2 STRIPS OF 1/8"x 1/16"
2 " " 1/8"x 1/8"
1 STRIP " 1/4"x 1/16"
3 STRIPS " 1/32"x 3/16"
2 " " 1/16"x 3/16"
2 " " 1/16"x 1/2"
4 " " 1/16"x 3/16"

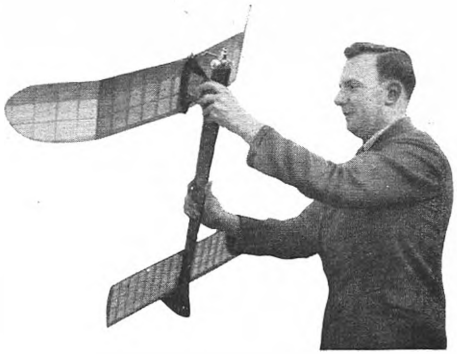
MISCELLANEOUS.
18" OF 1/32"x 1"x WIDE
4" " 1/16"x 1"
6" " 1/16"x 1/2" STRIP
2" " 1/16" HARDWOOD
2"x 2" OF 1/32" PLY
3"x 3" OF 1/16" "
1 PIECE OF 14 S.W.G. WIRE
1 " " 18 " "
SMALL PIECE OF ASBESTOS.
CELLULOID FOR TANK.



PUBLISHED AEROMODELLER JUNE, 1935. PRT. 550.

Easy to build, high performance contest design for 1·5 c.c. from the Farnborough flier

TONY BROOKS



THE Y - BAR

FOLLOWING A SERIES of contest power designs emanating from the keen group of modellers among the student apprentices at R.A.E., Farnborough, the Y-Bar is a successor to the *T-Bar*, *Buzz-Bar*, and the eminent American expert Ray Mathew's design the *Fu-Bar*. Tony Brooks has given this particular model a very suitable name for the symbol γ as used in mathematics, usually designates height—one of the characteristics to be expected of this model.

First one built was powered by an Arden ·099, glow-plugged, and proved to be very satisfactory so a new one was made for an Elfin 1·49. This also proved "hot" by placing 8th in the Keil trophy, and 1st at the All Britain Rally 1954. The only features which may be unusual for a contest model are the flat bottomed wing section and the rear mounted fin, though these are by no means new features, each contributing to the stability of the design.

Construction of the wing and tail is simple enough for even a relative beginner to the hobby to tackle with confidence, and only the fuselage requires a few notes regarding sequence of assembly. This is as follows:—

Cut out all parts: Cement ply gussets to bearers: Build up basic frame: Cut slots for pylon and fin: Trim rear fuselage in plan view: Cement in pylon and fin: Cover sides with $\frac{1}{16}$ sheet: Add wing platform, tail platform, etc.

Trimming

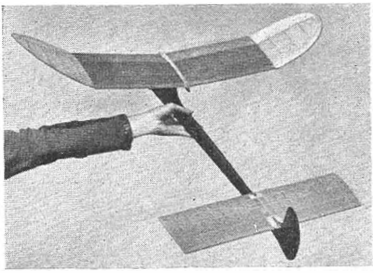
All flying surfaces must be flat, except for approximately $\frac{1}{8}$ in. to 5/32 in. "wash in" on right-hand inner wing panel. Tilt the tail until righthand tip is about 1 in. above the level position. (It is easier to cement the tail platform at this angle initially.) Thrust line should be straight with no side, up or down thrust.

Test the glide for a medium diameter righthand circle the cement all pack firm. Now try a power flight with 7 or 8 seconds engine run working gradually up to full power. Correct trim is steep righthand spiral and righthand glide.

Most suitable method of stopping the engine is to use an Elmic Mini-Diesel timer mounted just behind the bearer assembly, with a small tank between the bearers.

The pop up tail d/t is fuse operated, limit of pop-up being obtained by a loop of thread cemented between tail centre ribs at approximately half chord, this going into a small hole in the fuselage and is retained by a pin.

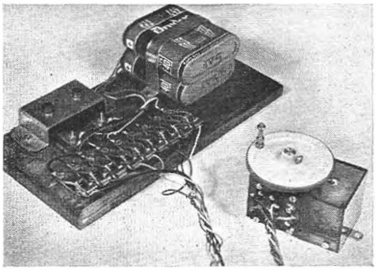
Remember that for F.A.I. contests, using a 1·5 c.c. engine the total weight must exceed $10\frac{1}{2}$ ounces and provision be made for a 3 point take-off from rest. For open events, where hand launch is permissable, no undercarriage is necessary and the weight kept down to only 8 ounces as on Tony Brook's prototype. Using an 8 × 4 prop. and engine at full revs., the rate of climb is of course, something to be envied by all power fliers.



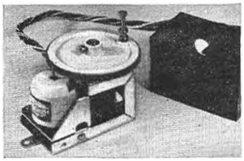
Vertical release is a natural for this fast climbing lightweight, large 50 per cent. tailplane keeping the climb under full control. Rear mounted integral fin, profile type fuselage and small 40 in. span make building and transport easy. Full-size copies of the 1/4th scale plans reproduced opposite can be obtained, price 4/6d. post free from the Aeromodeller Plans Service at Watford

Trade Notes

We build and test new kits and accessories for better aero-modelling



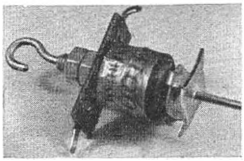
E.D. Self Centering actuator for multi-channel work is in neat red plastic box, demonstrated with dealer's test rig.

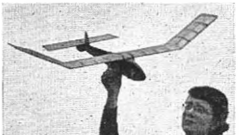


FIRST a correction: Messrs. **Lines Bros.** write to tell us that in the write-up on their new radio control equipment, April Trade Notes, we stated that the current change was 1¼ m/amps. This is not so, the change for the Triang Aircraft Receiver being 2 milliamps—even better, and adding yet more appeal to this most attractive outfit.

Overseas dealers seem to gravitate to one most popular North London Model shop and thence are put in contact with ourselves. This month we had the pleasure of speaking to two of the most progressive dealers in the British Empire, Jack Hearn of Hearn's Hobbies in Melbourne, Australia, and Monty Malherbe of Jix Models in Pretoria, South Africa. Jack was at one time a king of the speed circles, Airline pilot, and modeller of considerable note. Monty is reigning Senior Champion of South Africa, a stunt Champ, free flight man and a wideawake model shop proprietor. Both gave the same impression of the state of modelling in their respective countries—the popularity of large glowplug engines and big models—the large numbers of small diesels and sport models that get sold never to be seen again, and the enormous enthusiasm they have in their personalities, both for the hobby and their own respective businesses. They should each do very well with their model shops.

Star wheel Typhoon compact escapement, Below

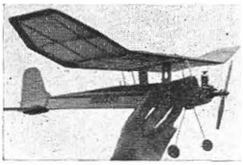




Dab and Inch Worm are good fliers made up from top quality balsa supplied in kits

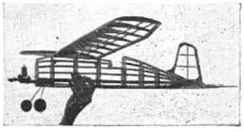
While here Monty took the opportunity of flying Henry J.'s prototype **Mercury Monarch** with **AM25** and was so impressed by the performance that he had the handle practically all day—flying more than a dozen long flights through the South African schedule which includes wingovers from inverted. Monarch kits have been long in the "engineering" stage and should be released by the time you read this. Other new items from Mercury include the **Typhoon** 2.47 ball race high speed diesel, the 4.5 rear disc racing glow motor and the smart radio control escapement. Made by skilled Dutch firm of Typhoon in Amsterdam, the engines have already been reviewed in our columns (2.47, September, 1953; and 4.5, March, 1953) and are held in high repute on the Continent. The escapement, using a star wheel with four pawls, will retail at 22s. 6d. and is extremely compact. Sturdy construction should enable it to survive many a prang, yet the weight is only .7 oz.

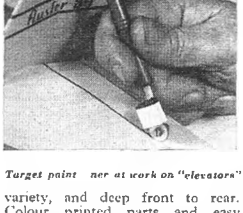
1955 Handbook from **KeilKraft** is a worthwhile investment of 9d., with articles on covering, rubber tensioning, building the kit, etc., all amply photo-illustrated. Also lists, of course, the many and varied items supplied by KK to the trade. Their latest pair, the **Bantam** and **Dandy,** have just received our blessing and may we say how much more attractive they are than one would believe from the pictures in the adverts. The **Bantam** flown on an Allbon Dart, has a particular objection to flying safely to the right, so trim for a left turn. It builds nicely, flies fast and well, and though a little "humped" has a nice revival of fuselage lines for an open cockpit that were so popular in pre-1940 years. Points to watch are: add sheet to the tail leading edge where it touches the seating, and extra gusset the dihedral crack—ours folded up after a right spiral. The Dandy is almost a PAA-loader in miniature, cabin being of the glasshouse



KeilKraft's Dandy for Bambi

Framework of Ansac displays fuselage profile, low thrustline and tailplane





Target paint ner at work on "elevators"

variety, and deep front to rear. Colour printed parts and easy assembly make up a very nice kit indeed for the Allbon Bambi. Bantam price is 12s. 3d. for 39-in. span, the Dandy, 8s. 9d. for 21-in. span.

A tip for radio fliers. We were impressed by insulating material supplied with that New Zealand H.M.V. Radio outfit reviewed in February and made a few enquiries. It turns out that Rubberised Horse Hair, called **Hairlok**, is the British equivalent and this will be supplied through Messrs. Odeon Radio, of 55 College Road, Harrow. Resilient light, and just the job for protecting receiver *or* transmitter from shock damage, we commend it to all who like to have a long valve life.

New kit firm is the Mick and Pat King partnership of glider contest fame, from Westcliff-on-Sea. **Contest Kits** have been launched with a gliding pair, the **Dab,** a 9s. 11d. lightweight of 34-in. span, and the **Inch Worm,** a 19s. 6d. 64-in. span A/2. Both we have built —and flown, and each we can report as being just what they are advertised as—contest kits. The Dab has a profile fuselage with fragile tissue fairing bulge for the wing platform and whilst we would be the last to state that it has the lines of a Venus, it certainly soared straight off the line and has excellent towline stability. Kit was short in some strip wood, a packing error we are sure that would quickly be rectified by your dealer should it happen to you. Like the Inch Worm, Dab has sensible use of spruce spars and cut templates for cutting ribs from unmarked selected sheet. Inch Worm uses a Hansen section with trailing edge droop: but if you lose that template, you have no record of the section as this is not included on the drawing. Incidentally, we trust that for their next, C. Kits will take up the services of a draughtsman. All the weight we could pack into the nose of the Worm was still not enough either to come up to 14.5 ounces or get the C.G. in the right place—a point we insist upon for this is a "C.G. Crit" model and the balance *must* be either on or in front of where it shows on the plan. With a bulge on the nose, tail incidence increased by 5/32-in., and up to weight with C.G. correct, it is genuinely good for the magic two-minutes from 164 feet of towline; depending of course on your standard of building. The one-piece wing is a handicap—why not follow the APS standard and give alternative two-part wing details Messrs. C.K. ?

Ever had trouble finishing off that scale model with paint lines? We have often enough; but at last a small tool has been unearthed to solve our difficulties. It is the **Target** Paint Lining Tool, supplied through The Target Manufacturing Co., Wollaston, Nr. Wellingborough. A serrated wheel imparts a regular flow of paint or dope, from a store in the small container above the wheel. Feed is by a wick of flannel and the dope must be quite thin to get a fair flow. Price is 3s. 6d. post free.

A new **E.D. Self Centering Actuator** has been released from the Kingston factory, mainly intended for the multi-channel enthusiasts and their elevator or rudder controls. Quick action is its greatest virtue, and this makes it also suitable for boat work as there is enough power to swing the rudder of a fast five-foot launch. Unique sales service is a test board supplied to the retailer for a nominal 10s. for

Amazing German Distler motor gave power for four days non-stop off 4.5 v. flat torch battery. Has ball races, runs beautifully smooth, should be good for servo drive if imported

counter check and demonstration. The actuator costs £3 11s. 0d. and is driven by a 4.5 v Ever Ready motor held by spring tension against a 2-in. diameter wheel. When operated either way, this 2-in. wheel rotates through 30° and gives about 3in. movement either side of centre. Being self neutralising, it is ideal for elevator operation and weighs 4½ ozs.

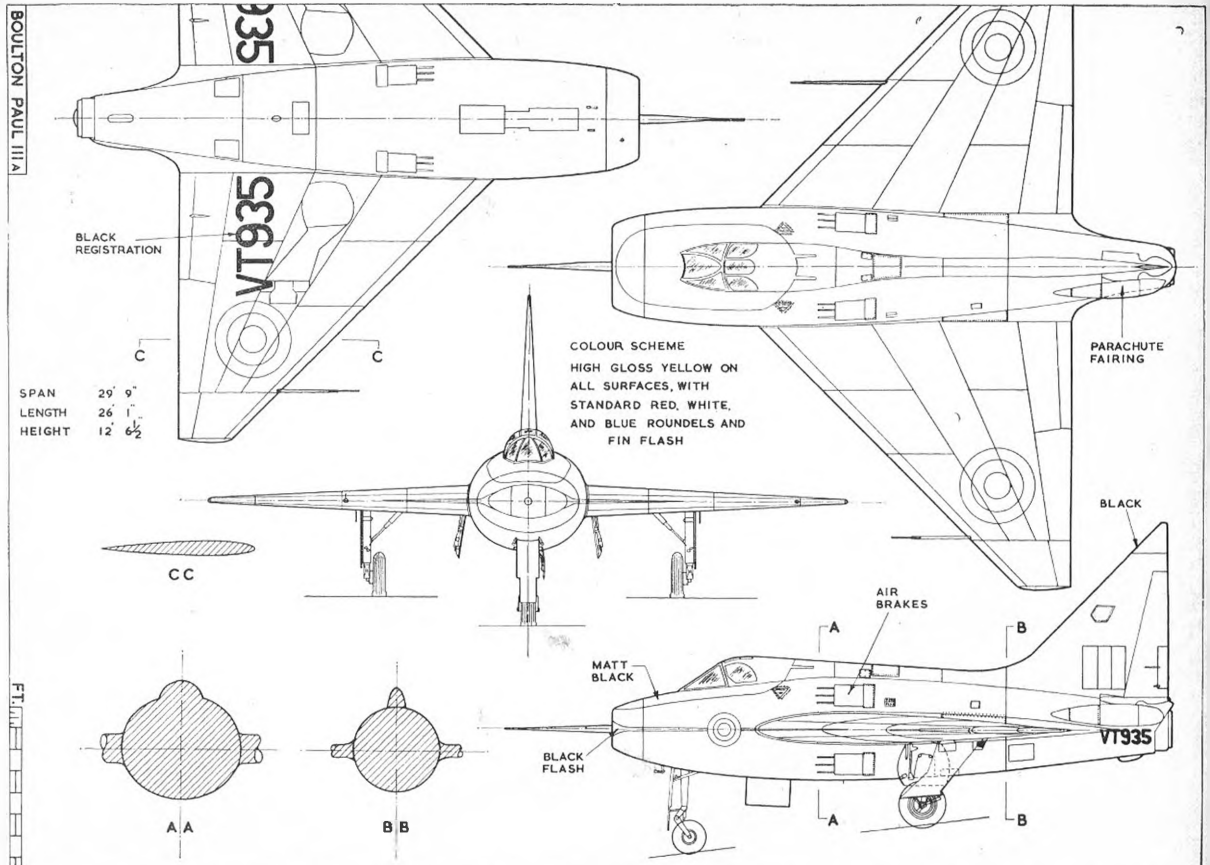
Something new in control line handles is the 5s. 11d. item (plus 1s packing and post) advertised in classifieds by **BCM/Solo Release.** We have a sample of each of the three colours, silver, orange, and yellow, and the idea is very good—for those using cord lines only.

