AERO MODELLER

JANUARY, 1954

IN THIS ISSUE

POWERED FREE-FLIGHT DELTA

SPECIAL ARTICLES ON PAA-LOAD MODELS AND C/L COMBAT MODELS WITH PLANS

1'6

Digital Edition Magazines.

This issue magazine after the initial original scanning, has been digitally processing for better results and lower capacity Pdf file from me.

The plans and the articles that exist within, you can find published at full dimensions to build a model at the following websites.

All Plans and Articles can be found here:

Hlsat Blog Free Plans and Articles.

http://www.rcgroups.com/forums/member.php?u=107085

AeroFred Gallery Free Plans.

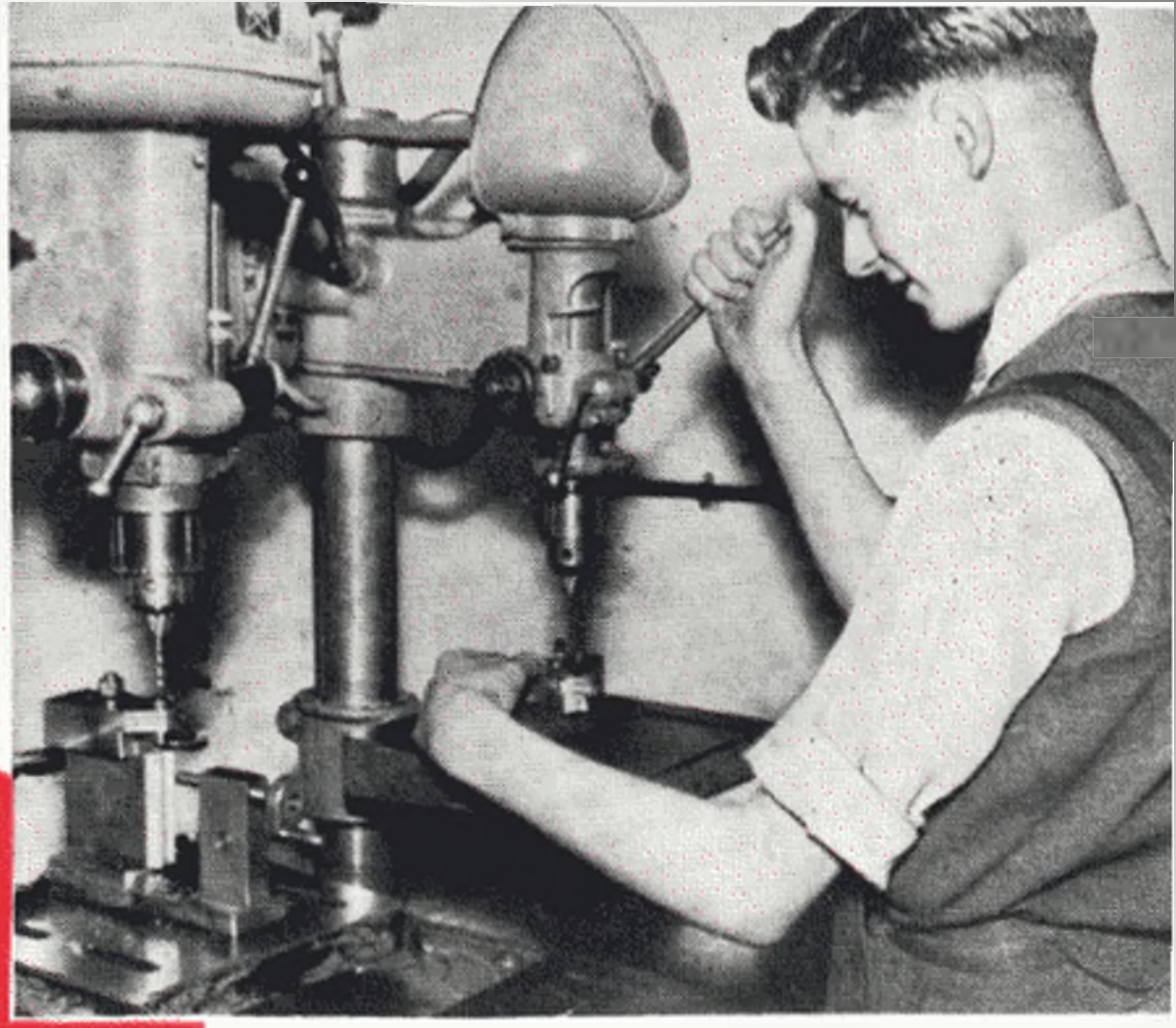
http://aerofred.com/index.php

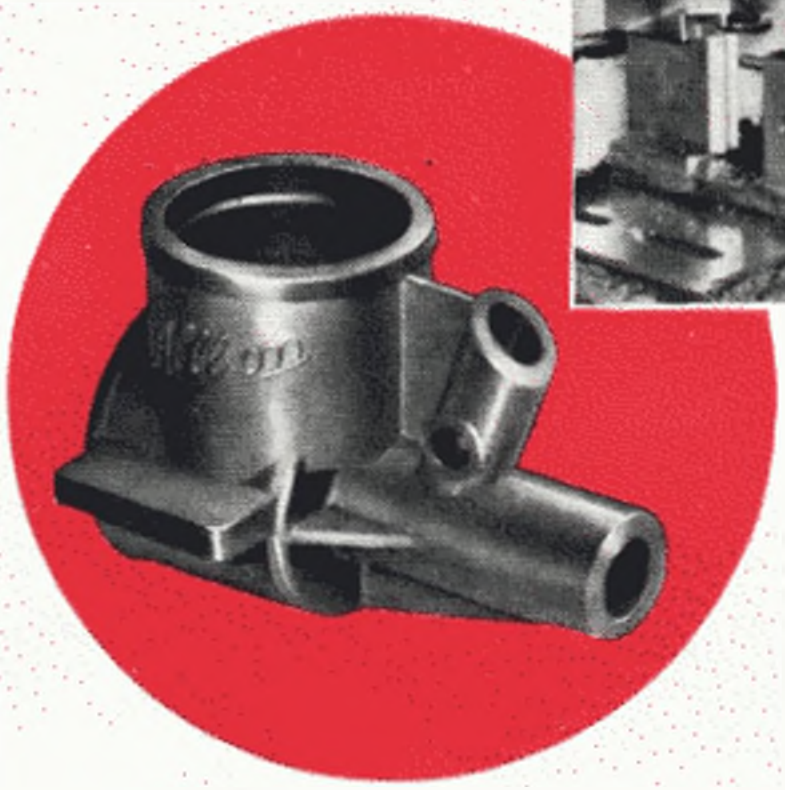
Hip Pocket Aeronautics Gallery Free Plans.

http://www.hippocketaeronautics.com/hpa_plans/index.php

Diligence Work by Hlsat.

Inside Your Engine





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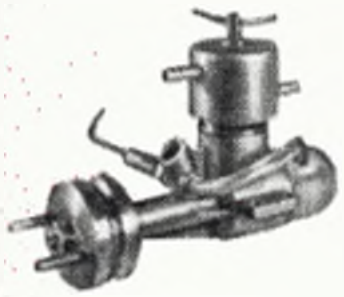
No. 2 Casting and Drilling the Crankcase

Above, inset, is a Dart crankcase formed from a special light alloy by pressure die-casting. This casting is subjected to many machining operations, one of these being jig drilling, as shown in the photograph above. There are no less than seven drilling operations for each crankcase, besides the cutting of threads for the backplate and cylinder liner.

Before the casting of the crankcase special steel dies are fabricated by skilled pattern makers, who spend many hours at this intricate job, painstakingly shaping the steel by hand. The finished die is finally subjected to a hardening process, but prior to this, an experimental batch of crankcases are cast and these used to make up several prototype engines. Exhaustive tests on these engines are conducted, from which it is ascertained whether any alterations to the crankcase are necessary for production or performance reasons. These finer points of design settled, the die is then hardened.

We are constantly improving our production methods at the Davies Charlton works and each new engine we produce incorporates the experience gained on its predecessors. This and many other factors are your guarantee when purchasing our products.



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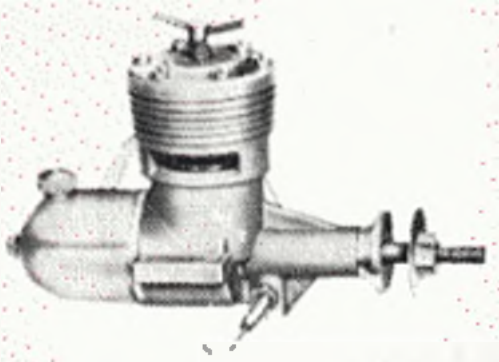

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E.D. Mark II RADIO CONTROL UNIT

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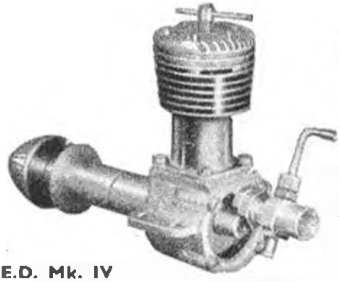
E.D. Mark IV 3·46 c.c. ENGINE

More proof of the outstanding qualities of E.D. Equipment, which has formed the basis of many record breaking performances. E.D. Equipment is designed and manufactured to the highest standard of accuracy and durability, to ensure the greatest possible speed and performance for your models.



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Over 3,000 Entries

AND ONLY ONE

BAMBI

YES! "Bambi" is the prize-winning name submitted by an unknown Norwegian aeromodeller who will receive the first production model of this sensational new engine. Unfortunately, on his card, the name and part of the address were obliterated in the post, but if Mr. "E. W." of Sandefjord, Norway, will get in touch with us, we will confirm the glad news. Full details of the lucky prize winner will be given in a future advertisement; meantime we quote his winning card as follows :—

"I have seen the picture of the new 0.1 c.c. diesel in the November AEROMODELLER. *What is it? I think it is the most pleasing news you could give aeromodellers of the world. This is the opening of a new epoch in aeromodelling. An engine with that superb look and such elegant lines . . . it must be an Allbon. It looks like an Allbon, and if it behaves like an Allbon there is no doubt this engine will make aeromodelling history. I indeed congratulate the manufacturers, Messrs. Davies Charlton Ltd. I cannot think of a better name for the new engine than 'Bambi'—Allbon Bambi—Italian for 'little child', made immortal by Walt Disney."*

Let us, too, thank the other 3,000 odd aeromodellers who sent postcards from every quarter of the globe. We were staggered by the multiplicity of names—over 300 in fact, and some of them on mighty original postcards. We had humorous couplets such as "What could be neater than Allbon 'Skeeter'", not forgetting the wag who suggested it be called the "Flea" because it is well up to scratch, quick to take off, and will leave its mark! Another entrant remarked, "If they make a smaller engine I suggest they sell a microscope with it! Not all the cards were humorous; some were quite artistic, and one enthusiast even went to the trouble of making a replica engine in balsa, complete with coloured box.

After reading through the 3,000 postcards, we really felt that some appreciation should be shown to those people who went to the trouble of sending in entries. We shall, therefore, be sending them a priority delivery slip which they will hand to their local dealer to ensure that they receive the first of his supplies. We do this as there is every indication that the preliminary batch of engines will be sold out in a matter of days.

DAVIES CHARLTON LTD.

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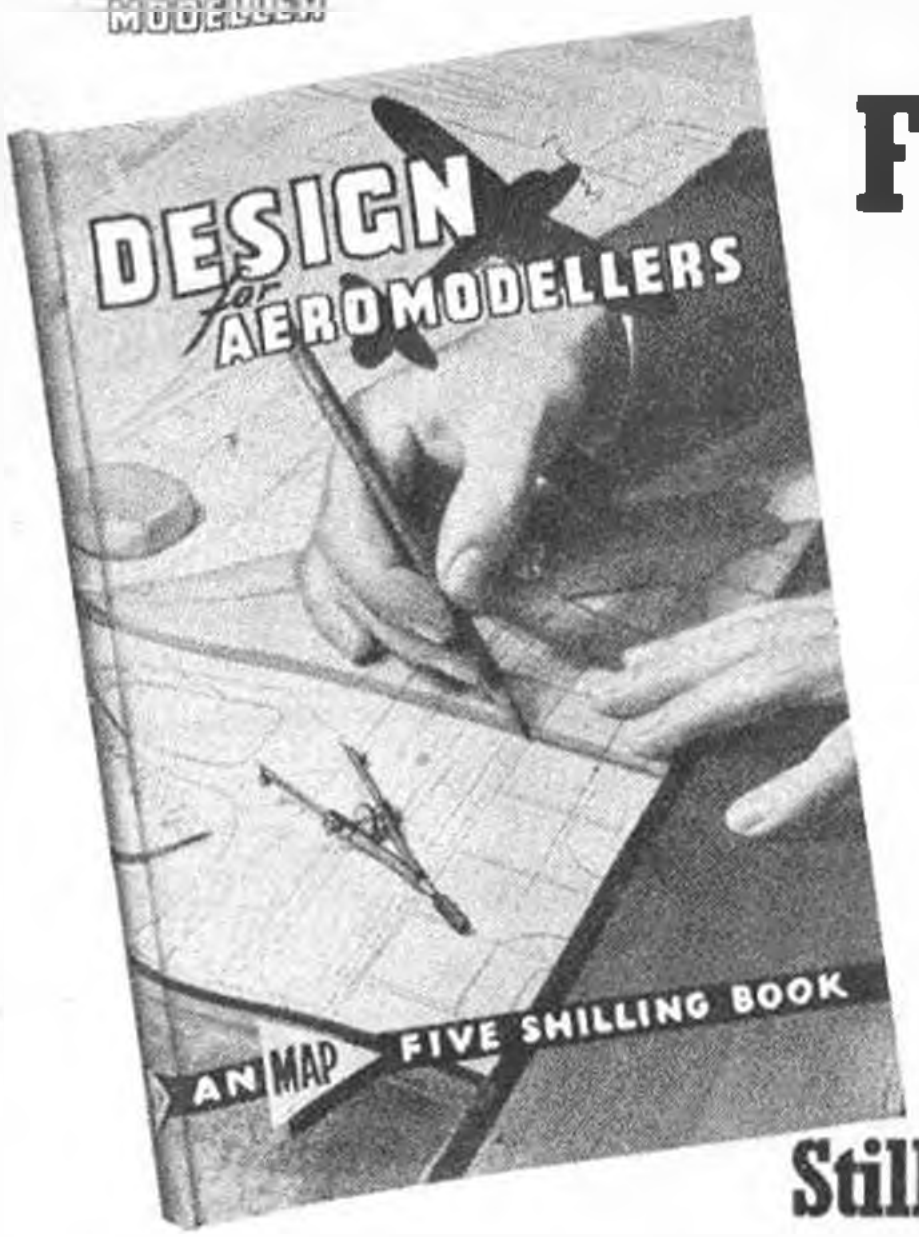
With a capacity of ·1 c.c. is the smallest production Diesel in the World!

The pleading cartoon by Ray Malmstrom, reproduced below, reminds us that we are receiving orders, both private and trade, by every post. Whilst we appreciate the empty engine bearers we do ask you all to be patient. Producing a very small engine such as "Bambi" has its own particular problems, and at this moment a batch of prototype production engines are undergoing stringent tests. Even so, we do not anticipate that supplies will reach the shops until late in February, and meantime ask that orders are NOT sent to the factory.



First of the 5/- Books!

FOR the first time for very many years aeromodellers are offered a comprehensive book covering the design of every kind of model aircraft written in language that the average enthusiast can understand. No tedious formulae, no intricate graphs, but good honest practical facts which really tell you why, what and how of model design. There is no "golden road" to success in designing, but DESIGN FOR AEROMODELLERS will make your path very much more smooth than the long and arduous business of learning by experience. Here is the experience of all the experts, assembled by another expert, Ron Warring, who produced much of this book in his well-known series in *Aeromodeller* "It's Designed For You".

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Bound in stiff card with a two-colour photo-cover, DESIGN FOR AEROMODELLERS contains 96 pages, size 8½ × 5½ ins. profusely illustrated with line drawings, eight pages of half-tone photo-pictures showing the principal kinds of models, useful appendices and index.

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Still time to get AEROMODELLER ANNUAL 1953

BIGGER printing of *Aeromodeller Annual* 1953 looks like being all too few for the world-wide demand received. Threequarters of the edition were sold in advance of publication, and for the first time we have been able to send adequate supplies overseas. Don't delay, get your copy while it is still there. Here are some of the specially selected contents: Chas. Taylor on Team Racers, Ted Sills on Reliable Radio Control, George Cull on Scale Details, John Fozard on Delta and Canard Deltas, Ron Warring on Chuck Gliders, Bert Judge on Jetex, etc., etc., plus plans of every type of model from France, Holland, U.S.A., Italy, Poland, Australia, Japan, Jugoslavia, Czechoslovakia, Great Britain. 160 pages, size 8½ × 5½ ins., over 100 plans, diagrams, half-tone pictures, bound in green with gold-blocked title on spine and face. Three-colour dust cover showing Avro Atlantic.