Illustration will appear next month to show our point, the line being wound around a ½-in. diameter rod.

What's the answer?

MOST OF Billy's flying is done in the evenings. He really can get his "Hogan" to perform, with a flight ratio that should put him at the top of any contest. The only thing is, when it comes to an actual contest Bill's Hogan is generally anything but consistent. The Hogan, as you probably know, features anti-warp wing and tailplane structures and a fin built integral with the fuselage. We have puzzled it out, but can't see how the trim can possibly change. Obviously something happens, however, and it's not just contest nerves. What's the answer?

The Answer—Most probably Billy's Hogan is suffering from a fault all too common on power duration models. Either the wings or tailplanes, or possibly both, are not strapped down tightly enough. This may not show up in calm evening air flying, but launch the model in quiet air and the wing lifts momentarily, or the tailplane tilts, upsetting the trim completely. There are two requirements to be satisfied to obtain limit—and plenty of them—are usually better than a lot of partially stretched strip rubber. The latter exerts a powerful crushing action on the structure, yet may still have too much



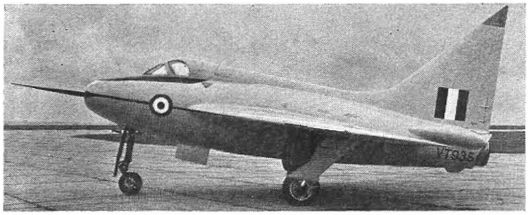
"J" TYPE 1/72ND SCALE RE :NTS AND "A" TYPE 1/48TH SCALE DYE-LINE PRINTS OF THIS DRAWING ARE AVAILABLE FROM A.P.S. PRICE 6D. AND 1/- RESPECTIVELY

AEROPLANES IN OUTLINE

NUMBER 34

By J. R. ENOCH

Boulton Paul P.IIIA



INTENDED specifically for aerodynamic research at high sub-sonic speeds, the Boulton Paul P.III, built for the Ministry of Supply, was designed by a team at the head of which was F. F. Crocombe, B.Sc., F.R.Ae.S., and J. W. Batchelor as Chief Engineer and Designer.

First flown by A. E. ("Ben") Gunn on October 10, 1951, at Boscombe Down, the P.III, Serial VT.935, was the second British "Delta" to fly. Powered by a Rolls Royce Nene, centrifugal Turbo-jet of 5,000 lb. thrust, the aircraft was superbly demonstrated at the S.B.A.C. Display in September, 1952, where it impressed all present with its very high rate of roll, and rapid rate of climb. At that time the machine appeared with overall lightweight aluminium finish with a black fin tip and anti-glare patch forward of the cockpit. In addition to the conventional service markings, the prototype "P" insignia was forward of the fuselage roundels.

After a considerable amount of test flying with this prototype had been completed, it was modified by the manufacturers, various internal and external refinements being added as a result of previous experience In this form sufficiently modified to warrant re-designation as the P.111A, the aircraft made its maiden flight on July 2, 1953.

In general arrangement the P.IIIA differed only superficially from its original form, the one-piece moulded windscreen of the P.III being replaced by that shown on the drawing. Principal of the modifications incorporated was the fitting of air brakes, which, in four rectangular sections, and hinged at their forward edge, are equally spaced round the fuselage.

The Rolls Royce Nene engine, retained in this version, has a bifurcated air intake, the ducts passing on either side of the pilot's cockpit. A probe used to carry a pressure head is mounted on the leading edge of the internal intake fairing. A single wheel undercarriage nose unit is employed, with a fairing door fixed to the oleo leg, it retracts backwards and is faired by a single door hinged on its port side. (The P.III had smaller double doors.) Forward of the nose wheel doors the two projections, one of venturi pattern, are instrument air intakes.

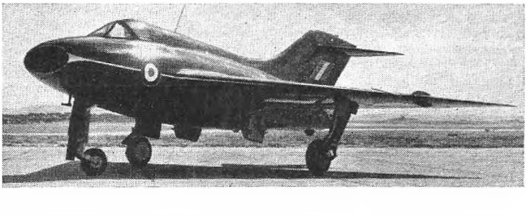
The pressurised cockpit, has a reinforced canopy which opens on extended hinges fitted to its rear edge. An 8 ft. 0 in. diameter braking parachute contained in the bulbous fairing on the port side of the rear fuselage, the cable being attached to the base of the fin, can be used to reduce the landing run.

Flaps are not fitted, the only control surfaces with the rudder being the two-piece elevons, which it is presumed are power-assisted. On the port wing leading edge is a probe mounted pressure head, and further inboard on the starboard wing a yaw meter. When first it appeared the P.IIIA was finished similar to the P.III, but was later sprayed high gloss yellow, with a black trim line extending from the sides of the annular intake along the wing leading edge to half span. In January, 1954, manufacturers' trials were successfully completed and the aircraft was then handed over to the High-speed Flight of the R.A.E. at Farnborough, and though it did not appear at the following S.B.A.C. display, test flying of the aircraft was much in evidence.

On August 20, 1952, the existence of a new Boulton Paul Delta research aircraft was revealed when it was announced that on August 6 the P.120 had flown.

The P.120 was generally similar to its predecessors in outward appearance, but differed from them in being fitted with a variable incidence tailplane, adjustable for trim at low and high speeds, mounted high on the fin of revised shape. The wing tips of the aircraft were pointed and boundary layer fences near the tips extended approximately half chord above and below the wings. In common with the types P.III and P.IIIA, the P.120 Serial VT.951 was powered by a Rolls Royce Nene turbo-jet, and originally had a natural metal finish, this was later changed to high gloss black. This prototype due to make its first public appearance at Farnborough that year, was unfortunately lost in a crash on August 29.

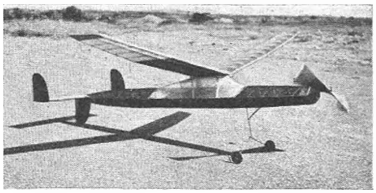
Despite the setback caused by the loss of the P.120, development test flying with P.IIIA continues, and it is expected that a high performance interceptor fighter will be the outcome of this intensive research programme.



Heading shows side elevation of the chrome, yellow and black P.IIIA and indicates the large parachute fairing at tail. Triangular ejector seat notice aft of cockpit is red

The P.120 with high-mounted tailplane had a brief but eventful career. Was painted glossy black all over

The co-operation of Messrs. Boulton Paul is gratefully acknowledged.



From first hand personal accounts and written reports of the 1954 *Wakefield contest at Suffolk Co. AFB, Long Island U.S.A., we heard a lot about the Baxter "Ground Hopper" (above).*

We asked him for an outline of his approach to the Wakefield, and this is what he states:—

Dick Baxter on . . .

Low power WAKEFIELDS

A gear box which reduces the torque delivered to the propeller while multiplying the available revolutions, added to an otherwise conventional aeroplane will produce a machine that flies at almost constant velocity. By adjusting for optimum speed the energy absorbed by the gear box can be more than replaced by that salvaged from the high speed climb phase—thus increasing the aeroplane's potential duration.

The Summer Soldier design flown at last year's Wakefield finals employed a 4 : 1 ratio gear box driving a 15 in. diameter, 26 in. pitch propeller from an 18 strand $\frac{1}{4}$ in. Pirelli motor. A typical flight pattern consists of a rolling take-off and a long slow climb followed by a cruise period and a gliding descent after the $2\frac{1}{2}$ minute motor run. Normal duration is three minutes more or (alas) less. Power problems are virtually non-existent; and surprisingly, take-off characteristics are good although a sturdy landing gear is required.

The low power level Wakefield is a fascinating type to fly, combining as it does, potentially superior performance with "sport" handling characteristics. It offers the challenge of the unusual and yet presents no problems which have not been already solved by the average Wakefield builder. I hope the Soldier will excite further interest in this type and I would be pleased to hear of other experiments along these lines.

The problem in flying duration models is simply to keep them off the ground as long as possible. Since machines require energy to fly, this means we must supply the maximum possible quantity thereof and then use our store as slowly as possible.

Will you look for a moment at this energy which allows our models to fly? In general . . . ENERGY equals FORCE × DISTANCE (travelled), and for an aeroplane energy used in flying equals DRAG × VELOCITY × TIME which is proportional to (VELOCITY)^3.

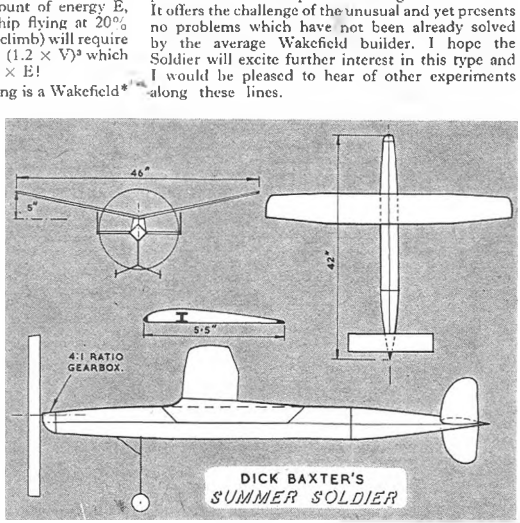
Thus in one minute an aeroplane flying at gliding speed V, will use an amount of energy E, proportional to V^3. The same ship flying at 20% above gliding speed (as during the climb) will require in one minute E_2 proportional to $(1.2 \times V)^3$ which equals $1{\cdot}7 \times V^3$. So E_2 equals $1{\cdot}7 \times E$!

If the aeroplane we are discussing is a Wakefield* you will observe that during the climbing phase an additional amount of energy E wasted equals $0.7 \times E$, was expended over what would have been required had the aeroplane flown at its gliding speed. The energy wasted during one minute of rapid climb would have sustained the aeroplane for an additional 2/3 minute at gliding speed.

During the climb phase the aeroplane changed the unused remainder of the potential energy originally stored in its rubber motor for potential energy stored as altitude.

The model would have been better off to fly more slowly without wasting that 40 seconds worth of energy on speed . . . . Provided it could keep its unused energy stored in the rubber motor.

* *Also true of less exotic types.*



Just a wing and a tiny fuselage are all you need to make for hours of flying fun with . . . . .

Lil' PLANK

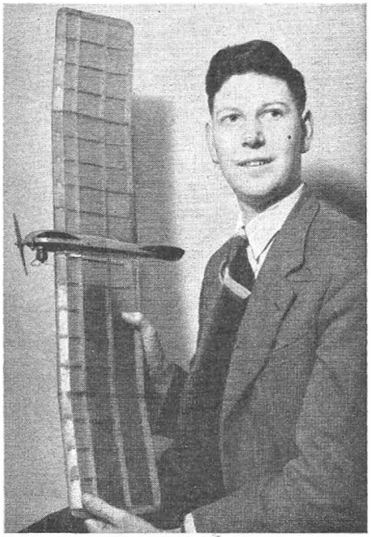
designed by Pete Wyatt for ·5 cc diesels

THIS IS NUMBER eight in a series of planks and embodies the best features of the previous seven. Designed to be as small as possible and still be safe on an "Allbon Dart" at full revs, it is cheap and easy to build, takes up little space, and is simple to fly without being too finicky over the structure and trimming details.

Build the **Wing** first so that the fuselage can be made to suit it. All dimensions are given on the plan overleaf which is half-size. Cut out all the ribs, and spars for the wing centre section and cement the two dihedral break ribs to leading and trailing edges and to the two lower $\frac{1}{4}$ in. × $\frac{1}{16}$ in. members. Cement the rest of the ribs into position together with the $\frac{1}{16}$ in. sheet main spar webs and finish off with the upper $\frac{1}{4}$ in. × $\frac{1}{16}$ in. main spar members and $\frac{1}{16}$ in. × $\frac{1}{8}$ in. front spar.

Build up each wing tip in a similar way by packing up the centre section to the correct angle and butt jointing the wing tip to it. In order to avoid tip stalling on the glide, about $\frac{1}{16}$ in. wash-out can be built into each wing tip. Cement a small piece of reinforcing linen on all the dihedral joints.

Make two $\frac{1}{16}$ in. **fuselage** sheet sides with cut-out to suit the wing, allowing for the $\frac{1}{16}$ in. sheet bottom covering on the wing seating. Durofix hardwood engine bearers to one of the sides and assemble fuselage as far as the front bulkhead. Fuel proof inside of tank compartment and place several coils of fuel tube in position before finally sheeting the top. The tube should be enough for 20 seconds run plus starting. Durofix wedges on to the engine bearers to allow for side thrust and drill bearers to suit engine. Cement nose cowling and fins in position. Cover whole model with lightweight Modelspan and apply three coats of dope and one of fuel proofer.



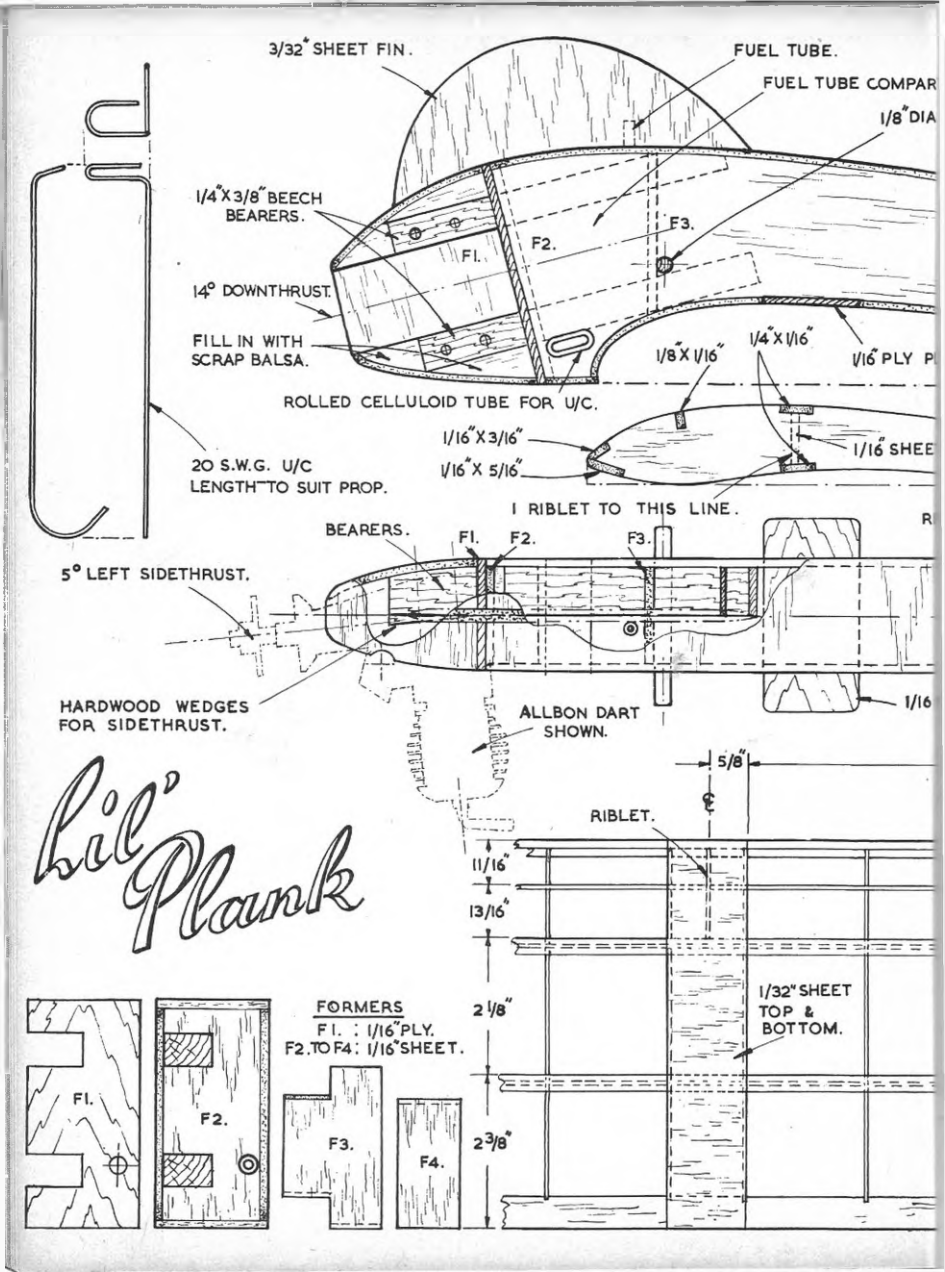
Only 35 inch span, this Lil' Plank will tuck away in any model box. Tough enough to bounce from tip to tip, it's just the thing for fun flying with the minimum of expense

Trimming

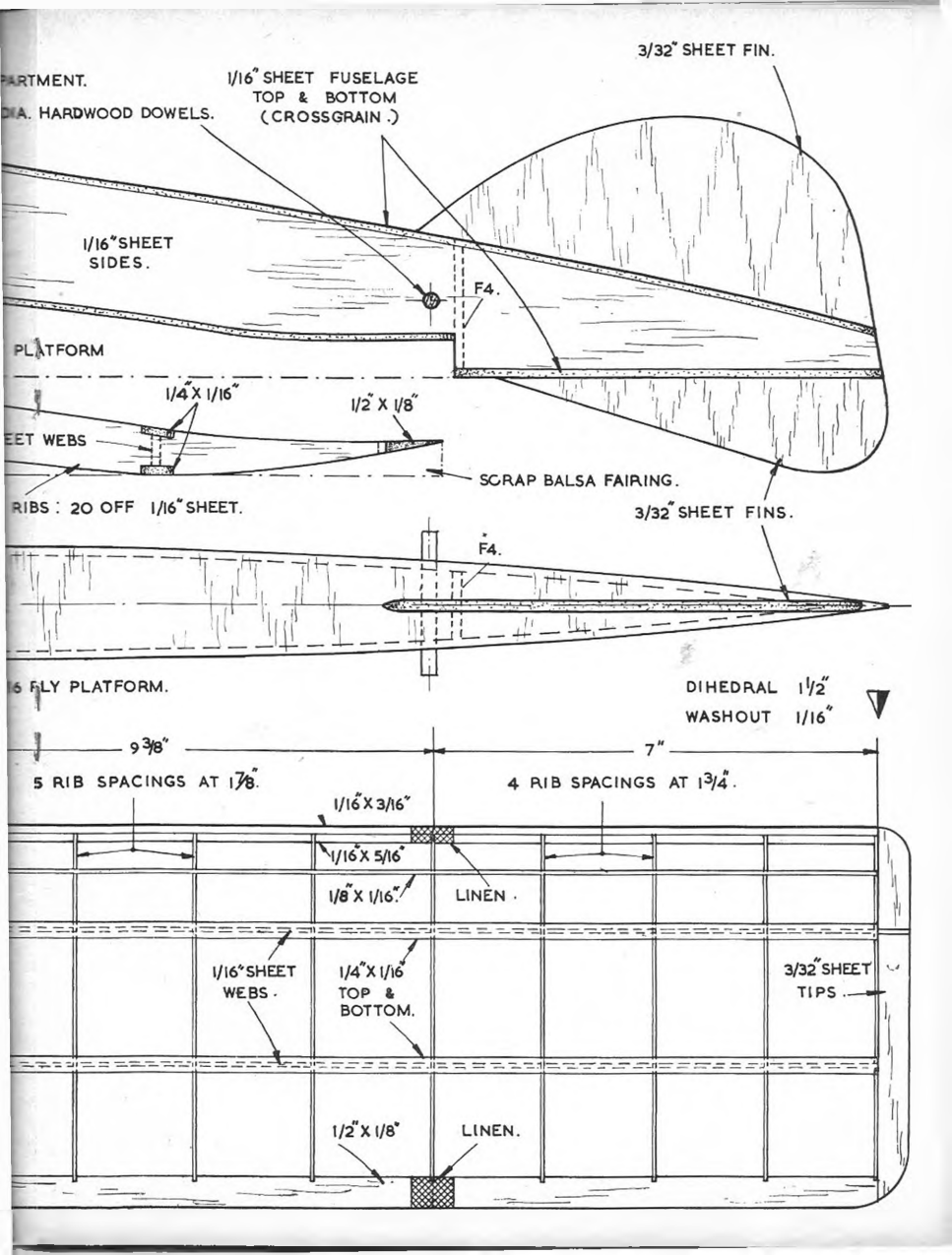
Since a "plank" is rather tricky to test glide, I usually guess the C. of G. initially and start with low powered flights.

Before attempting any flights make sure wings are balanced and true to one another, also the C of G should be slightly in front of that shown on the plan as it is easy to move this back when test flying. If test glides are attempted make sure they are over long grass as the gliding speed is rather critical. Initial flights should be made on low power to check the glide. If the climb is to the left, open up the power using a little right rudder to keep the tail down. Lil' Plank should climb in a tight left spiral as this is the only way to control a large amount of power. A straight trim will give lovely snap loops and a right trim is likely to make a hole in the ground since there is no tail to counteract the gyroscopic action of the propeller! The whisker type under-carriage gives good take-offs providing you aim carefully into wind. Lil' Plank takes a fair distance to "unstick", but rockets off the ground when full speed is reached. It might be a good idea to use one of these planes to clear a take-off area at contests!

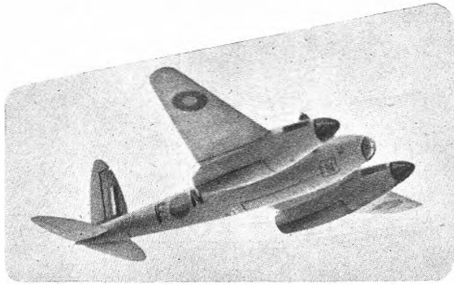
Full-size & scale plans overleaf


3/32" SHEET FIN.
FUEL TUBE.
FUEL TUBE COMPAR
1/8" DIA
1/4"X3/8" BEECH BEARERS.
F1.
F2.
F3.
14° DOWNTHRUST.
FILL IN WITH SCRAP BALSA.
1/8"X1/16"
1/4"X1/16"
1/16" PLY P
ROLLED CELLULOID TUBE FOR U/C.
1/16"X3/16"
1/16"X 5/16"
1/16" SHEE
20 S.W.G. U/C LENGTH TO SUIT PROP.
I RIBLET TO THIS LINE.
BEARERS.
F1.
F2.
F3.
5° LEFT SIDETHRUST.
HARDWOOD WEDGES FOR SIDETHRUST.
ALLBON DART SHOWN.
1/16
5/8"
RIBLET.
11/16"
13/16"
2 1/8"
2 3/8"
1/32" SHEET TOP & BOTTOM.
F1.
F2.
F3.
F4.
FORMERS
F1. : 1/16" PLY.
F2. TO F4: 1/16" SHEET.

Lil' Plank


PARTMENT.
DIA. HARDWOOD DOWELS.
1/16" SHEET FUSELAGE TOP & BOTTOM (CROSSGRAIN.)
3/32" SHEET FIN.
1/16" SHEET SIDES.
F4.
PLATFORM
1/4" X 1/16"
1/2" X 1/8"
EET WEBS
SCRAP BALSA FAIRING.
RIBS : 20 OFF 1/16" SHEET.
3/32" SHEET FINS.
F4.
16 FLY PLATFORM.
DIHEDRAL 1 1/2"
WASHOUT 1/16"
9 3/8"
7"
5 RIB SPACINGS AT 1 7/8".
4 RIB SPACINGS AT 1 3/4".
1/16" X 3/16"
1/16" X 5/16"
1/8" X 1/16"
LINEN.
1/16" SHEET WEBS.
1/4" X 1/16" TOP & BOTTOM.
3/32" SHEET TIPS.
1/2" X 1/8"
LINEN.

Free Flight "single-engined" Mosquito XVI



NEW POWER SYSTEM

DEVISED BY P. L. WHITTAKER D.F.M.

THIS FREE-FLIGHT "Mossie" is conceived from the A.P.S. plans for the rubber job (now withdrawn from Plans Service, though the C/L model plan CL.570, can be used as a similar basis). Construction of the fuselage is based on a spruce spine and belly and is fully planked. Engine nacelles are constructed in like manner. Two full $\frac{1}{8}$ in. balsa spars are incorporated in the wing centre section.

Undercarriage and all air-intakes have been scrapped due to their toe stubbing habits when landing. Wing outer sections carry spruce leading edges and plug onto plywood tongues. All surfaces are covered in nylon parachute fabric.

The Allbon Javelin engine is mounted in the starboard nacelle, fed with fuel from a tank in the wing and drives the Port airscrew in the opposite direction via an aluminium tube and piano wire flexible drive. Power is taken direct from the crankshaft to the 20 s.w.g. piano wire drive which incorporates a rubber coupling,cum weak link, in the Port nacelle.

Airscrews are K.K. Truflex 8 in. × 4 in. warped in boiling water to a suitable pitch—about 3 in. right and left handed. Reasons for the rubber drive coupling are that the motor can burst into life before power reaches both props—also, a "power-on" dive in to Port will only sever the rubber bands, thus saving the wire shafting. The motor should be tuned lean on both props with a minimum of fuel and compression—thus, if the shaft packs up in flight, the motor will give one burst and stop. This set up, coupled with a turn to Starboard on trim, will avoid a fatal turn into the dead engine.

Thrust lines are horizontal with no offset, tailplane setting is 4° negative. Ballast is added to the rear of the Port nacelle to drag the C of G rearwards and onto the centre line. When the model, suspended at the rear of the cockpit cover, is dead level, add two balls of shot to counteract the engine fuel.

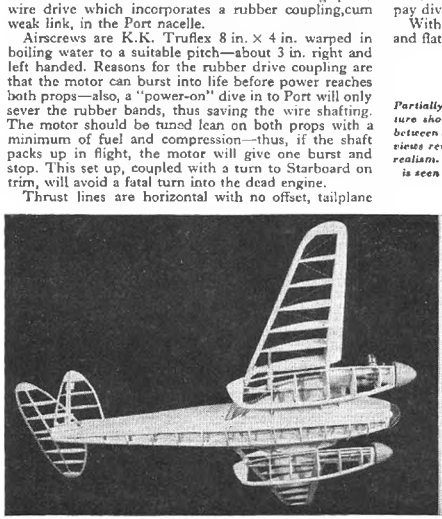
Provided that the critical C of G location is found, $2\frac{1}{2}$ in. dihedral will take care of roll, torque being nil. Rig the wings with 2°–3° washout at the tips and test glide as fast as possible. Don't apply power until a flat glide is obtained. Slight nose heaviness is a good thing, under power the negatived tailplane holds its own. Yaw and flat turns under power are due to mismatched props and can be corrected by brute force in the wash basin.

Several authentic colour schemes are available. Probably the easiest is the P.R. Cerulean grey-blue applied all over. Fuel proofing with top quality material and good workmanship on the surfaces will pay dividends.

With an all up weight of 25 oz., the climb is long, fast and flat. Performance at height will scare you round the

(*Continued at foot of next page*)

Partially complete structure shows curve of drive between nacelles, and other views reveal the attractive realism. Pendulum rudder is seen in action above



Speed topics

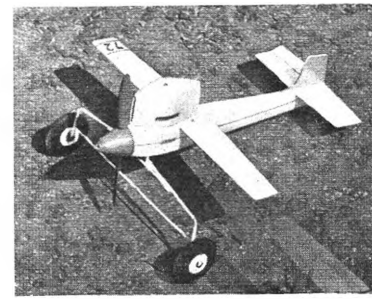
RESULTS OF THE ELIMINATOR to select the 2.5 c.c. British speed team for the World Champs at Poitiers in July hardly inspire terms of admiration. It should be remembered that this was the first time out for many of the models entered, and all were flying on the new line length—in fact the same 52.21+ ft. length lines as used for the bigger 5 c.c. class.

Question of the day was "rich or lean?" and few seemed to find the right answer—but the point that matters most is that we have a good team. It is *Peter Wright* (E.D.), 90 m.p.h., *Mike Smith* (Oliver), 87.4 m.p.h., *Digby Woods* (Torpedo), 83.8 m.p.h. and *Dick Edmonds* (Oliver), 83.8 m.p.h. With ten weeks for preparation, each of these modellers should be able to reach the "100" mark in time for the final contest.

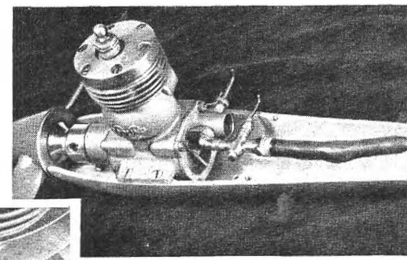
Smith and Edmonds (High Wycombe) will also stand us in good stead should there be International Team Racing, whilst Wright and Woods (St. Albans) will tackle other speed classes supplementary to the World Championship for Class 1.

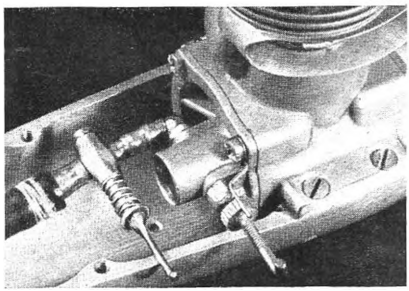
Other models were flown at the Radlett eliminators, included Don Powells Dooling 29 record holder (128.5 m.p.h.) and John Hall's McCoy 60 (134 m.p.h.) but little else there was to report, save for an encouraging number of "special" glow plug 2.5's none of which came up to the leading standard (almost!) engines.

Universal acceptance of the pen bladder as an ideal tank for speed, especially with bigger classes, where centrifugal effect is great, led us to borrow Pete Wright's latest Gook for these two photographs. A standard pen bladder is tightly bound to a piece of neoprene, filled with fuel under pressure and connected to the needle-valve jet body. Needle should be shut tight, motor primed, then needle opened to precise setting for immediate starting when the fuel is allowed to spurt into the engine. Disadvantage of this is the constant needle movement, so Pete uses a sensible fuel cock (a filed nail in brass tube) and just flicks this "on" when the engine is ready to start. This facilitates both the starting, and attaching the bulbous pressure filled pen bladder. A constant motor run is the greatest virtue of such a tank and we commend it to all speed enthusiasts.