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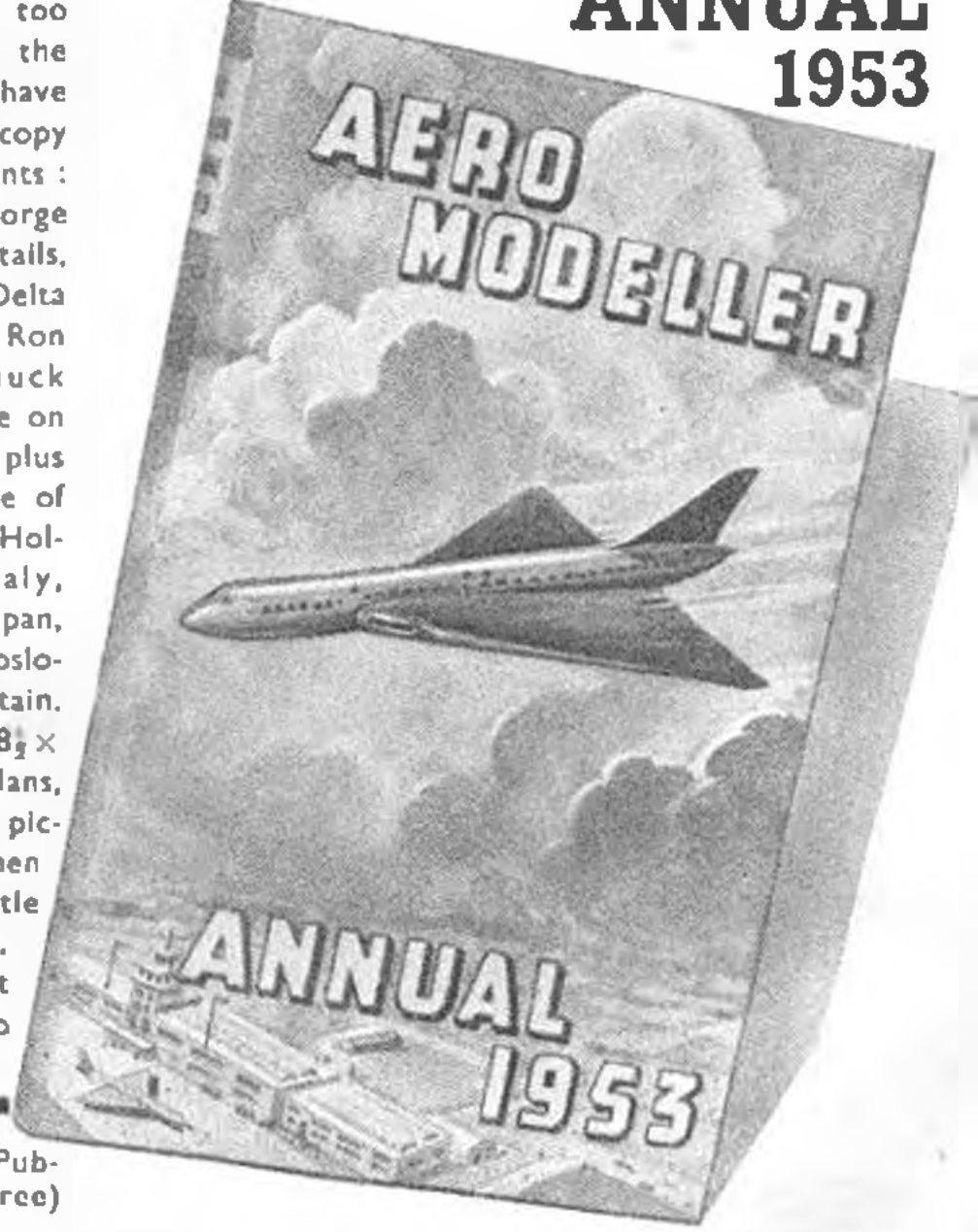

CAMOUFLAGE 1939-42 AIRCRAFT

BY O. G. THETFORD

Growing interest in scale model aircraft, and in particular, models of those stalwarts which defended us in the difficult early years of the war, makes this book a valuable addition to every enthusiast's library. We are lucky to be able to offer a few copies only of this classic work, copiously illustrated, and with accurate litho coloured plates showing authentic camouflage of all the fighting powers of that date. While they last, 108 pages, 8½ × 5½ ins., cloth bound, C. Rupert Moore coloured painting cover, 12 colour plates covering R.A.F., Army Co-op., Fleet Air Arm, and all the belligerents.

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Pacer, 30" ...	15/8 + 2/6
Skystreak, 40"	10/6 + 1/9
Stunt Queen ...	21/0 + 3/6
Rubber Powered	
Ajax, 30" ...	6/0 + 1/0
Competitor, 32"	7/0 + 1/2
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Minibuster ...	15/0 + 2/6
Panther	25/0 + 4/2
Gliders	
Verosonic, 46" ...	10/6 + 1/9
Vortex, 66" ...	18/6 + 3/1
Rubber Powered	
Sentinel, 34" ...	10/6 + 1/9
Hi Climber, 38"	25/0 + 4/2
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Mentor, 36" Rubber	9/0 + 1/6
Tiger Moth Scale	28/6 + 4/9

APOLOGIES DUE

Will customers overseas forgive a recent delay in sending air-mail acknowledgments of their orders? It was due directly to enormous pressure on staff here and I am quickly clearing up arrears. BUT PLEASE REMEMBER, your orders are sent off promptly by return even though the notification letter be somewhat delayed.

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E.D. Bee I c.c.	47/6 + 7/3
Mills 1·3 c.c.	75/0 + 12/6
E.D. 1·46 c.c.	52/6 + 4/6
E.D. Comp. 2 c.c.	57/6 + 4/3
E.D. 2·46 c.c. Racer ...	72/6 + 6/0
E.D. Hunter 3·46 c.c. ...	72/6 + 6/0
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AERO MODELLER

INCORPORATING "THE MODEL AERODROME CONSTRUCTOR"

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C. S. RUSHBROOKE

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D. J. LAIDLAW DICKSON

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The New Look

ORGANISED aeromodelling in Great Britain, as represented by the Society of Model Aeronautical Engineers, has gone through many phases that can be likened to growing pains. Well meaning though past efforts have been, the Society has never really met the day-to-day requirements of this rapidly growing hobby, for, within the scope of our knowledge, the governing body has no sooner met new conditions than the situation has again got ahead of current planning.

Back in its earliest days, the S.M.A.E. came into being mainly as the result of the dissolution of the old Kite and Model Aircraft Association, and a new group was formed that operated to all intents and purposes as just another model club. As time went on, affiliations were formed with other groups with similar interests until it eventually became obvious that the S.M.A.E. "club" as such was actively competing against its own associates. It was at this time that the first radical change was made, and the "club" aspect was abandoned, a Council being elected which devoted itself more specifically to the organisation and furtherance of the hobby on a national scale. Individuals still retained their active aeromodelling interest by becoming members of other clubs, which in turn affiliated to the Society and competed in events organised by an administration operating under the authority of the Royal Aero Club.

Now, dating from the 1953 Annual General Meeting of the Society, which took place in Birmingham on the 22nd November, a much wider policy has been adopted, and the field is open for each and every aeromodeller to become part of the consolidated movement within these islands. Full membership is available in both Senior and Junior capacities, the rates being 10/- and 5/- respectively. Country Membership is retained at an annual fee of 15/-, and the foregoing categories entitle the members to full benefits of contest entry, etc., as in the past.

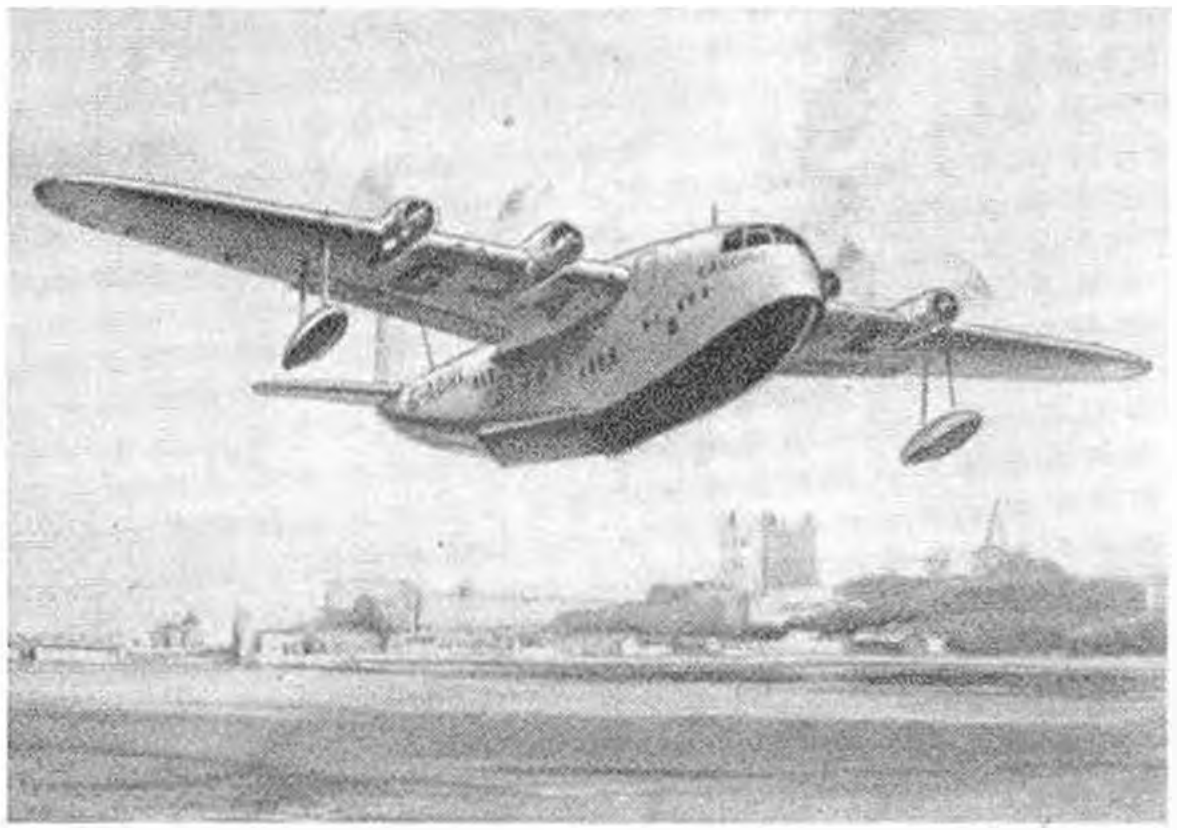
To cater for the very large numbers of club and unattached modellers who are not contest-minded, a new type of ASSOCIATE Membership has been created at the very nominal fee of 3/- per annum. Here at long last is the chance for many thousands of aeromodellers to belong to the Society without necessarily becoming members of a club, or feeling that their requirements are swamped in the interests of the competition man.