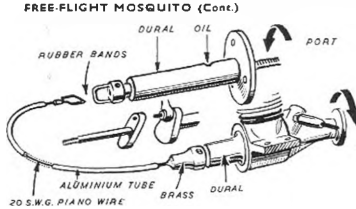


P. Wright's winning 2.5 Gook, with E.D. Racer Glowplugged





FREE-FLIGHT MOSQUITO (Cont.)



bend, with such realism, what matter that the glide is bricklike—the hotseat of a mossie is no place to be with the fans turned off anyway!

A final caution, don't use two Darts or Merlins, there are no control lines to prevent roll (sly dig). Don't use .75 Mills running both ways either when number one engine has run dry, number two will cause the plot to peel off and contract acute gravel rash.

If you can't reach a lathe, the price of the engine countershaft and odd modification (such as could be made for you by any engine repair depot) is still lower than twin motors.

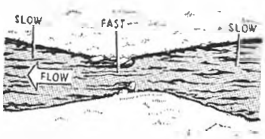
Detail, left, shows "twin" drive from single engine

Carburettor design . . . by M. Templeman

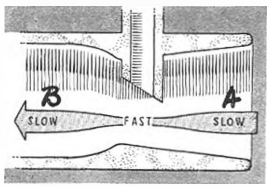
TO ENABLE ONE of our engines to run, it must have an easily combustible fuel to burn in the cylinder. For the fuel to burn it needs oxygen, which it obtains from the air. As air contains only about 23% oxygen by weight, it can be seen that considerably more air is needed to burn the fuel than if pure oxygen were used.

Therefore we need over four times as much air in order to get the oxygen required to burn with the fuel. In order to burn the fuel in the shortest time the fuel has to mix completely with the oxygen.

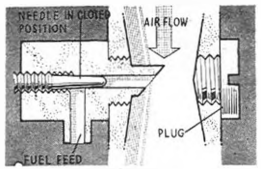
For example, if we burn a large piece of coal it takes longer than if we broke it up first. Therefore if we break our fuel up as small as possible when mixing it with the air, it will burn much faster.



To obtain a fuel air mixture in our engine we use what is known as a carburettor. The air passing through a carburettor draws the fuel through a jet, which sprays it into the air forming a mixture of fuel and air. The principle of the carburettor can be seen by visualising a river. The effect of a river narrowing causes the water to flow faster in order to maintain the volume of water constant.



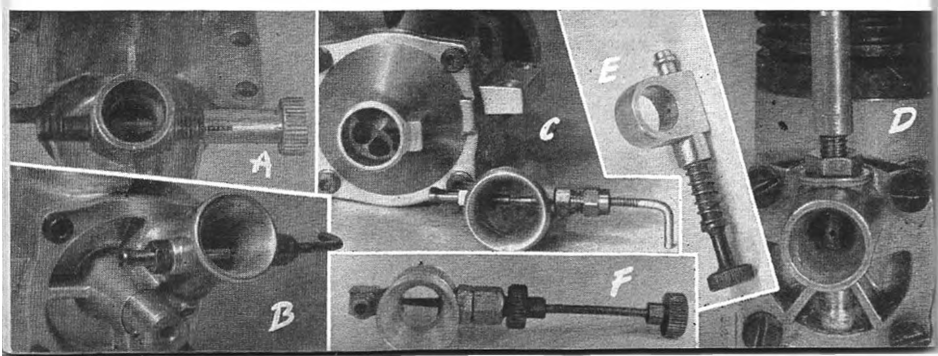
The same condition applies to the carburettor. To get a certain volume of air through, the speed must increase where the bore is smallest, between A & B.



If we therefore design a carburettor which puts just the right amount of fuel in the air we will use our fuel to the best advantage. The only way to do this is to inject the fuel in in such a way that it offers the least resistence to the flow of air. To do this we ought to dispense with needle valves, spraybars, etc. But you will ask how can we alter our fuel flow for the best fuel/air ratio, which is necessary for fuel economy and the greatest power? There are various ways:—One is by trying different *fixed* jets until you find the correct value of fuel and air, but this is rather tedious. Another method is to use a jet at one side of the carburettor with a needle protruding from the opposite side to alter the size of the hole in the jet. But we have a needle causing resistance to the airflow. Now if we can get a jet which is variable and does not offer as much resistance as the other types, we get better fuel consumption and greater power. If also the carburettor is polished and sharp edges removed, the air will pass through more easily and faster, so getting more combustible gases into the cylinder to produce power. So if the needle is placed before the jet we only get resistance from the jet. This can be done as shown in the sketch above.

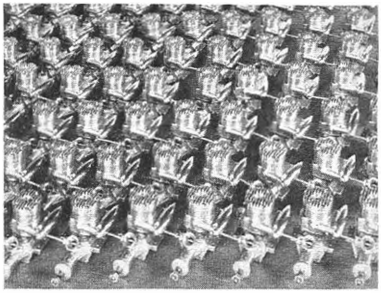
As the performance of an engine depends upon the gases reaching the cylinder, then any improvement in carburettor design will help power output. An E.D. racer fitted with above illustrated jet improved the performance of a class A team racer from 80 m.p.h. to 95 m.p.h., (*?—Ed.*) and also decreased the fuel consumption, so getting 50 laps per tank as against 42 on the standard spraybar.

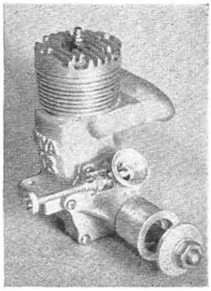
CARBURETTOR TYPES. A. *Standard spraybar with single jet hole at 90° to airflow on fast Torpedo 15.* B. *Amco 10 c.c. has Dooling type needle, seen also on Glowplug reed valve version in C with jet central in carb.* D *is a Webra Mach 1 modified from two part needle to take Allbon spraybar with no loss of performance. Holes in-line with flow are both sides of body. Carb has cast venturi section internally.* E *is Cox Thermal Hopper remote needle, discharges into channel around carburettor through several more holes.* F. *McCoy surface jet with 90° fuel feed pipe. Needle projecting across carb helps to distribute spray in orifice.*



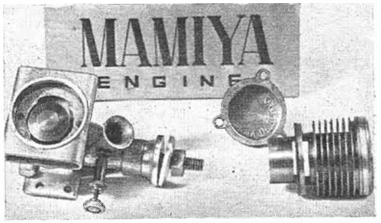
Motor Mart

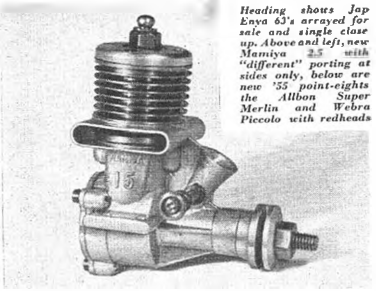
New Japanese 2.5 Engine reviewed





RECENT census of Japanese engines in current production shows that modellers out there have a choice of no less than 34 different types from which to make their choice. The Japs are particularly clever at involved pressure die-cast crankcases, and one of the latest of their product, the glowplug **Mamiya 15** is no exception. Sent to us as one of the best engines in the F.A.I. class, it has been duly run-in and checked in r.p.m. with a general standard of from 1,000 to 1,500 revs below that of the **K & B 15** with similar bore. The Mamiya has new features in a conical piston with flattened top, all reciprocating weight being kept to a minimum, the piston wall being "shell" thickness, and two large transfer passages are incorporated in the casting at the sides. Exhaust is also at sides only, has large area around the bore, and leaves little cylinder to hold the top and bottom sections together. Plug supplied is known as a "Sunglow" but on 2 volts the illumination can only be likened to an eclipse. Wire is heavy and brownish in colour, certainly not that to which we are accustomed, so all checks were made with a K & B Plug—and Nitro Methane fuel. With further experiment we hope for more revs, for the appearance of the engine certainly leads one to expect higher performance.

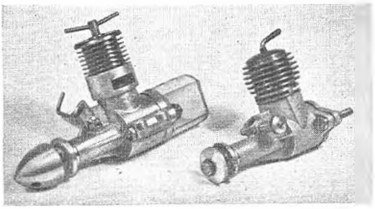




Heading shows Jap Enya 65's arrayed for sale and single close up. Above and left, new Mamiya 2.5 with "different" porting at sides only, below are new '55 point-eights the Allbon Super Merlin and Webra Piccolo with redheads

2.5 c.c. eliminators at Radlett, reported elsewhere on p. 311, give rise to doubt the superiority of glowplug now that so much line drag is introduced for 1955. The Oliver diesels were motoring fast for official flights, even faster during practice so they may yet oust the Nitro burners. Especially as it looks as though 10 thou. lines are min. thickness—lines used normally are .0076 in.

News from Germany is of an in-line twin "about E.D Bee size", with one central carburettor and disc valve induction individually feeding each cylinder. Still being developed, but a working proposition, by all accounts, which may come on to the market in due course. And from the East Zone of the same country comes whispers of a supercharger cum injection pump for use with model power units.



For the record, SAE numbers as applied to lubricating oils are an arbitrary classification depending on the viscosity of the oil. Numbers in use are 5W, 10W, 20W, 20, 30, 40 and 50 for crankcase oils—the higher the number the thicker the oil. Gear oil classifications start at 75 and go up to 250. SAE numbering is an American specification, now widely adopted by oil manufacturers in this country. Oils matched "number for number" will have similar viscosity characteristics, whereas definitions like "light", "medium" and "heavy" vary widely.

A REAL "OK CLASS A" TEAM RACER OF 22½" WING SPAN FOR 2.5 cc.

FOOTPRINT

DESIGNED BY

P. Smith

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THE AEROMODELLER PLANS SERVICE

38, CLARENDON RD., WATFORD, HERTS.

3/-

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

MATERIALS REQUIRED

SHEET BALSA 35" LONG

1 SHEET OF 1/2" X 2" M.S./FT.
1 " " 3/8" X 4" MED.
1 " " 1/8" X 3" M.HARD.

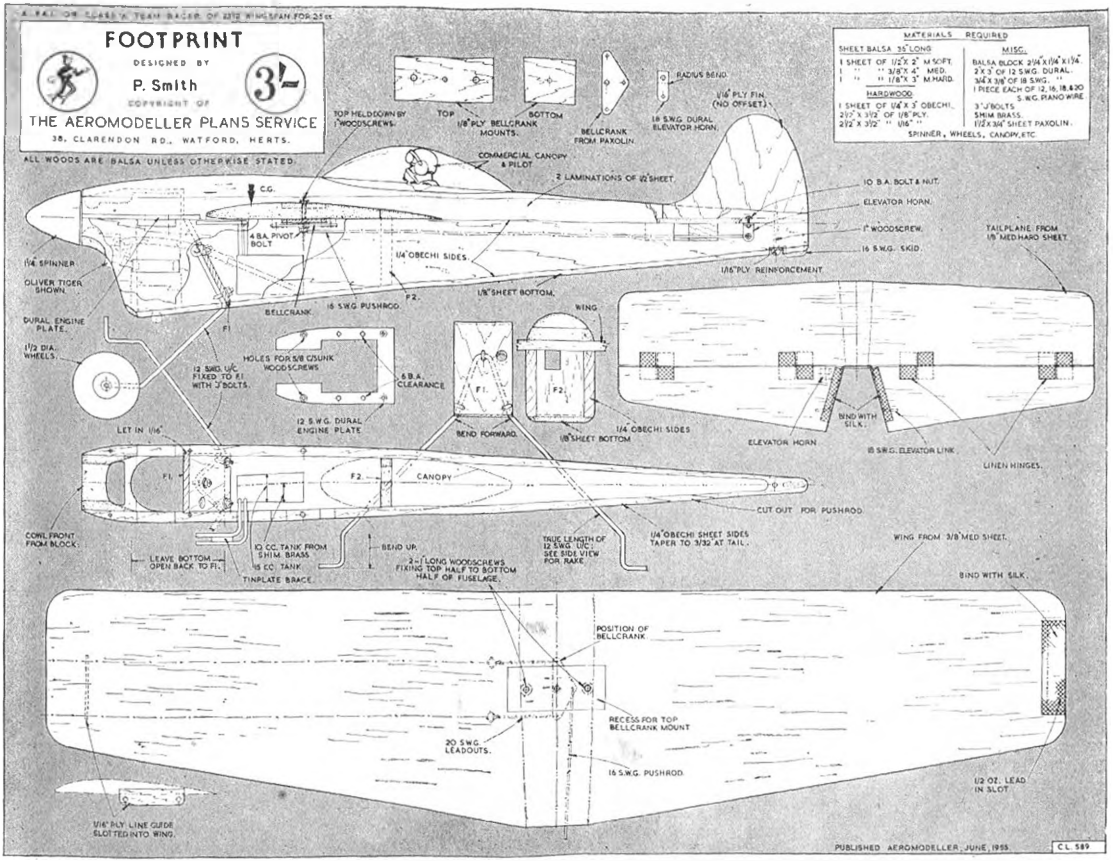
HARDWOOD:

1 SHEET OF 1/4" X 3" OBECHI.
2½" X 3½" OF 1/8" PLY.
2½" X 3½" " 1/16" "

MISC.

BALSA BLOCK 2¼" X 1¼" X 1¼".
2" X 3" OF 12 S.W.G. DURAL.
¾" X 3/8" OF 18 S.W.G. "
1 PIECE EACH OF 12, 16, 18 & 20 S.W.G. PIANO WIRE
3 "J" BOLTS
5 M.M. WASS.
1½" X ¾" SHEET PAXOLIN.

SPINNER, WHEELS, CANOPY, ETC.



PUBLISHED AEROMODELLER JUNE, 1955. CL 589

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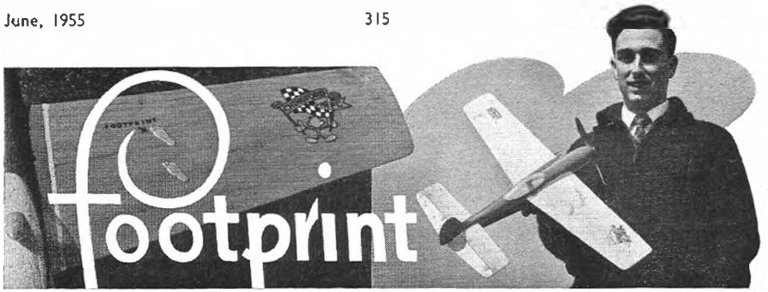


. . . by special request!

Winner of the 1954 International team race at the World Championships with a speed of 82 m.p.h. over 40 laps on 10 c.c. of fuel———

designed by Peter Smith

WHEN THE BRITISH TEAM destined for Holland and the World C/L Championships last August, learned that one of the events was to be a team-race, it was decided that as most of us had considerable team racing experience we should stand a very good chance if only we had some suitable models. A quick glance at the F.A.I. T/R rules showed me that a completely new model was called for as the F.A.I. area of 8 sq. dm. total is considerably larger than our own 70 sq. in. for wing area alone.

The model had its first test flight the day before the team was due to depart and exceeded all expectations. Its subsequent performance in the World Championships also left nothing to be desired.

"Footprint" was easily the fastest model in its heat and even though a prop change had to be made, it went on to win with a time of 7 min. 10 sec. for 10 kms. Incidentally this "slow" (for Footprint) time was bettered only once by another model during the whole meeting.

Following the heat win it went on to win the semi-final (by over 2 min.) in the fastest time of the day of 5 min. 46 sec., and the final in 6 min. 7·3 sec.

All races were run over 10 kms. (120 laps), the "Footprint" averaging approx. 40 laps at 82 m.p.h. on a 10 c.c. tank.

Cut the **fuselage** sides from good quality Obechi. Cut out formers. Bend undercarriage from 12 s.w.g. piano wire and fix to F.1. Slot sides to take F.1. Durofix securely together, allow to dry and draw rear of fuselage together and cement. Cement on bottom and noseblocks. Lightly cement top of fuselage to bottom half and carve to shape. Split the two halves with a razor blade.

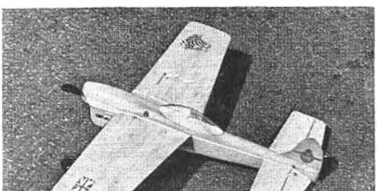
The **wing** and **tail** are cut and sanded from sheet balsa and need little comment. Insert ⅛ in. ply support on upper surface of wing, first adding bell-crank pivot bolt. Cement wing and tailplane to upper half of fuselage and connect up controls.

Engine platform is cut from 10 or 12 g. dural. Drill holes for engine bolts and mounting screws. It is advisable to reinforce the screw hole at the rear of fuselage with plastic wood unless very hard balsa has been used for fuselage top.

Gouge out the inside of the engine bay to give plenty of room for the escape of exhaust gas and for fuel tubing. Add wing tip weight, line guide, tailskid, etc. For extra strength tissue cover before doping and fuel proofing.

Although first flown specifically as an F.A.I. racer with 10 c.c. tank it has also flown with some merit and at no disadvantage against smaller S.M.A.E. class "A" racers, using a larger 15 c.c. tank. Dimensions for both tanks are shown on the plan, and thanks to the method of split fuselage construction, the tanks can be inter-changeable.

The completed model should weigh about 17 or 18 oz. and will prove to be quite rugged enough to take all the hard knocks that are encountered whilst team racing.



Simple yet reasonably realistic lines characterise the Footprint with its all-sheet structure. Use of Obechi for the fuselage sides may be new to many, but it has been the saving of many a model in Peter Smith's Chingford Club. Top half, with wing and tail attached as per a speed model, are detachable along thrust-line for access to tank and engine departments

Culmination of DAVE SUGDEN'S Making your own Engine series

THE Sugden Special

A 2.5 c.c. PLAIN BEARING HIGH PERFORMANCE DIESEL WITH MODERN FEATURES

SUGDEN SPECIAL

DESIGNED BY D.C. Sugden.

4/6

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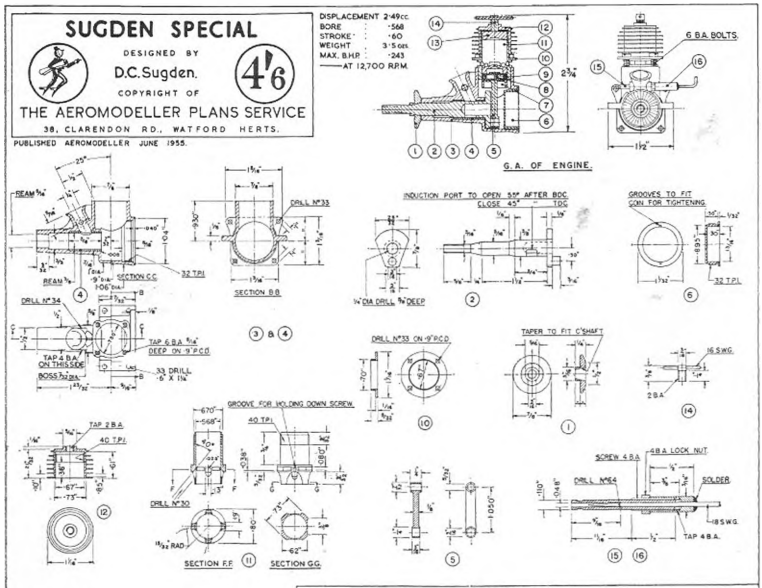
THE AEROMODELLER PLANS SERVICE

38, CLARENDON RD., WATFORD HERTS.

PUBLISHED AEROMODELLER JUNE 1955.

DISPLACEMENT 2·49cc
BORE ·568
STROKE ·60
WEIGHT 3·5 ozs.
MAX. B.H.P. ·243
—AT 12,700 R.P.M.



SCHEDULE OF PARTS					
PART N°	NAME	MATERIAL	PART N°	NAME	MATERIAL
1	DRIVING DISC.	DURAL.	9	END PADS.	DURAL.
2	CRANKSHAFT.	HIGH TENSILE STEEL.	10	CYL. HOLDING DOWN RING.	DURAL.
3	CRANKCASE	ALUMINIUM.	11	CYLINDER	H.T.S.
4	CRANKCASE BUSH.	CAST IRON OR PHOSPHOR BRONZE	12	CYLINDER HEAD	DURAL.
5	CON. ROD.	DURAL.	13	CONTRA PISTON.	CAST IRON.
6	BACK COVER.	DURAL.	14	COMPRESSION SCREW	STEEL.
7	PISTON	CAST IRON.	15	SPRAY BAR.	DURAL.
8	GUDGEON PIN	SILVER STEEL.	16	NEEDLE CAP.	BRASS

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IN DESIGNING this engine the requirements were: high power output, low weight and easy construction. The first implies Oliver type porting and low friction crankshaft bearings whilst the others rule out ball races. The effectiveness of the compromises made is indicated by the test results, *i.e.*, the internal shape of the engine is satisfactory, but the output could be raised with ball races for racing purposes.

Design and Development

The stroke/bore ratio was chosen small enough to produce a light compact design with docile starting characteristics, but large enough to prevent the internal stresses from being excessive. A value of 1.06 was obtained when a stroke of .6-in. was chosen.

With Oliver transfer ports it is not very practicable to screw in the cylinder, a feature making for lightness, and on the first prototype motor a system of studs was devised which has been superseded by the method shown here. The cylinder is prevented from rotating by the holding down screws which locate in the grooves between the exhaust ports. The cylinder head then screws on in the normal fashion.

A floating bush was used to replace a ballrace at the web end of the crankshaft on the first engine. This bush, made from Immadium VI bearing metal, was the width of a standard ball race and itself rotated in a high tensile steel outer bearing. It proved to be tricky to make and wore rapidly with the result that the crankcase compression leaked past the crankshaft, thus causing the motor to become rather thirsty. The second prototype consequently had the short plain bearing, shown on the drawing, which has proved to be quite satisfactory. A separate inserted front bush used on the first engine was made integral with the crankcase on the later designs since this bearing is lightly loaded.

The exhaust ports were reduced from the 80 thou. depth of the first to 60 thou. depth on the second engine and the slightly lower power output of the latter unit could be attributed to this modification. 80 thou. ports were used on the third and final engine.

The second and third motors had the carburettor intake drilled $\frac{1}{4}$-in. diameter for the simple reason that a suitable smaller size drill was not available. This did not appear to affect starting which is easy on all three engines. Alternative beam mount lugs were provided on the third motor.

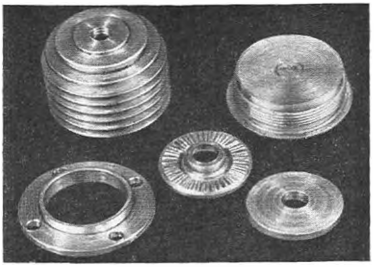
Construction

Tolerances are not indicated on the drawing since the design is not intended for mass production. As a matter of principle all dimensions should be produced as accurately as possible and if the order of working as followed below is used, all parts will fit accurately and errors will be eliminated.

The **pattern** required much care to make and as many parts as possible were turned on a Wolf drill lathe. An additional $\frac{1}{8}$ in. was allowed on the faces to be machined. The local foundry did the casting.

The **back cover** was turned from dural as described in Part V (April issue).

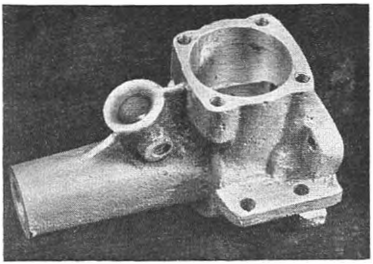
The **con-rod** was milled from a piece of DTD 610 $\frac{1}{4}$-in. dural plate which despite its rather low strength has proved adequately strong and wear resistant. The holes were drilled and reamered, and the milling on one side completed at one setting up on the vertical slide to ensure good alignment of the rod, which is important. The remainder was easily filed.



Simple turned parts from Dural

The **cylinder head** and **holding down ring** were machined, the finning being completed before the boring and screw cutting were commenced.

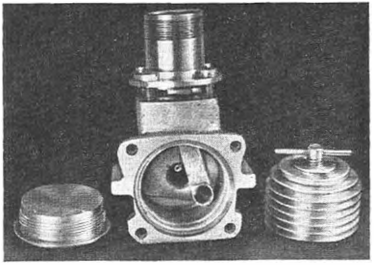
From a piece of S11 stock, sufficiently long to allow 1 in. for chucking, the **cylinder** was machined and drilled $\frac{1}{4}$ in. dia.

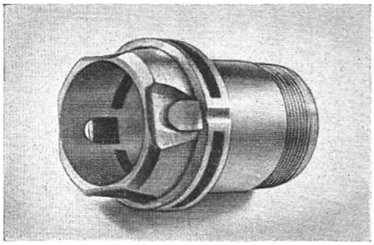


Prototype sand cast c/case fully machined

Marks are made at 90 degrees intervals round the exhaust ring. The work was marked at No. 1 jaw and transferred to the vice on the vertical slide for milling the transfer grooves. These could be filed out if necessary. A $\frac{1}{4}$ in. end mill was used although an old drill carefully

Diamantled, from the rear, shows cylinder retaining method





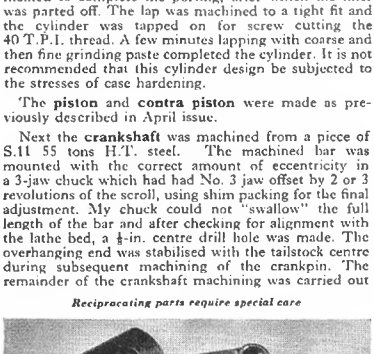
Cylinder fully machined, showing ports

ground for the purpose would do, and the grooves were located by the 90 degree marks as also was the drilling for the transfer ports. It was not found necessary to use a jig here and with the cylinder set across the lathe bed at 40 degrees, a centre drill and drills No. 40 and 30 completed the hole. This was squared off between the exhaust ports after they had been milled as described in Part V. The milling has been taken to the correct depth when the tool is on the point of breaking through the cylinder bore ($\frac{1}{4}$ in. dia.). The work was then returned to the chuck, trued up, and bored to $1\frac{1}{2}$ thou. undersize. A half-hour of filing remained to complete the porting, after which the liner was parted off. The lap was machined to a tight fit and the cylinder was tapped on for screw cutting the 40 T.P.I. thread. A few minutes lapping with coarse and then fine grinding paste completed the cylinder. It is not recommended that this cylinder design be subjected to the stresses of case hardening.

The **piston** and **contra piston** were made as previously described in April issue.

Next the **crankshaft** was machined from a piece of S.11 55 tons H.T. steel. The machined bar was mounted with the correct amount of eccentricity in a 3-jaw chuck which had had No. 3 jaw offset by 2 or 3 revolutions of the scroll, using shim packing for the final adjustment. My chuck could not "swallow" the full length of the bar and after checking for alignment with the lathe bed, a $\frac{1}{8}$-in. centre drill hole was made. The overhanging end was stabilised with the tailstock centre during subsequent machining of the crankpin. The remainder of the crankshaft machining was carried out

Reciprocating parts require special care

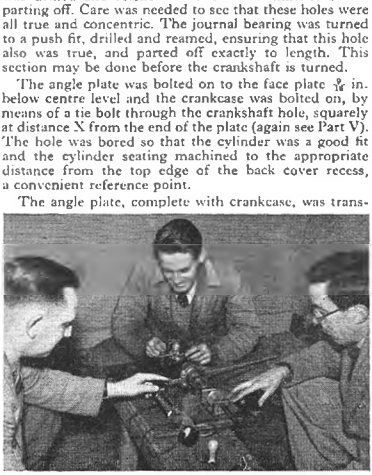


as described in April issue. The induction port was milled out to port opening and closing lines scribed through the carburettor intake hole as shown in the photograph on p. 203, April issue.

The rear face of the **crankcase** casting was centre popped and the chucking boss was filed until the casting nipped true to this centre. The inside was drilled, bored and the threads cut to fit the back cover. Finally the hole was drilled and reamed to take the crankshaft before parting off. Care was needed to see that these holes were all true and concentric. The journal bearing was turned to a push fit, drilled and reamed, ensuring that this hole also was true, and parted off exactly to length. This section may be done before the crankshaft is turned.

The angle plate was bolted on to the face plate $\frac{3}{8}$ in. below centre level and the crankcase was bolted on, by means of a tie bolt through the crankshaft hole, squarely at distance X from the end of the plate (again see Part V). The hole was bored so that the cylinder was a good fit and the cylinder seating machined to the appropriate distance from the top edge of the back cover recess, a convenient reference point.

The angle plate, complete with crankcase, was trans-



Testing engine No. 2. Eric Hook, Dave Sugden and Ron Warring discuss the Eddy-current dynamometer

ferred to the vertical slide for drilling the cylinder holding down screw holes. With the cylinder fitted, a No. 35 drill was used to simulate the screw for obtaining the correct centres. Holes were drilled in the holding down ring at the same setting by slipping it on to the cylinder in the appropriate position The carburettor holes were drilled with a similar set up. No. 34 drill was used for the spray bar hole which was only tapped on one side.

Having thoroughly cleaned all the parts the motor was assembled without difficulty, although care was required to ensure that the cylinder tightened down evenly. Starting is normally achieved after a choke and a couple of flicks. After the first burst, put the piston up on to compression and check that the con rod is running true on the crankpin. It is possible for the rod to run on the end of the pin, which results in a damaged big end and possibility of failure of the shaft due to the greatly increased bending moment. A cure for this trouble is to turn the rod from back to front.

Having completed all the processes with success, you should be the proud owner of one of the hottest plain bearing engines available. All the very best of luck.

As a service to Sweden Special makers, die-cast crankcases have been made and are available with the engine drawing price 12/6, or separate at 8/- each. References to Part V in April issue where "Machining operations" were detailed will be helpful. Back Numbers of this issue are available price 1/6d. from Watford offices.

An Opinion on the Special . . . by R. H. Warring

INITIAL IMPRESSION of the "Special" was that it was essentially an aeromodeller's engine, made down to minimum size and with all unnecessary weight removed. Whatever the claims that a little extra weight may not be important—and perhaps such claims are quite justified—when one thinks of "optimum" aircraft design one automatically links with it minimum weight. In this respect the "Special" rates top marks.

Design-wise the "Special" is quite orthodox and Dave is evidently an admirer of the Oliver stable, as seen in the form of porting he employs, though the cylinder retaining ring is a novel departure from the orthodox.

Being tailor-made, as it were, to suit Dave's own requirements, the test engine had one or two features which the writer would have altered. There was no positive lock on the needle valve, also the contra-piston fit was tighter than the writer would consider comfortable to handle. But apart from these minor points, everything else had the appearance of being "right".