ALL classes of membership fees are now *inclusive* of Third Party Insurance, with a claims limit of £25,000. This figure should take care of all Ministry demands connected with the use of airfields, and it is pointed out that the new S.M.A.E. policy is unrestricted in its application. Under former conditions, many clauses in the Society's policy were restrictive, a factor that undoubtedly diverted many of its members to other sources for the very necessary insuring of their activities. The Associate Members fee will be seen to be less than other forms of insurance obtainable from any other company, and combined with the various benefits gained from membership of the Society, in our opinion forms the best bargain that has ever been offered to the aeromodelling public.

Applications for membership should be forwarded to the Hon. General Secretary, S.M.A.E., Londonderry House, Park Lane, London, W.1, where arrangements have been made for immediate enrolment and insurance coverage, though it must be realised that there may be a slight delay in the issuing of Membership Cards, etc., pending the receipt of supplies from the printer.

Cover Picture . . . .

Of the many freelance ducted fan designs to be seen on flying fields in 1953, probably this one by Basil Brookes of North Kent is the most outstanding. An enlarged Larkchkin, presumably based upon the pioneering Veron kit, this model is no less than 52 in. span, and weighs 25 ozs. Its impressive flight characteristics with an Elfin 2·49 were praised by many at Radlett.



Heard at the Hangar Doors

Star Flight

News of our Queen's departure to Australia and New Zealand in the B.O.A.C. Stratocruiser "Canopus" reached us as we closed for press with this issue. By the time this is read, readers will be well acquainted with details of the Royal Tour and will have had time to reflect on the wonders of this aeronautical era when reigning monarchs are some 12,000 miles from their capital city, but still within 24 flying hours of same.

We wonder whether Her Majesty during her long and arduous tour will notice a little piece of aeronautical history that hangs in the lounge of the modern "Canopus"?

It is, to wit, a miniature painting by our well known cover artist C. Rupert Moore of the original Short "C" class "Empire" flying boat.

The B.O.A.C. "Stratocruisers" are each named after an original Empire Boat, and there is in each a Moore painting depicting the original aircraft. Rupert Moore informed us that the pictures had to be mounted with great care, as the pressure in the Stratocruiser cabins does alarming things to picture mounts, particularly if bubbles of air are left between the picture and the mount.

"Canopus", as shown in the copy of the picture above, was the first of the famous "Empire" boats. Officially described as a "Short S.23 Empire Flying Boat" she was built by Short Bros at Rochester for Imperial Airways in 1936, and is shown taking off from Rochester on the first flying boat passenger flight to Alexandria on October 22nd, 1936.

She also made the first "Empire" flying boat flight to Durban via Kisumu and Mozambique on 16th October, 1937. "Canopus" flew on the Empire route to Singapore which became known as the Horse-shoe Route and on the vital war-time life-line between Durban and India. Before being retired from service in October, 1946 "Canopus" had flown 15,026 hours with Imperial Airways, British Airways and B.O.A.C. It is perhaps appropriate that the aircraft which carried Her Majesty on this historic flight to the New World should bear a famous name.

The Brum A.G.M.

The 1953 Annual General Meeting of the S.M.A.E. was a most disciplined affair, probably the result of an audience somewhat awed by their sumptuous surroundings! Though not large, the attendance was more representative than in some previous years, and business went through with a commendable speed.

The Hon. Secretary reported a decrease in membership, which could only be due to the increase in fees which had encouraged many clubs to withdraw from affiliation, or at least only affiliate those of their membership who were interested in competition work. The increased fees had therefore largely defeated the object they had been created for, and finance was almost parallel with the previous year.

The revised terms of Membership had obviously been well received and discussed by the meeting, which voted them in on a unanimous vote. Not so decisive was the motion tabled that Area finance should be incorporated with the main accounts, voting being 22 for to 29 against. It is obvious that the more progressive Areas feel they should retain such finance as they collect by their own efforts and initiative.

Mr. K. J. A. Brooks was returned as Public Relations Officer by a large majority over Mr. D. J. Laidlaw Dickson, who thus forfeited his "deposit", which, never having been paid, was not missed!

The Hon. Competition Secretary reported 1953 entries within 5 per cent. of those in 1952, which again proved that it was the keen contest man who had retained his membership following the 1952 changes, the ratio of glider entries still being 2–1 over rubber, with power a little behind in third place. The 1954 Programme was approved, and it remains to see what snags are produced in practice during the coming year, for we have yet to see a list that pleased each and every competitor. However, it was obvious that the meeting approved the early production of this vital information.

Completely Unnecessary

Many a time in the past have we drawn attention to the dangers of flying models under or near to electric power pylons, particularly machines of the control-line category in which the flying wires act as electrical conductors.

The death of a young Essex aeromodeller as the result of a disregard of such elementary precautions hit the headlines of the national press on November 23rd, 1953, and inestimable harm has been done to the hobby in this country as a result. As is all too often the case, one isolated incident has been boomed into a mountain, with a complete disregard of the many thousands of models and flying hours that are produced annually with no untoward effect other than sundry skin cuts and cement stains.

We sincerely regret the loss of this young enthusiast, whose untimely death could have so easily been avoided, and we trust that, as a result of his death other careless flyers will be brought to their senses and encouraged to exercise the elementary precautions that will prevent a recurrence of this tragedy.

You Sloppy Soldier You . . . !

Members of the Farnborough M.A.C. are still chuckling over the fate of Bert Halfacre's " Paagebuy ", which was lost more times than Vishinsky has said no ! The model met an untimely end when it landed in an Army barracks—and was promptly pulled to bits by a squaddy. Bert got his engine back . . . the squaddy got seven days ! ! " Tenshun, erbout turn. By the right kerwick march . . . one-two, one-two. Come on there, at the double you destructive service man you !

Slow Boat To . . . ?

Cpl. E. P. Bond of Hut A/3, R.A.F. Calshot, Hants., writes to inform us that he has picked up the remains of a rather large model aircraft at the entrance to the Hamble River. As far as can be judged from the wreckage, the job was about 6 ft. span with slotted leading edges, with the tail mounted on an upswept boom. The job, according to Cpl. Bond, is beautifully built, and finished in two shades of green, with the letters G-AOK-M on the mainplane.

Pardon ? Oh, it goes without saying that no name and address appeared on this apparently valuable piece of aircraft. Will they never learn !

Those Were The Days !

Commencing in our next issue, we shall be introducing a new feature that should give many of our older readers food for reminiscence, and our newer enthusiasts a glimpse into the trials and troubles of aeromodellers of earlier years.

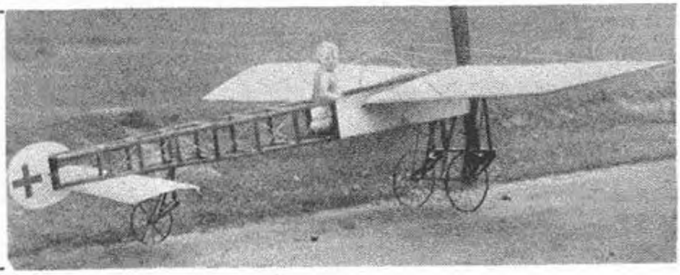
When was the first Wakefield Contest held, and where ? Who won, and what were his times ? Is present day aeromodelling much farther advanced than say 20 years ago ? These and many other answers can be found by a study of our new feature, which we are sure will intrigue all who have any interest in the great hobby of aeromodelling.

And so . . . to the music of Harry Davidson playing the " Blue Danube " . . . ah, Those Were (certainly) The Days.