Starting characteristics appeared quite satisfactory, without being outstanding. Hand-starting with small propellers was typical of a racing engine and the "Special" did appear to like a really generous prime and sh ow a definite preference for the fuel tank being located on an approximate level with the needle valve.

Tests were started with large propeller loads, when it was quickly evident that the torque output was going to be at least as high as any 2·5 c.c. engine yet tested. Maximum torque was generated at 8,500 r.p.m., there being a slight loss of torque with decreasing speed, but running continued satisfactory down to below 7,000 r.p.m. With increasing speed, torque output fell smoothly and readings were obtained in excess of 15,000 r.p.m.

The corresponding B.H.P. curve showed a peak at 12,700 r.p.m. Corresponding peak B.H.P. was ·243, which is exceptionally good. The "Special" does in fact, conform almost exactly to the expected output of top-class racing engines of 2·5 c.c. size, whilst its power/weight ratio is appreciably better than average.

Fuel used was quite heavily nitrated, the exact formulation being a matter of conjecture. Basically it started off as 25% Ether, 50% DERV, 22% Castrol XXL, 3% Amyl Nitrate with a *further* proportion of amyl nitrate added to Dave's own ideas. Some separate r.p.m. checks were made with other fuels, all of which showed varying degrees of inferior performance.

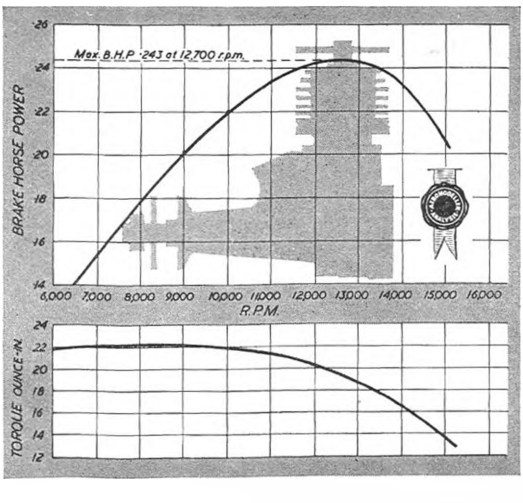
Summarising, the "Special" undoubtedly lives up to the requirements of a high-performance 2·5 c.c. engine with no apparent vices, consistent in running with a relatively low vibration level. Particularly commendable is the power/weight ratio achieved whilst retaining an essentially robust unit. In fact, a thoroughly excellent engine all round

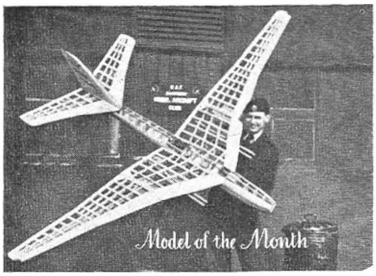
Sugden Special

DATA

Displacement: 2.49 c.c. (.152 cu. in.).
Bore: .568 in.
Stroke: .60 in.
Bore/stroke ratio: .93.
Bare weight: 3½ ounces.
Max. torque: 22.2 ounce-inches at 8,500 r.p.m.
Max. B.H.P.: .243 at 12,700 r.p.m.
Power rating: .0975 B.H.P. per c.c.
Power/weight ratio: .07 B.H.P. per oz.

PROPELLER R.P.M. TESTS	
Propeller dia. × pitch	r.p.m.
8 × 5 (Frog, nylon)	13,500
9 × 6 (Stunt)	10,100
10 × 6 (Trucut)	7,800
11 × 5 (Stunt)	7,000
7 × 10 (E-Z)	10,100
11 × 8 (Whirlwind)	5,500
9 × 3 (Tiger)	11,400
9 × 4 (Stunt)	10,700
7 × 4 (Stunt)	15,200



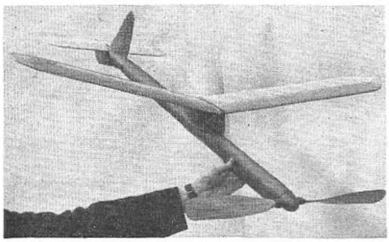


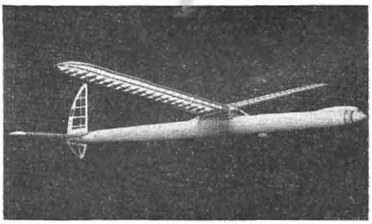
Model News

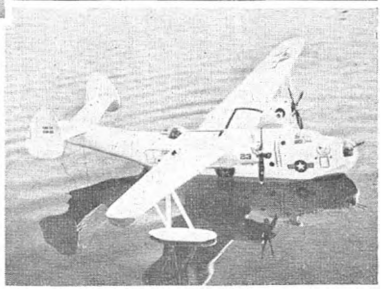
NOT UNNATURALLY, the boys of the R.A.F. are progressive, adventurous types—or so the recruiting offices would have us believe. Anyway, the Model of the Month shows a keen spirit, and few could deny that it is both original and enterprising. Being built at the R.A.F. Shawbury model club by L.A.C. Evered, it is christened "Valtralantic", and is to be a radio-controlled entry at the forthcoming R.A.F. Championships. Span is 10 ft., length 6 ft. 3 in. and a bogy undercarriage will be fully retractable. A pair of ETA 29's will, it is hoped, take it into the air, and as it orbits base under full control, a musical box will play Brahms Lullaby and tip lights flash in harmony. What one might call musical elevation!

Ted Evan's superb Wakefield obviously made a firm impression last season, for a couple of our better pics received this month show two followers of the slim streamline trend. The other tubular Wakefield at *top left* is A. Naylor's "AEROMODELLER" Cup winner at the recent Northern Models Exhibition. It was voted best in its class and as a perfect example of the Wakefield builders art, was also best aircraft in the whole exhibition. One at *top right* is A. Hobbs' of Halifax design with a 48 in. Alan King type wing and unique fuselage structure. An inner skin of $\frac{1}{16}$th balsa is wrapped around a turned balsa block template with an outer $\frac{1}{32}$nd skin. This is made in three sections, tapering front and rear with a constant centre fuselage. Prop is a 20 in. dia. single bladed Bilgri and structure weight, $4\frac{1}{2}$ oz.

To John Warren of Enfield go the honours for producing first photo's *bottom left*, of a scale Luton







Buzzard from our 1/72nd plans published in February. Span is 47½ in., weight 14 oz. and a Mills .75 is sidemounted for power. No news of flight tests have been received to date: but if looks are anything to go by—it should be a nice performer.

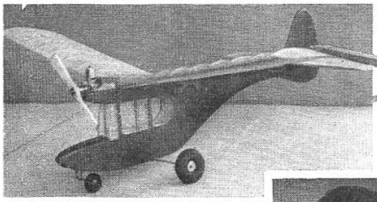
The scale flying boat, *bottom right*, a rather unusual choice for a scale control-liner, comes all the way from Everett in Washington, U.S.A., and is the work of Jim Linke and E. J. Sigmon. It's a Martin Mariner to 50 in. span, and has a couple of O.K. .074 Cubs in those nacelles. We can just imagine the thrill of landing or taking off such a model on calm water, and can only wonder why so few modellers appear to have tried overwater control-line.

Over now to this page, and at *top left* we have a most appropriately named "Ugly Duck". Designed and built by Headmaster D. R. J. Hindle, of Reculver Primary School near Herne Bay, this high thrust-line sport design was specially created for the ·8 c.c. Allbon Merlin diesel. Span is 36 in., and weight, including a pair of heavy sorbo wheels for soft landings, 15 oz. Mr. Hindle is one of many modellers who use "Design for Aeromodellers", our 5/- book, and to quote him "I was considerably surprised to find that this design flew straight from the board"—kind comment indeed for our publication, which is written in non-technical modeller's language.

Radio-control model at *top right* is another winner from the Northern Models exhibition, taking first prize in the r/c class. Built by W. S. Neild of Cheadle. Looks like a tough, purposeful model which we hope to see performing at the radio contests later this year.

Bottom left, almost on its way up is one of a rash of VTO semi-scalers that have appeared following publicity for the Lockheed and Convair experiments. This one, by L. E. Kemp of Sutton, is based on the Convair Pogo with an American Cameron 19 engine. Span is a mere 18 in., and the surfaces are covered in $\frac{1}{16}$th sheet. It should certainly be able to climb away from a Vertical Take Off: but when is somebody going to make a model that can land back the reverse way? Our own experiment with a contra-prop based on model helicopter principles has so far eliminated torque; but introduces fuel feed difficulty with the engine revolving at 4–6,000 r.p.m.: has anyone else tried the idea? A contra-prop and speed control could make a control-line model do almost anything.

Last but by no means least: at *bottom right*, another example of keen experiment in an Allbon Merlin powered round-the-pole exhibition racer by Jack Stickley of Belfairs. We gather that this was a very popular item with the spectators at the recent Belfairs M.A.C. Exhibition. It certainly prompts a thought or two for pole racing, next winter; only problem is to find a hall that does not object to having a ring of exhaust fuel on its floor.



June, 1955

AIRCRAFT DESCRIBED
Number 68.
BY G. A. CULL

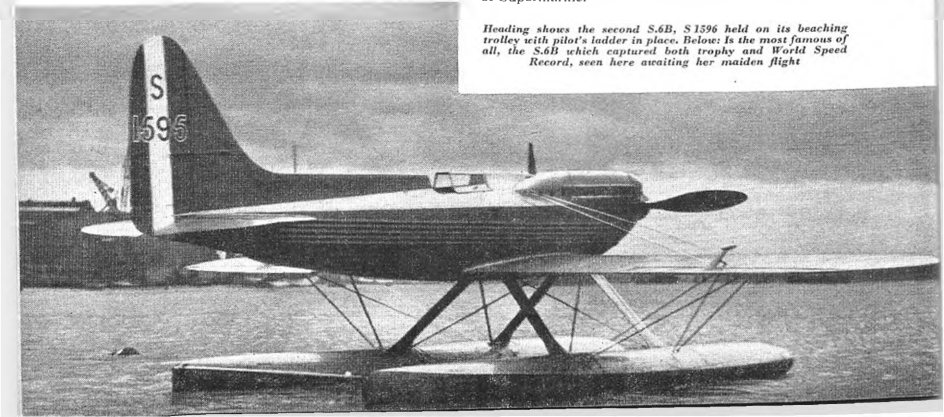
The Supermarine S. 6's

FOR THE British team to fly in the 1929 Schneider contest, four new racers were ordered, two of them from Supermarine. Rolls Royce entered the scene to power these S.6s. and were undoubtedly at the heart of the Schneider victory, but when the word to go was given there was insufficient time to design a new engine. Accordingly, the 825 h.p Buzzard became the basis from which the "R" engine was developed to give 1,900 h.p. for the 1929 contest.

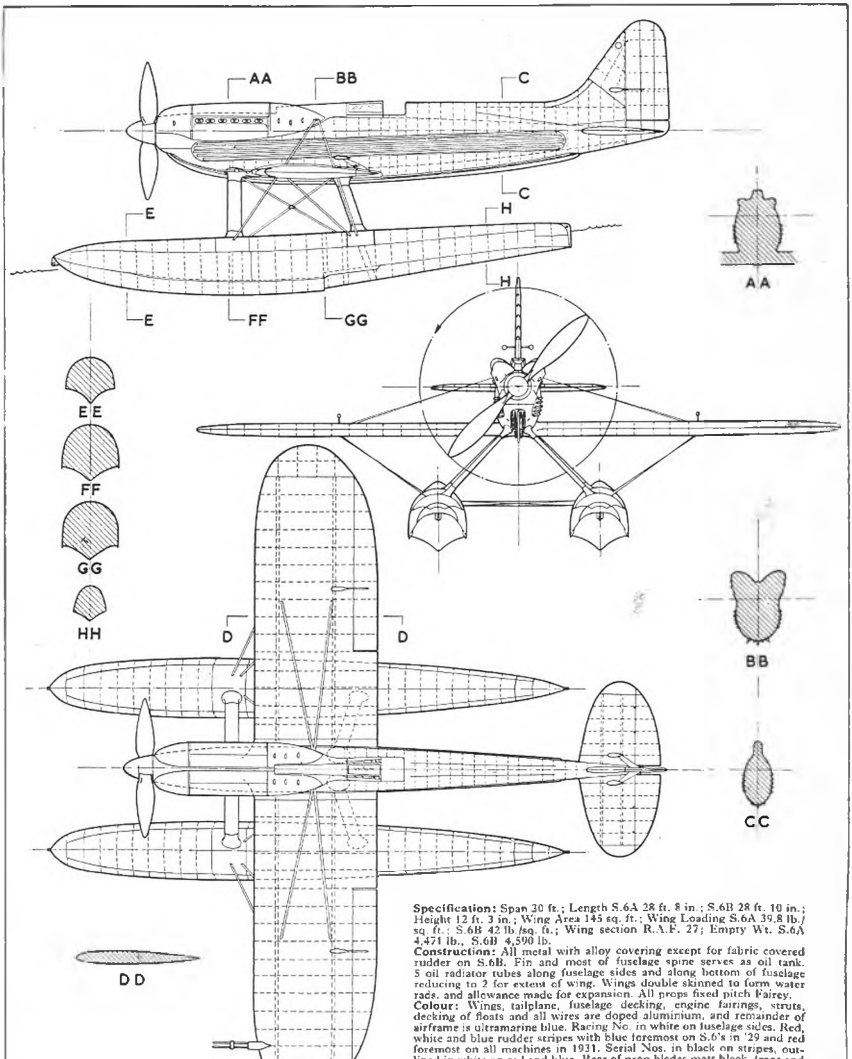
The first Rolls Royce/Supermarine S.6 was N247, and at first there was great take-off trouble due to the enormous torque causing a powerful swing. After most of the fuel had been transferred to the other float, a take-off was made on August 10, 1929, and a further cure was then made by lengthening the port float. To cool the engine the whole of the wing upper and lower surfaces were doubled-skinned to form a water radiator, but this was not enough; so small scoops were fitted to take air *inside* the wing, and floats gained patches of extra radiator. This enabled full throttle to be used. The second S.6, N248, flew on August 25 and was later modified as N247, but with slightly less rad. area on the floats. With contest load of 124 galls. the S.6's could not accelerate and the solution was to increase power and reduce pitch.

On Sept. 7, '29, N247 (race No. 2) flown by F/O Waghorn won the contest at 328 m.p.h., and F/O Atcherley was disqualified for missing a pylon. With a different prop. N247 made world speed records of 355.8 on September 10 and 357.7 m.p.h. on Septen ber 12, '29, flown by S/L Orlebar. For the next contest in 1931 Rolls Royce squeezed 2,300 h.p. out of the "R", increasing the weight by only 100 lb., and the first of these was installed in N248. For the newest engine the S.6's were fitted with longer 22-foot floats with combined rad. patches on noses and sides to become S.6A's. In this form N247 encountered tail flutter so severe that the rear fuselage was buckled and subsequently large external mass balances were fitted to rudder and ailerons.

Two S.6B's Were built for the 1931 contest and differed from the S.6A's mainly in having longer and broader floats, of which the entire top surface was radiator area; more fuel and oil were carried and the airframe strengthened to take the increased weight. Like the S.6, the S.6B was fraught with take-off troubles. The swing to port was out of hand, but the first S.6B, S1595, flew for the first time on July 29, 1931. The new 8 ft. 3 in. prop. had been the trouble, but a 9 ft. 1½ in. diameter was successful, though the S.6B remained quite a handful on take-off. Stability on turns was improved by weights in the nose of the floats and replacing the metal skinned rudder with a fabric one. Neither France nor Italy were ready in time for the 1931 contest, so on September 13 only F/L Bootham flew round the course in S1595 (race No. 1) to win the Schneider Trophy outright at 340 m.p.h. On the same day F/L Stainforth put the record up to 379.05 m.p.h. in S1596 (No. 7). On Sept. 16 this machine's flying ended on landing: Stainforth's heel jammed under the rudder bar causing the S.6B to cartwheel and sink. S1595 took over for another record attempt with a sprint "R" engine of 2,550 h.p. and on Sept. 29, Stainforth set the record at 408 m.p.h. So ended the active career of the S.6's—a sensitive but great quartet of tremendously powerful, full-blooded machines, in their day the ultimate in refinement, bred of Rolls Royce and Mitchell of Supermarine.



Heading shows the second S.6B, S1596 held on its beaching trolley with pilot's ladder in place. Below: Is the most famous of all, the S.6B which captured both trophy and World Speed Record, seen here awaiting her maiden flight



Specification: Span 30 ft.; Length S.6A 28 ft. 8 in.; S.6B 28 ft. 10 in.; Height 12 ft. 3 in.; Wing Area 143 sq. ft.; Wing Loading S.6A 39.8 lb./sq. ft.; S.6B 42 lb./sq. ft.; Wing section R.A.F. 27; Empty Wt. S.6A 4,471 lb., S.6B 4,590 lb.

Construction: All metal with alloy covering except for fabric covered rudder on S.6B. Fin and most of fuselage spine serves as oil tank. 5 oil radiator tubes along fuselage sides and along bottom of fuselage reducing to 2 for extent of wing. Wings double skinned to form water rads. and allowance made for expansion. All props fixed pitch Fairey.

Colour: Wings, tailplane, fuselage decking, engine fairings, struts, decking of floats and all wires are doped aluminium, and remainder of airframe is ultramarine blue. Racing No. in white on fuselage sides. Red, white and blue rudder stripes with blue foremost on S.6's in '29 and red foremost on all machines in 1931. Serial Nos. in black on stripes, outlined in white on red and blue. Rear of prop blades matt black, front and boss dull aluminium. Spinner polished alloy.

SUPERMARINE S. 6 B

FT

"J" TYPE 1/72ND SCALE REPRINTS AND "A" TYPE 1/48TH SCALE DYE-LINE PRINTS OF THIS DRAWING ARE AVAILABLE FROM A.P.S. PRICE 6d. AND 1/- RESPECTIVELY

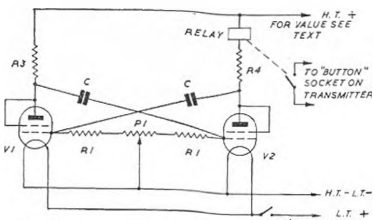


Fig 1 COMPLETE CIRCUIT OF PULSE-WIDTH MODULATOR

RADIO CONTROL NOTES

Ted Sills describes his **Electronic Pulse-width Modulator** and C. O. Davis an American expert an ingenious **Double Relay System**

The simple two-position actuator used by the majority of radio-control enthusiasts, although reliable and easy to install does not, as the name specifically implies, permit proportional control, and few will quarrel with the statement that graceful controlled flight is only possible with a proportional system. Probably the simplest way of obtaining proportional control is exemplified by Howard Boys' "Rudder Waggler". The simplicity of the actuator commends itself to the modeller who prefers to construct his own gear and there is no rubber motor to demand attention. Even the expert has been known to forget that the rubber actuator motor has to be wound up! Unfortunately this desirable simplicity is paid for in increased complexity at the transmitter end, since the transmitter has to be continuously switched on and off at a regular rate (*i.e.* "pulsed") and the ratio of "on" time to "off" time has to be varied in order to effect control of the aircraft. Mechanically driven switches whose closure time can be varied manually are normally used to control the transmitter, but such a device is difficult to construct unless a well equipped workshop is at one's disposal. The alternative to the purely mechanical system is an electronic device which operates a transmitter controlling relay. The electronic alternative is an excellent solution to the problem since no special tools are required in its making, it is cheap, and the component parts are readily available.

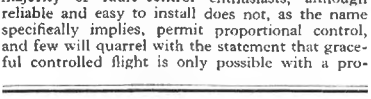


Fig 2 SCREENED REMOTE CONNECTIONS TO POTENTIOMETER

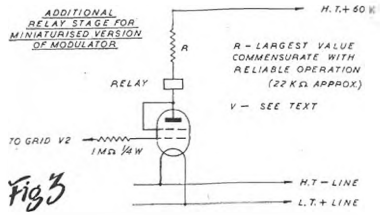


Fig 3

The Modulator

The circuit of *Fig.* 1 is, as the radio-minded reader will perceive, a simple multivibrator switching a relay at a pulse-rate depending on the values of C and $\left(\frac{P^1}{2} - R^1\right)$

With the values given in the diagram the pulse-rate will be about 4 per second. The actual pulse-rate is rather difficult to calculate directly, but for our purposes it is not essential to know the rate at all precisely. If it is desired to *increase* the pulse-rate, *decrease* the value of C accordingly and vice-versa. With the slider of P^1 set at the centre of its track the on/off ratio will approximate to unity, and the aircraft, warps permitting, will fly straight ahead. As the slider is moved towards one end or the other the on/off ratio will gradually change until at the extremities of the track the transmitter is either on or off, depending on the sense of connection, for 10 per cent. of the total time, and the aircraft will turn accordingly. To summarise, the pulse-rate, for a given total value of resistance in the grid circuits, depends on the value of C, and the pulse-width variation, on the descrepancy in resistance between the grid circuits. The rate of variation of pulse-width, *i.e.* rate of turn, is controlled manually by the operator turning the knob or control handle attached to P^1.

Construction

The wiring is so simple that no detailed instructions are called for; the leads may be of any length and no care need be taken over the layout. The circuit may either be built up as an add-on unit so that it may modulate any C.W. transmitter, or it can be built into an existing transmitter as an integral part of it as fancy directs. If the transmitter is powered from a 6 or 12 volt accumulator and vibrator or motor generator H.T. supply, standard

valves of the following types may be used for convenience, and the unit built into the transmitter case: 6SN7, 6SL7, ECC35, ECC33, ECC81, (these are all twin triodes), 6J5's, triode-connected pentodes such as SP61, VR65, EF36, VR56. For these valves any relay capable of closing at 4 or 5 mA will be suitable. P) can be mounted in a hand-held box for ease of control together with any switches considered necessary. The leads to the potentiometer should be screened for preference and *Fig.* 2 shows how this may be done.

A more attractive design is to make use of valves having a filament rating of 1·4 volts and to build a complete unit, containing the batteries for power supply, small enough to be held in the hand. With 1S4 type valves, an H.T. supply of 120 volts, and a relay closing at 1·5 mA there will be a small safety margin to guard against run-down batteries. With a similar relay, and an additional 1S4 stage to operate it, as in *Fig.* 3, the modulator is quite happy at 60 v. H.T., and will continue to work with an H.T. supply as low as 40 volts. The only connection to the transmitter is a two-way cable to the "button" socket or terminals.

Other refinements will no doubt suggest themselves to the ingenious reader, and it is hoped that this short article may stimulate the interest already apparent in proportional systems of control. It is becoming increasingly obvious that the radio-control contests of the future are going to be won by models using proportional control and that the single two-way actuator is already outmoded.

We now come to an ingenious control system devised primarily for radio-controlled model yachts by American expert C. O. Davis borrowed from our associate magazine "Model Maker".

The system is such that a single signal from the transmitter *always* gives right rudder (regardless of which direction the rudder previously moved), and the longer the signal is held on the farther the rudder moves. A short signal (dot) rapidly followed by a longer signal (dash) always gives left rudder. The amount of rudder movement is again dependent on the length of the dash. This device then is not, repeat not, a sequence type of escapement. The heart of this discriminating device is a double coil, three position relay (all contacts open when unenergized). The relay was obtained on the war surplus market. It has 2,000 ohm coils and double pole single throw contacts on each side. If this type of relay can't be found, a suitable relay could be home built, or the job done by mounting two conventional relays back to back with the armatures mechanically coupled together.

The circuit for the rudder control is shown in *Fig.* 1. Its operation is as follows: The two coils of the relay are connected in parallel, but each has a series resistor as shown. One coil has a large electrolytic capacitor across it. When the circuit is energized by the closing of the sensitive relay in the receiver, the coil without the capacitor comes up to full voltage instantly, and attracts the armature to it. The other coil comes up to full voltage more slowly because the capacitor must charge up through the resistor; eventually it comes to the same voltage as the first coil, but it will not take the armature away from the first coil because of the difference in the air gap that now exists. The rudder is wired up to give right rudder with the relay in this position. If the circuit is now de-energized, the first coil loses its voltage rapidly. The voltage of the second coil, however, is held up for a short while by the capacitor across it. The coil with the capacitor thereon takes charge of the armature. If the circuit is re-energized by the (dash) before the capacitor discharges too far, the second coil with the capacitor will retain its hold on the coil armature and energize the rudder motor in the left rudder direction.

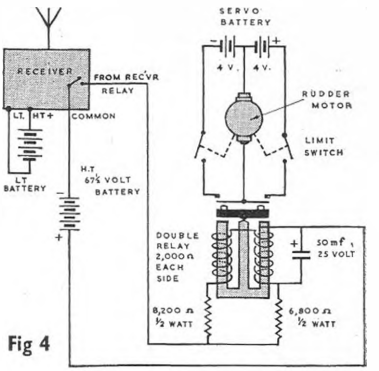
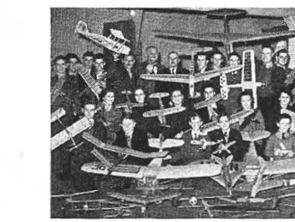


Fig 4

RUDDER CIRCUIT DIAGRAM

The values of voltage, resistors and capacitor shown, are for the surplus relay described. Other relays will require different values which are best determined by experiment, to obtain the desired action. The drain on the 67½ volt battery, which also serves as the receiver "B" battery, when the relay is energized as shown, is 12 milliamperes.

CLUB NEWS



Roughly seventy-five per cent. of the budding ST. HELENS M.A.C. total membership are shown in this photograph taken on a recent club-night

WE RECENTLY had the opportunity of taking a brief look at the Model Railway Club exhibition in London. Our strongest reaction was thank goodness that aero-modellers take their hobby with a touch of humour—the models on show were frequently exquisite in workmanship, but their owners were, generally speaking, the most depressed-looking people we've ever seen! We don't always approve of some of the hysterical tomfoolery which is occasionally, regrettably, to be seen on the flying field, but we do like to see characters looking as though they enjoy their hobby. But then, perhaps aeromodelling appeals only to optimists?

Midland

Stirring into outdoor activity is **LEICESTER M.A.C.**, with numbers of new models getting an airing. At the last winter indoor meeting, a fitting end was the establishment of a joint Jetex speed record of exactly 60 m.p.h. by G. Brewin and J. Aird. F. Canham's covering put him in the lead by 1 point in the second stage of the current building/finish/flying competition.

PETERBOROUGH M.A.C. are attempting to rebuild to their previous strength and invite old and new members to the comfortable clubroom in the City Youth Club, any Tuesday at 7.30. Popular domestic contests, film shows, and contest visits make the programme very attractive.

New models are promising in **WEST BROMWICH M.A.C.** now that some trimming weather has arrived. O.o.s. was the term for one junior's pork pie to which a dog took a fancy—the victim now refuses to put his scran down! Several members flew on April 3rd at Moreton, and one or two jobs were lost, but the biggest headache was the break-down of the coach on the way home.

Back into print come **CHESTERFIELD SKYLINERS M.A.C.** Now well organised, the club has affiliated to the local Model Engineers and has access to an excellent workshop and storeroom. Club transfers will be available shortly, and the only snag is the lack of a F/F site in the neighbourhood. A monthly coach outing helps to overcome this.

CONTEST CALENDAR

May 29
BRITISH NATIONALS. R.A.F. Waterbeach. Thurston Cup (Glider). Davies Trophy. (T/R.A.) Short Cup (2.5 PasLoad). Gold Trophy. (C/L Stunt). S.M.A.E. Trophy (R/C). C/L Speed. (All classes).
May 30
Sir John Shelley Cup (Power). Model Aircraft Trophy (Rubber). Davies Trophy (T/R.B.). BowdenTrophy (Precision Power). Super Scale Trophy (F/F scale power). Taplin Trophy (R/C). Lady Shelley Cup (Tailless). C/L Speed (All classes).
June 19
Trials (Wakefield, A2, Power). R.A.F., Odiham, Hants, (provisional).
June 26
Northern Heights Gala, R.A.F. Halton.

East Anglian

Wedding bells and National Service have so depleted **CAMBRIDGE M.A.C.'s** ranks that it has been reluctantly decided to cancel this year's C/L rally. It is hoped that next year will see this meeting back in the calendar, however.

A first-class clubroom, with all recreational facilities has now been obtained by **NORWICH M.A.C.**; club nights have been changed to 7.30 Mondays, and the place is the Magpie Old Age Pensioners Club. Gamage Day was unlucky for members—they weren't able to use the 'drome until late afternoon, by which time conditions had become poor, resulting in damaged models and few really good flights.

New club in the Area is **CRITTALL (BRAINTREE) M.A.C.**, which at present is mainly interested in C/L, with a sprinkling of F/F and a couple of potential R/C enthusiasts. The sixteen members meet on the first Thursday of each month in the Crittall Social Club. New members, of course, welcome.

A good turn-out on April 3rd saw **BELFAIRS M.A.C.** entering everything possible. Their Farrow time was 21 : 14, and one member of the team was Mrs. P. King who also placed second (in Area) for the S.M.A.E. Cup and topped the Women's Cup list with a veteran *Inch Worm*. A thoroughly enjoyable scramble over Easter was won by M. Cundy with a light rubber job.

Big re-organisation has taken place in **WARE D.M.A.C.**, which, during the winter, grew to embrace boats, photography, and other subjects. No luck attended the members who flew in the elims. at Debden; again, weather could have been considerably better.

Southern

Into their first contest season move the **DE HAVILLAND S.S.C.M.E.** (Christchurch). Only two members actually flew in the Gamage and Pilcher, but a dozen others lent moral support. Projects on the way include a gas turbine, several A2's, a large boat, a R/C glider, etc., etc.

A stiff horizontal windsock was also present when **SWINDON M.A.C.** congregated at Wroughton for the elims. Only six models flew, and five of these were written off. The club felt it a pity that they couldn't have postponed, needless to say. Poor conditions were also encountered on Gamage Day, but times were reasonable under the circs. On this day T. Rogers won the club's Cooper Cup for the third time in five years.

Similar conditions obtained for **WEST HANTS A.A.**, of course, and a poor day for luck was experienced. The inter-club three-round match with Bournemouth will again be held this year, the first comp. (glider) being on May 21st. After last year's close finish, some sharp competition is anticipated.

The first model rally for five years was held on the Isle of Wight, at Lea Airport. Organised by the **SOLENT HEIGHTS M.F.C.**, a strong Godalming contingent flew and well and truly cleaned up. Main event was a power duration event for a cup presented by the I.W.M.E.S. which was won by Godalming's K. Boughey with 3 : 56 in very windy conditions.