Mystery Aircraft

By a somewhat devious process, an old and battered photographic plate has found its way to these offices, accompanied only by the information that it was exposed somewhere in Kent in approximately 1910. The picture, reproduced on this page, was apparently taken in the grounds of a country estate, and shows what at first glance appears to be a Bleriot XI. A second glance reveals that the machine is much too small, has no visible power plant, and would thus appear to be a *model* of the Bleriot XI (except for the fin shape). Whether the model was built as a plaything for the occupant (who must now be about 45 or 46) or whether someone actually flew it is a matter of conjecture, unless any reader has any information which might shed light on the origin or purpose of this early modeller's efforts.

Whose baby is this ?



VULTAN

Backed by over 200 flights and developed through seven previous models, we proudly present this super-stable Delta design by . . .

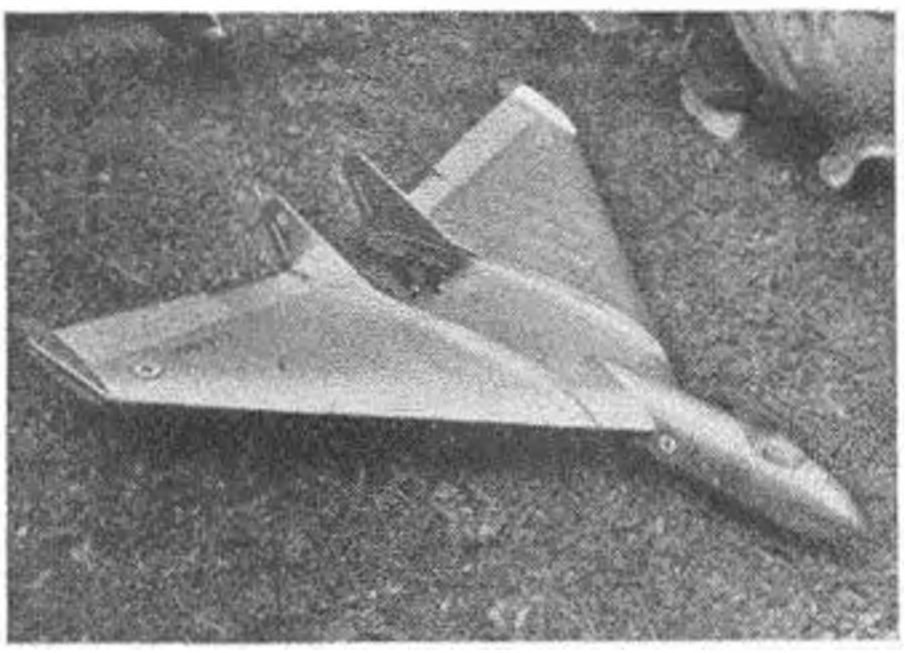
S/Ldr. L. E. ELLIS, D.F.C.

Canadian . . . rumour hath it that he rejoined the R.A.F. after a spell as civilian to get back into British modelling . . . very active in R.A.F. M.A.A., Debden . . . married, with one boy, a keen modeller of 10½ years . . . most interested in unorthodox types.

QUITE the most impressive flight performance at the 1953 R.A.F. Championships on that wet and windy week-end at the end of July, was that by Laurie Ellis's remarkable Delta. In conditions fit to deter even the most ardent modellers, with wind force breaking into gale proportions, the Vultan amazed all with its surprising stability. Conversation with its Canadian creator quickly revealed the reasons for such success, for it appears that Laurie is not the man to give up at initial upsets.

No less than seven models precede this Vultan, which is in effect a Mark VIII, and over two hundred flights with these original models provided the valuable experience necessary to design this latest version. All of these experiments were crammed within the space of one year, and even now, Laurie is contemplating further tests with high power

As presented, for 1·2 c.c. engines, the Vultan is a perfect low-powered sport model Its relatively high weight of 30½ ounces is by no means too much for 1 c.c., since the total lifting area of the thinned Clark Y airfoil is no less than 642 square inches. The model was first flown with the Allbon Spitfire, using a 7 in. × 4 in. pusher prop. It performed well, as we have already mentioned—and had a delightfully long take-off run of 30 yards before coming unstuck and climbing at a commendable rate.