Wind marred **BOURNEMOUTH M.A.S.** flights on Gamage Day, but top times were fair, with junior P. Manville aggregating 6 : 28 in the Pilcher (and incidentally winning the club's Hunt Trophy) and A. Arnold producing 7 : 36 in the Gamage. The B.M.A.S. *News* continues to be a readable and interesting journal containing informative articles as well as club news.

Highlight of **SOUTHAMPTON M.A.C.'s** contest record so far is N. Worley's 9 : 57 which placed him 9th in the Pilcher. A new record category, for Jetex, has been filled by B. Hay with 2 : 19, while power fans are producing four identical *Eliminators*, all covered red and yellow.

An exhibition at the firm's sports ground is scheduled for July 9th by **VICKERS-ARMSTRONG LTD. (WEYBRIDGE) M.C.** The ground is in Kings Head Lane, Byfleet, Surrey. That's all the gen. sent.

North Western

The second club comp. in **SHARSTON D.M.S.**, a "fixed time" event, was won by M. Cartledge, whose *Corsair* was within 12 secs. Bad conditions in the Pilcher reduced entries to two, but R. Brock's 1½ size *Lutan Minor* (A-M 2.5) flew very scalishly until it alighted in a nearby stream and floated sedately away on the current.

J. Hannay of **WALLASEY M.A.C.** topped N.W. A2 results with 12 : 02 despite high wind, and S. Hinds placed 3rd; on aggregate these fliers are now 3rd and 2nd in the Area for both eliminators. The first lady member has joined the club after 11 peaceful years (the P.R.O. said that, Mrs. S.!)

Dates are announced for two of the popular North Western meetings. The Daily Dispatch rally will again be at Woodford, on July 3rd, and comps. scheduled are open rubber, power, glider, A racing, combat, F/F scale, new-rule Paa-load, and probably a junior chuck glider do. The Clwyd slope-soaring meeting is July 10th.

London

Another date for your diary is the **ENFIELD D.M.A.C.** C/L Rally, on Enfield Playing Fields, July 17th. Events include A and B racing, combat, and six speed classes (no jet). Cash awards. The Northern Heights Coronation and Model Engineers Cups will be flown for at this meeting (no racing at the N.H. Gala).

C/L activity is considerable in **SIDCUP A.S.**, members of which took the first six places in A racing in a friendly Comp. with Dartford. Winner was M. Templeman (E.D. 2.46) who also won the club's own race with a 5 mile heat in 4 : 44 and the 10 m. final in 10 : 12. M. Basset's Tiger Cub model won a domestic 2½ race with 5 : 37 for 5 miles. The first issue of the club's new magazine is excellent and sets a high standard for future issues.

S.M.A.E. CONTEST RESULTS

Pilcher Cup

270 *entries* 20 *March*

1. T. Woodward, Foresters, 12 : 00.
2. D. Lipscombe, R.A.F., 11 : 00.
3. G. Roberts, Five Towns, 10 : 42.
4. D. Laxton, Oundle, 10 : 27.
5. J. Eckersley, Bradford, 10 : 21.
6. K. Brown, York, 10 : 10.

Gamage Cup

137 *entries* 20 *March*

1. E. Bennett, Croydon, 11 : 52.
2. A. Goodall, Grange, 11 : 35.
3. J. O'Donnell, Whitefield, 11 : 31.
4. G. Upson, Northwick Park, 11 : 02.
5. C. Miller, Bradford, 10 : 54.
6. K. Oliver, Foresters, 10 : 24.

S.M.A.E. CUP

228 *entries* *3rd April*

1. J. Hannay, Wallasey, 12 : 02.
2. B. Harris, Prestwick, 12 : 01.
3. P. Guest, Barnsley, 11 : 49.
4. J. O'Donnell, Whitefield, 11 : 47.
5. R. Yeabsley, Croydon, 11 : 11.
6. S. Hinds, Wallasey, 10 : 59.

FARROW SHIELD

(27 clubs)

1.	Croydon	39 : 14
2.	Leeds	32 : 03
3.	Whitefield	30 : 59
4.	Halifax	25 : 09
5.	Anglia	21 : 57
6.	Belfairs	21 : 16

WOMEN'S CHALLENGE CUP

(10 entries)

1. Miss D. Knight, North Kent Nomads, 6 : 50.
2. Miss E. Franklin, Blackpool, 5 : 27.
3. Mrs. S. Morgan, Wigan, 5 : 15.
4. Mrs. M. A. King, Belfairs, 4 : 41.
5. Mrs. Fittness, Chester, 4 : 30.
6. Mrs. B Moulton, West Herts, 4 : 19.

JETEX CHALLENGE CUP

(29 entries)

1. K. Ridyard, Timperley, 23.83 ratio.
2. M. Pressnell, Belfairs, 21.59 "
3. L. Ranson, Hornchurch, 20.39 "
4. J. O'Donnell, Whitefield, 18.30 "
5. P. Hardwick, Wolves, 17.14 "
6. I. Dowsett, West Middx., 14.18 "

The 18th **NORTHERN HEIGHTS M.F.C.** Gala (Halton, June 26th includes, as is generally known, a spot landing event for R/C models. This year R/C gliders will be eligible, the time (1 min. min., 3 mins. max.) being taken from cast-off. Travellers to this meeting are advised to make for Wendover or Tring and change to local buses.

East Midland

Successful start to 1955 was **FOREST-ERS (Nottingham) M.F.C.** member T. Woodward's winning the Pilcher—the only entrant to return 3 maxs. and his fly-off was 8 : 00! K. Oliver placed 7th in the event and also 6th in the Gamage, and these two fliers did well in A2 to bring their positions 1st and 3rd in the Area for the Trials. Resuscitated C/L models scored wins in A and B at Congleton.

Northern

A lively winter programme of film shows, quizzes, talks, etc. kept **HEATH AERO-MODELLERS** on the top line during the cold(er) months, and the ladies' section have done the funds a lot of good with beetle drives and so forth. A comprehensive programme has been arranged for this all-C/L club, including taking part in the Whit week Hobbies show organised by the local Rotary Club.

LEEDS AND BRADFORD AMAL-GAMATED M.F.C. now forms a very strong contest group, particularly in F/F. In the N.A. power comp. Messrs. Eggleston, Lanfranchi, and McNulty were 1, 2, and 3, and the Farrow aggregate was 32 : 10, in poor conditions. McNulty also distinguished himself with a 5-flight A2 total of 9 : 18, all put in inside 40 mins. Gallons of fuel are passing through C/L motors—R. Marshall's hope has so far sunk 5 gals. and broken two shafts and conrods—one in the air. An in-door warm-up between the two halves of the club went down extremely well, with the usual hungry junior clearing a whole tray of buns. Anyone requiring a top-line display is invited to contact this very active group. They might even produce another junior who recently shook them—this one was looping a 2 ft. square of ply with elevator, motor, etc., screwed (or even nailed) on!

South Midland

Another D.H. club, the Beavers, has decided to change the name to **DE HAV-ILLAND (HATFIELD) M.A.C.**, who now have a new clubroom and use of part of the 'drome when full-size machines aren't flying. Not yet settled in their new home, six members nevertheless flew in A2, two, Ward and Longstaffe, going on to the Trials. Remarkable machine is a "Nordicised" *Lulu*—a 3 ft. c/s extension (AR 17 : 1) and an 18 in. tail boom on the standard body. Urgh-h-h!

There was a good turn-out for the elims. at Henlow, though weather was bad. Nine finalists emerged, headed by J. Waldron (Henley) with an 18 : 36 agg. for both elims. No entrants came up for the Farrow Shield and there were only two for Jetex; this Area thinks it might be advantageous to hold these events later in the year, when eliminators and trials, etc., are over.

South Midland Rally is at Cranfield Beds., on August 21st.

Western

Last indoor meeting of the season in **BRISTOL and WESS M.A.C.** featured a novel contest in which entrants had to design and construct a model solely from half a sheet of ⅛ in., clay being provided. The results were varied and instructive, and with more flying space some astonishing performances might have been put up. Winner was R. Farr. First 1955 outdoor contest was for chuck gliders, top time being 32.8 secs. by G. Woolls.

North Eastern

Running smoothly despite domestic upheavals, **THORNABY PATHFINDERS M.F.C.** is now organised on semi-military lines—security officer, mobile ambulance unit, NAAFI, etc. The Flying Training Programme will feature passing out parades of qualified C/L handlers (!) who will train on club machines serviced by junior and senior members. Don't tell us you have to read D.R.O.'s to check when you're detailed to fly?

South Western

Reformed, and well organised with the local A.T.C. and school playing fields, the **BRIDPORT D.A.C.** has a membership of 31, mainly keen on gliders and C/L but four R/C fans are included. Winning per-formances recently include J. Morey's 73 m.p.h. (Elfin 1.49) in speed and I. God-frey's 7 : 49 o.o.s. in glider, flying a *Martin*.

Scotland

Worst hit by weather—snow and high winds on Gamage Day—the West of Scot-land Area mustered only one Gamage and five Pilcher entries. April 3rd saw better support, B. Harris of Prestwick returning top time in A2 and his clubmates leading the Farrow scores.

Ireland

Interest in radio is picking up in **CORK M.A.C.**, despite serious training for the big Munster C/L Championship to be held in Cork, July 9/10th. Weekly columns in Irish local newspapers keep modellers in touch—spreading the news can be tricky

when builders are scattered. The club is running a building/finish/flying comp., the first stage of which sees P. Otter leading.

Request for correspondents writing in English, French, or German, comes from Roger Scheistraete, 159 Allee Verte, Ghent, Belgium, who guarantees to answer every letter received.

Finally, the flying season is here and so once more we start the weary round . . . . a green and yellow sailplane has been found in the Peterborough area. Loser contact B. Riley, 9 St. Pauls Road, Peterborough.

Cheers,

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CRITTALL (BRAINTREE) M.A.C.
B. Arnold, 47 Hay Lane, Braintree, Essex.

SECRETARIAL CHANGES

WALSALL M.A.C.
I. Janes, 116 Birmingham Road, Aldridge, Staffs.

WHYTELEAFE A.M.F.C.
G. W. Brown, 103 Foxon Lane, Caterham, Surrey.

CORK M.A.C.
M. F. Sheehy, La Verna, Wilton Road, Cork.

AMESBURY M.A.C.
G. A. Griffiths, 17 Coronation Road, Durrington, nr. Salisbury, Wilts.

HEANOR D.M.A.C.
M. Booth, 21 Dalton Close, Aldercar, Langley Mill, Notts.

SEVENOAKS D.M.A.C.
N. F. Couling, 28 Milton Road, Dunton Green, Sevenoaks, Kent.

THORNABY PATHFINDERS M.F.C.
R. Gillow, 74 George Street, Thornaby-on-Tees, Stockton-on-Tees, Co. Durham.

CHESTER M.F.C.
K. A. Modern, 2 Burton Road, Blacon, Chester.

MILL HILL D.M.A.C.
J. E. Lane, 84 Hale Lane, Mill Hill, London, N.W.7.

NORTH LINCOLNSHIRE M.A.S.
E. Scales, 6 Granville Street, Grimsby, Lincs.

READING S.M.S.
A. B. Hocock, Whitehaven, Crockham-well Road, Woodley, Berks.

SOUTHAMPTON M.A.C.
E. Jenkins, 81 Atherley Road, Shirley, Southampton.

VICKERS-ARMSTRONG (WEY-BRIDGE) M.C.
Miss A. M. Hyde, 44 Wyndam Avenue, Cobham, Surrey.

WARE D.M.A.C.
A. Ling, 159 Musley Hill, Ware, Herts.

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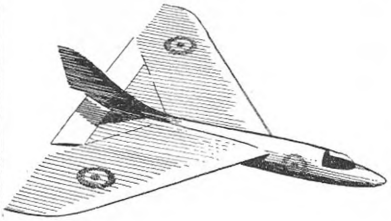

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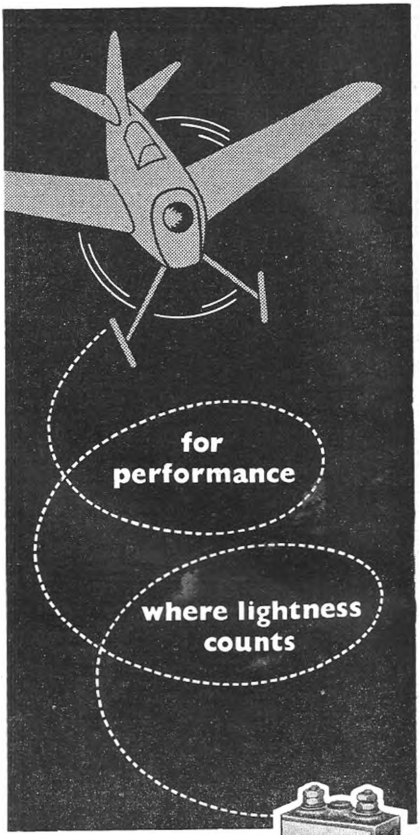

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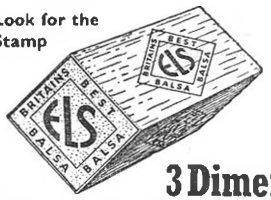

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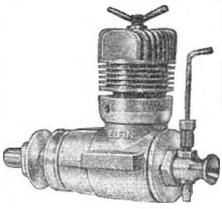

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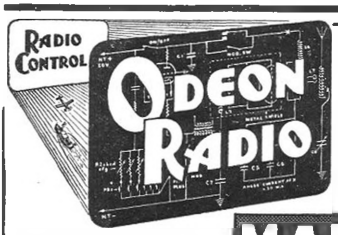

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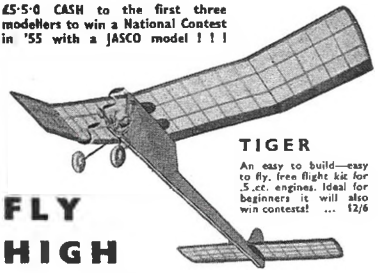

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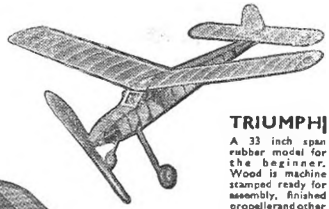

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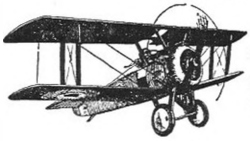

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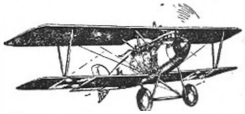

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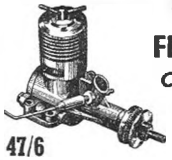

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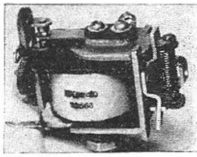

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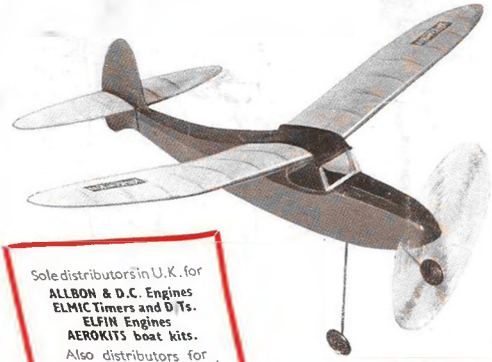

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