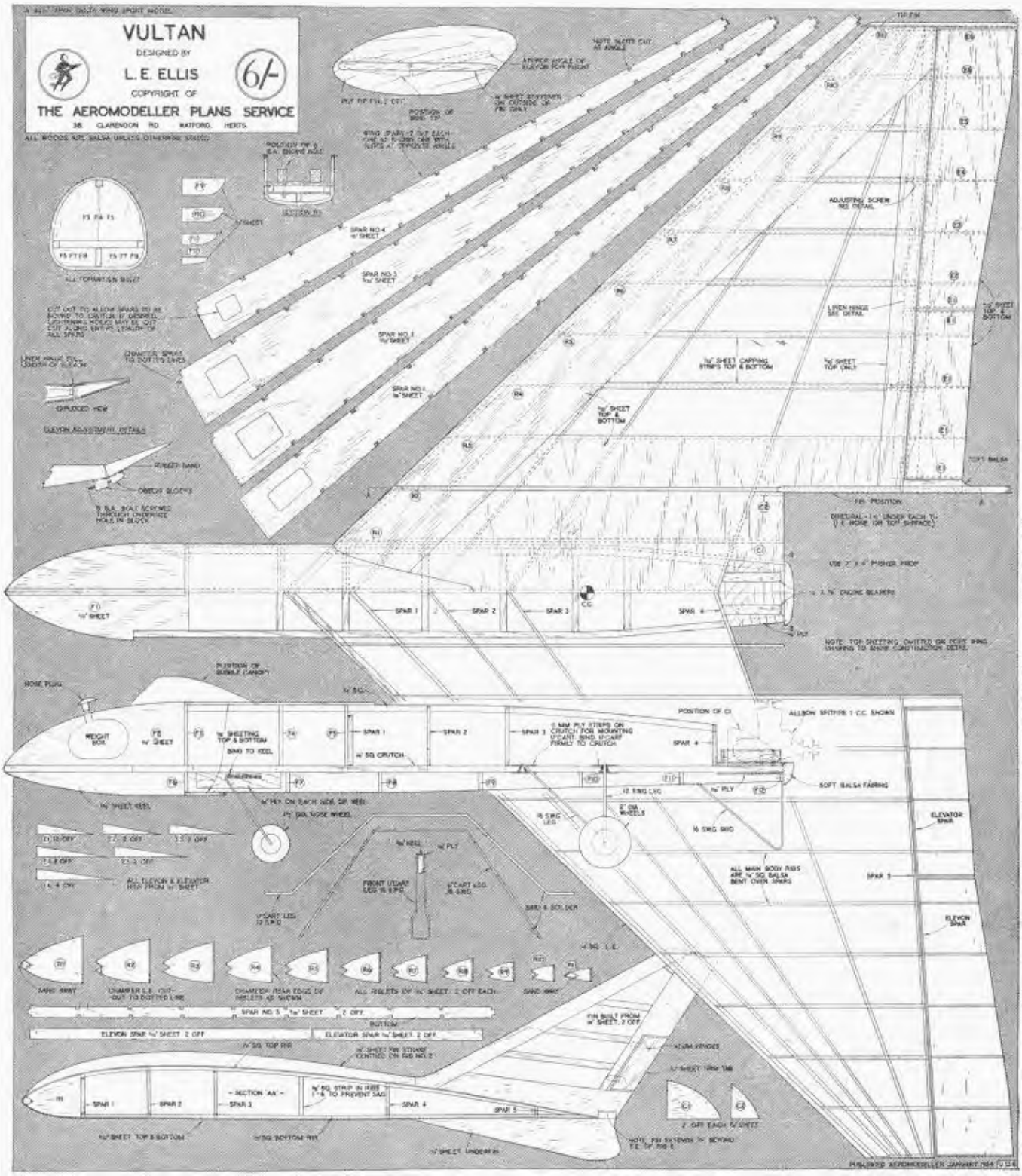


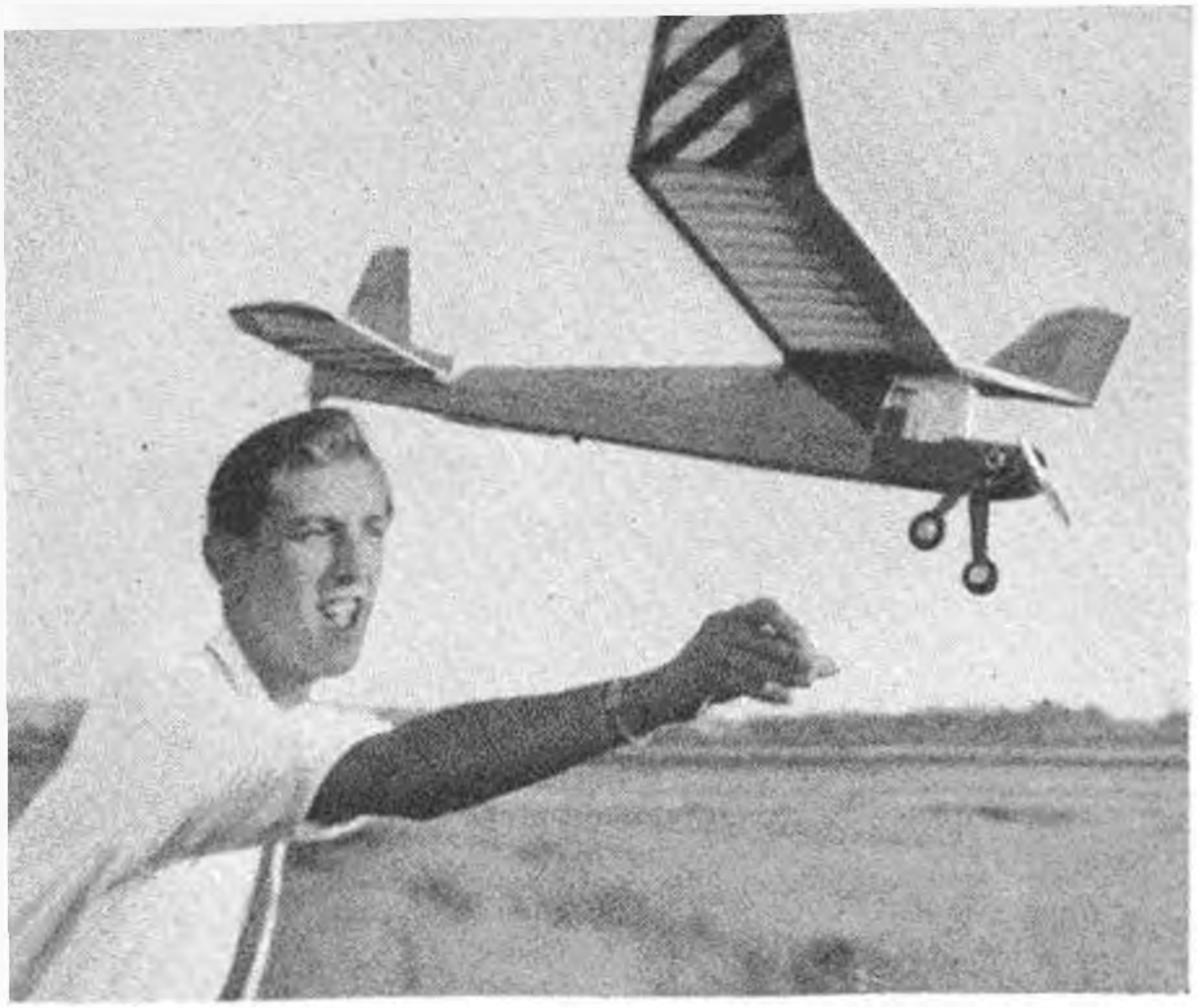
A much worn Mills 1·3 is at present installed, and the take-off run is now about 18 yards, followed by an even better climb away. Similarly, an E.D. 2 c.c. would add just a bit more performance, but it is Laurie's intention to fit an E.D. 2·46 "Racer" with a higher thrustline by at least half an inch, to hold the nose down under power. Engines of the "hot" variety will undoubtedly require extra trimming care with Vultan to find the happy medium for glide and power which is already built in for smaller motors. So ambitious gentry with 2½ c.c.'s raring to go in this design had better proceed with caution.

Trimming on the elevons and elevators is simplified by the screw adjustment system which enables positive setting to be maintained for regularly consistent flights of identical pattern every time. To date, over 60 flights have been made with Vultan, and very few flights have had the same trim settings, showing the flexibility of trim. It has not yet developed a spiral dive, yet it has been made to fly in very small circles. Its stall recovery is rapid and positive. Above all, it is so robust that in spite of flying in all conditions, it has not damaged itself with even so much as a tear in the tissue covering, which is more than we could claim for many another more conventional model!

Full building and flying instructions are issued with every copy of the full-size A.P.S. plan, a 1/6th scale reproduction of which is given opposite. The Plan is priced at 6/- post free.

A ROBUST DELTA FOR 1—2 c.c. ENGINES





Paul Wood, top junior entry, glide tests his monocoque "Atlas 48".

1 c.c. PAALOADERS

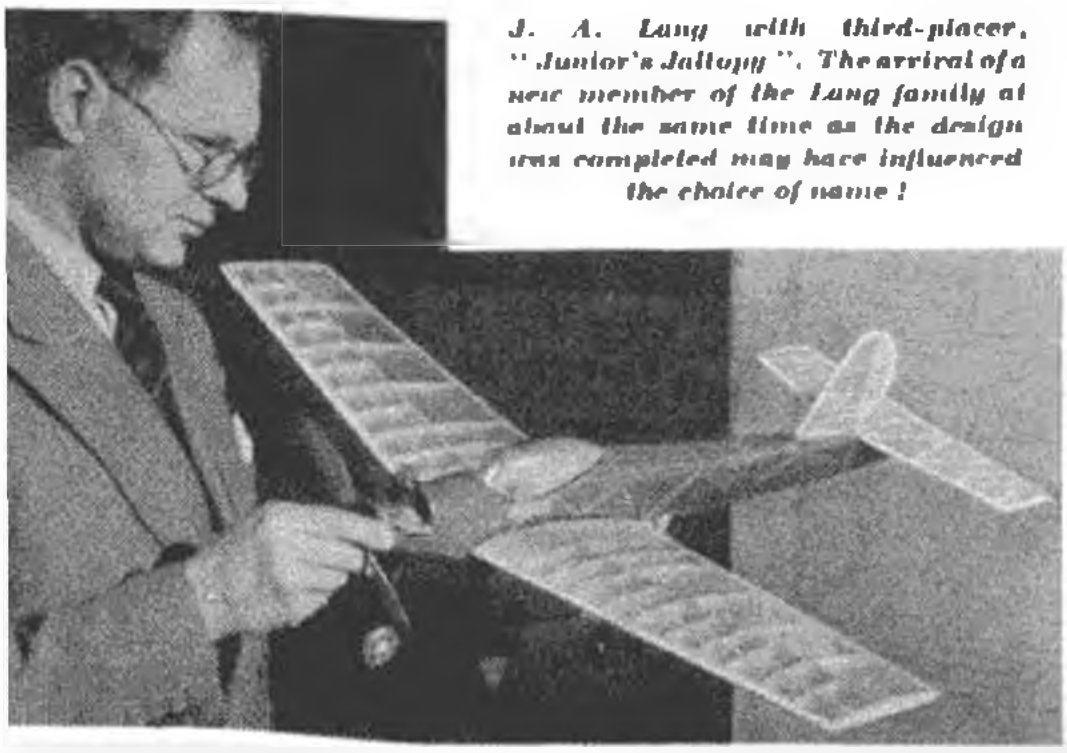
A SUMMARY OF THE LEADING MODELS IN THE *AEROMODELLER* DESIGN CONTEST

We would very much like to present a three-view and details of every entry in our recent Paaload Design Contest, but space, of course, precludes this. However, as a follow-on to the detailed presentation of the actual winner in the last issue, the other prizewinners are shown below, together with two designs selected by the judges as being of great interest and which, had the full qualifications been submitted, may well have placed among the top half-dozen.

Paa Packet

Second-place winner, by W. P. Holland (architect) of Boxmoor, Herts., "Paa Packet" is quick to build and a thoroughly sound design; this latter was proved by the installation of a 1·5 motor and the use of the loaded model, after one trimming flight, as a reserve in the F.A.I. eliminator on Sept. 27th. Even without the payload (for "open" contest work) the model remains quite trimmable with a 1·5 motor.

The design incorporates slightly more area than proved average throughout the contest, which, coupled with the low empty weight of 6·8 ozs., gives a very favourable wing-loading. Using a very old Bee, the qualifying flight of 1 : 40 from a 15-sec. motor run indicates the standard of performance. Strength was not sacrificed to obtain so light a weight, the structure being cleverly designed for a high strength/weight ratio. The fuselage, comprising simple box front blending into an aft section using four longerons and three cruciform spacers, is strong and extremely light. Two ply formers form a basis for bearers, wing boxes, and undercarriage attachment.



J. A. Lang with third-placer, "Junior's Jallopy". The arrival of a new member of the Lang family at about the same time as the design was completed may have influenced the choice of name!

Wings are stiffly but lightly built using a webbed mainspar and 1/32 in. dural vertical tongues fitting into a celluloid box, a short wire pin preventing incidence variation. Tail is of similar construction with light anti-warp bracing added. The sheet fin has a strake locating in the fuselage top which acts as a D.T. stop, and a rubber band passing through a hole in this holds the tail front firmly in place. The D.T. band is thus the only external band. Torsion bars for independent springing are used on the undercarriage, together with celluloid fairings which can be used to aid trimming. The dummy is held by a dowel and cannot move forward in a crash due to the wire incidence pin. A canopy hinge permits access.

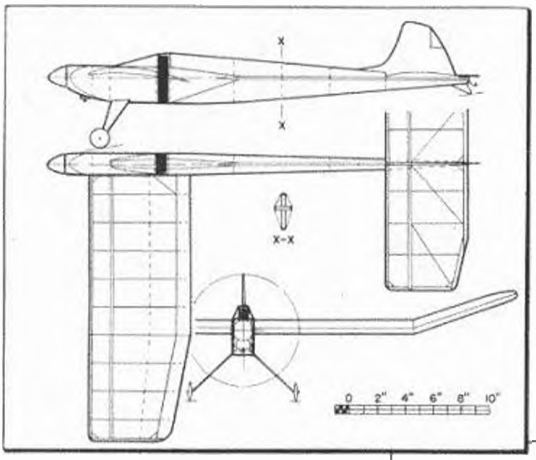
"Paa Packet" will be featured in next month's AEROMODELLER, when full-size plans will be available.

Junior's Jallopy

A M.O.S. Experimental Officer, J. A. Lang of Salisbury, gained third place with this pretty little job which was, in fact, the smallest design submitted. The original model, Spithre powered, came out at 11 oz. empty, but the designer produces figures and slight mods. for a Mk. II which show that an empty weight of little more than 7 ozs. could actually be realised.

The model is designed round the aluminium tongue, which bears wings, dummy, and the main undercart legs, and butts against the former carrying the motor bearers. Immense strength is thus concentrated at this point, at the expense of a little weight. The rest of the construction is fairly conventional, and it is interesting to note that the final balance point came out as calculated and the model flew exactly as designed. The just-under 25 per cent. tail is quite adequate for stability, and despite the final flying weight of 15 ozs., flight is comfortable and extremely realistic. A qualifying time of 1 : 14 from a 19 sec. run during the early trimming stages shows that the model is a good performer, and the designer is particularly pleased with the landings, since the model rarely overturns. Sport flying rather than contest performance was the aim, and quite within the rules.

Neat points are the bolt built into the dummy, to allow securing in place with a nut, tissue between the 1/16-in. rudder laminations to avoid splitting when warping for trim, and the commercial cockpit cover cut and spaced with a strip celluloid detachable centre-portion for access.

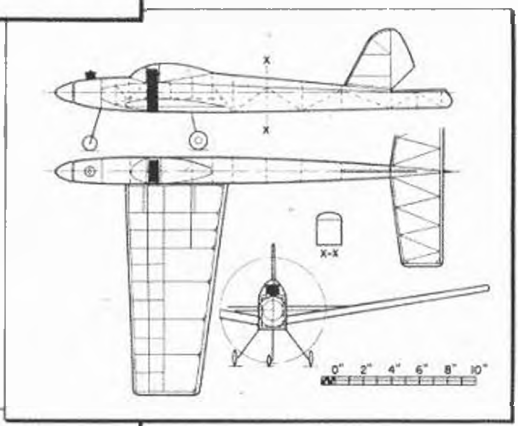


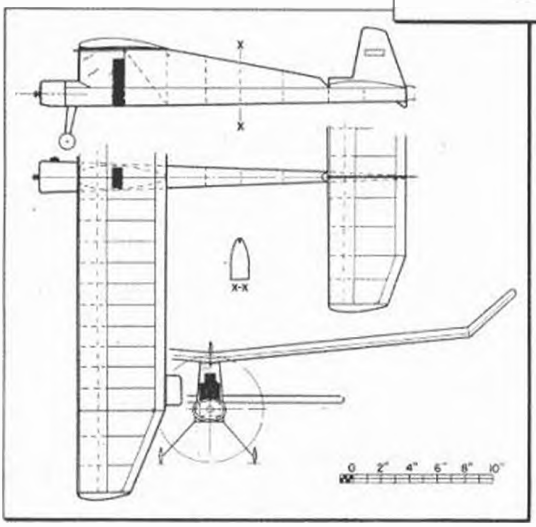
PAA PACKET

Wing span :	39 ins.
Wing area :	282 sq. ins.
Wing section :	Original—SI 63008 type.
Tailplane area :	104 sq. ins.
Empty weight :	6 8 ozs.
Motor :	E.D. Bee.
C.G. position :	On dummy.
Qualifying time submitted :	1 : 40 from 15.

JUNIOR'S JALLOPY

Wing span :	32 ins.
Wing area :	192 sq. ins.
Wing section :	80% Clark Y approx.
Tailplane area :	47 sq. ins.
Empty weight :	11 ozs.
Motor :	Allbon Spitfire.
C.G. position :	On dummy.
Qualifying time submitted :	1 : 14 from 19.





ATLAS 46

Wing span :	46 ins.
Wing area :	260 sq. ins.
Wing section :	Gottingen 602.
Tailplane area :	95 sq. ins.
Empty weight :	7¼ ozs.
Motor :	Allbon Spitfire.
C.G. position :	1¼ ins. behind dummy.
Qualifying time submitted :	3 : 12 from 19.

Atlas 16

Paul Wood, a Swansea apprentice at the National Oil Refinery, submitted the highest-scoring junior entry, which made much use of sheet construction and, incidentally, put up one of the highest qualifying flight times submitted, 3 : 12 from 10 secs. Originally fitted with a Cub ·049 and weighing 7¼ ozs. empty, the performance was markedly improved by the substitution of an Allbon Spitfire.

The design uses an all-sheet fuselage and is built up on a wide 1/16-in. crutch, with cross-grained 1/16-in. flat underside and 1/32-in. covering over the upper curved part. The 260 sq. in. wing and 95 sq. in. tail both have sheeted leading edges. A dural undercarriage enhances the appearance, which is only marred by the rather extreme tip dihedral. The neat oval cowling for the side-mounted motor gives a pleasing nose to the model.

Packhorse

A strictly " duration " approach earned fourth place for structural draughtsman B. T. Faulkner of Cheadle, whose " design history " proved the longest in the contest and emphasized that considerable thought went into his design, as, of course, with most of the entries. The model is virtually a low C.L.A. duration job built as near to specification as possible ; even the hinged cockpit cover fulfils the dual purpose of loading the dummy and permitting the motor to be choked.

Structure is pruned to a careful minimum, so that strength is adequate despite a low empty weight of 6¾ ozs. Performance is over 2½ mins. on a 20-sec. motor run, R.O.G., regularly, and the qualifying flight was 2 : 34 on 17.

Features of interest are the knock-off, strutted wings, the " double " tank with a full-visibility lower portion enabling the motor to be tuned and the model released when the fuel level reaches the lower portion, inverted motor to raise thrust line and also shorten undercarriage, and the internal motor airflow fairings.

Stoomvink

An aircraft technical artist, R. Das, of Haarlem, Holland, was one of the overseas entries who sent in interesting designs, and " Stoomvink " (the name means " Steambird ") earned sufficient points to place fifth. Simplicity is the keynote of the construction, with the weight of the structure distributed where it does the most good.

The realistic appearance does not prevent an excellent performance with the Mills ·75 employed on the prototype, the 260 sq. in. wing and 8-oz. empty weight contributing to this. The clever use of celluloid for cowling and cockpit canopy is noteworthy, and this was the only entry featuring a snuffer for the D.T. fuse. Other useful points were the flat wing mounting, with dummy resting above, the use of ¼ in. × ¼ in. positioned horizontally for the longerons and spacers, and a neat D.T. arrangement for the under-body-mounted tailplane.

Ente

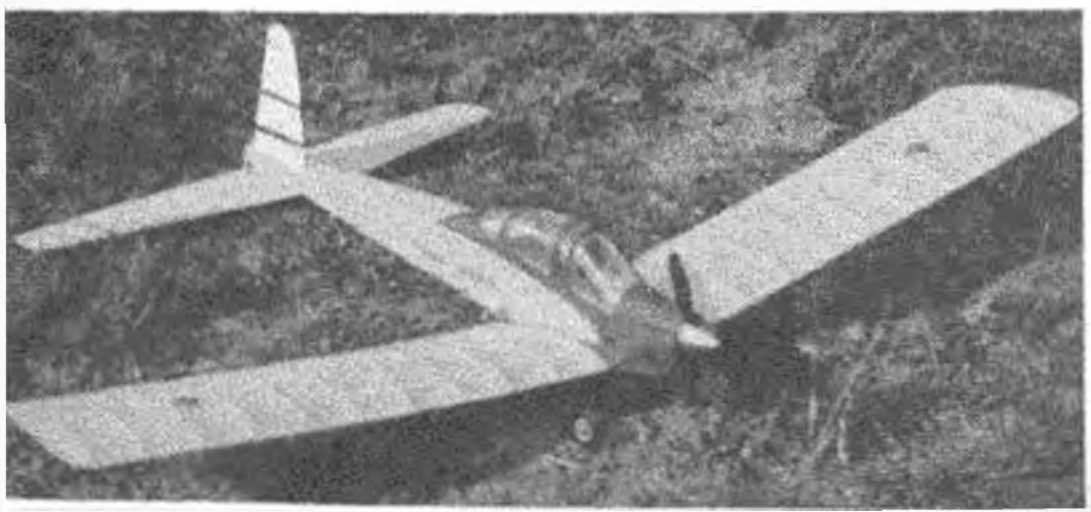
Most unorthodox entry, unfortunately invalidated by inability to complete flight tests in time, was without doubt the canard submitted by R. Hope of Bosham. Among many ingenious ideas in this design is the location of the dummy, which is actually secured in place by the removable undercarriage! One of the largest entries, with a 48-in., 310 sq. in. wing, the model was unfortunate in that during successful last-minute test flights, a rubber band came adrift and the model was damaged before completing an official qualifier. However, " Ente " (" Duck ") does actually fly stably and well, and after complete flight tests have been carried out, the design may well become available through the A.P.S.

Pay-packet

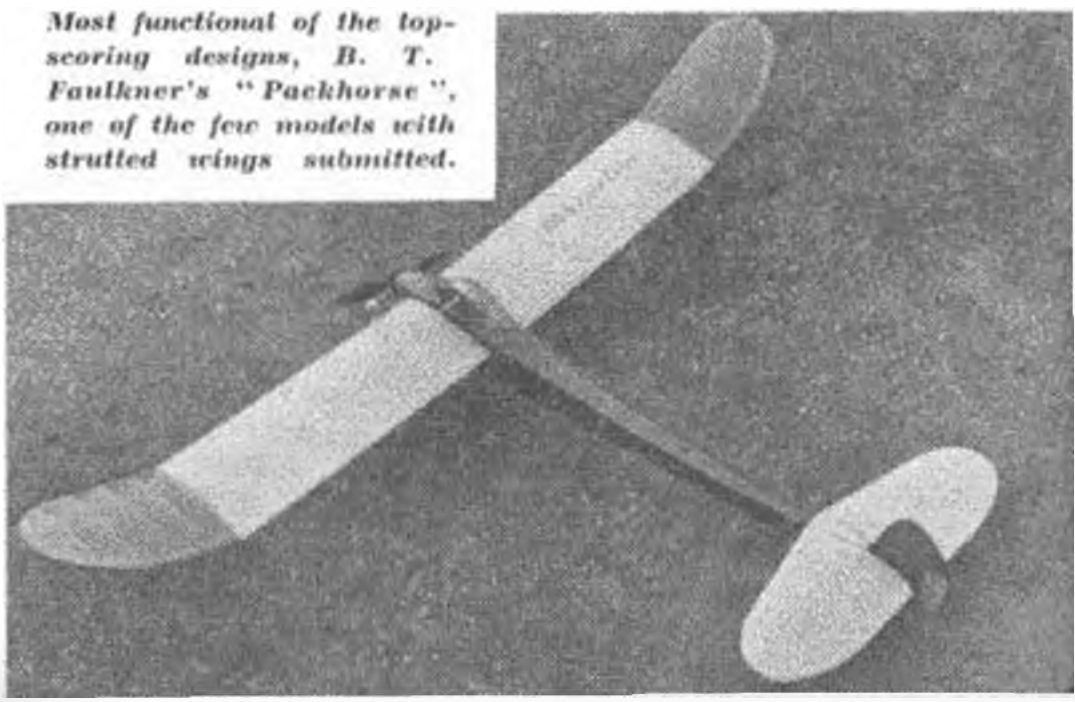
One of several commendable pushers was this McCoy ·049 design by C. M. Milford, which again invalidated itself by failure to make the qualifying flight because of the time factor. Since the closing date the model has shown itself to be quite capable of more than the ratio of 3 required for eligibility.

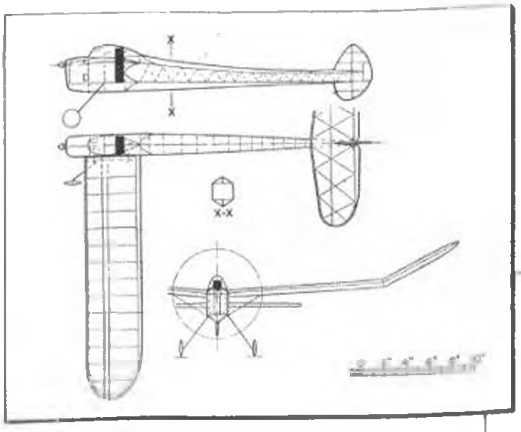
The aim was to concentrate dummy and motor weights close together, which dictated the pusher design, and the low wing was chosen as offering the simplest and lightest wing fixing for this lay-out. The design bears resemblance to the pre-war Stearman-Hammond Y and the Arpin, especially with the tricycle undercarriage which was, in fact, adopted for purely functional reasons. A cautionary point about the dummy is that rubber bands hold it in place as well as dowels, so that should the dowels fail, what inertia remains is absorbed by the bands.

C. M. Milford's attractive pusher (above) which unfortunately lacked time to put in the qualifying flights. Below is " Stoomvink ", one of several overseas entries, which placed fourth for Dutch owner R. Das.



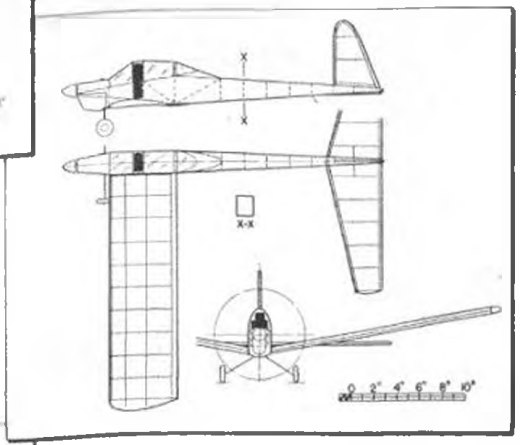
Most functional of the top-scoring designs, B. T. Faulkner's " Packhorse ", one of the few models with strutted wings submitted.





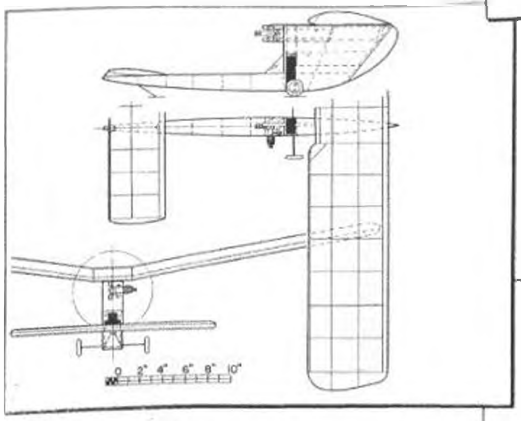
PACKHORSE

Wing span :	42 ins.
Wing area :	216 sq. ins.
Wing section :	Goldberg G.S.
Tailplane area :	63 sq. ins.
Empty weight :	6¼ ozs.
Motor :	E.D. Bee.
C.G. position :	On dummy.
Qualifying time submitted :	2 : 34 from 17.



STOOMVINK

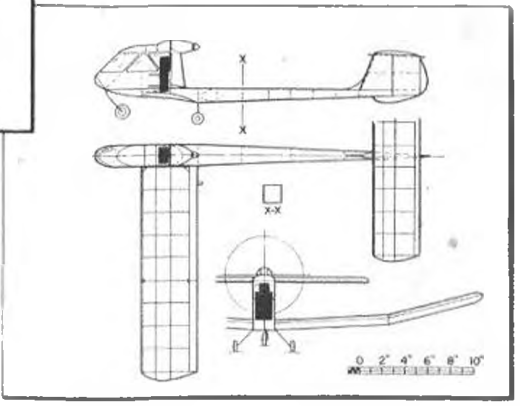
Wing span :	44 ins.
Wing area :	260 sq. ins.
Wing section :	As Paageboy.
Tailplane area :	83 sq. ins.
Empty weight :	8 ozs.
Motor :	Mills 75.
C.G. position :	On dummy.
Qualifying time submitted :	1 : 04 from 19.



ENTE

Wing span :	48 ins.
Wing area :	318 sq. ins.
Wing section :	N.A.C.A. 4415
Noseplane area :	98 sq. ins.
Empty weight :	9¼ ozs.
Motor :	Amco 87.
C.G. position :	On dummy.

No qualifying time submitted.



PAY-PACKET

Wing span :	40 ins.
Wing area :	200 sq. ins.
Wing section :	N.A.C.A. 6409.
Tailplane area	72 sq. ins.
Empty weight :	6½ ozs.
Motor :	McCoy -049.
C.G. position :	On dummy.

No qualifying time submitted.

A 42½" SPAN SEMI-SCALE LOW WING SPORTS MODEL

LINNET

DESIGNED BY

G.R. WOOLLETT

4/6

THE AEROMODELLER PLANS SERVICE

38 CLARENDON RD WATFORD HERTS.

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

WING RIBS R OFF 1/16" SHEET, 4 OFF 1/8" SHEET CUT TO DOTTED LINES WHERE APPROPRIATE

SCRAP

COVER CABIN WITH CELLULOID

1/8" SQ

1/16" SHEET

1/16" SHEET PLANKING

MILLS '75 SHOWN

1/16" SHEET

F3

F1

F2

F4

1/16" SHEET

UNDERCART BOX

3/16" SHEET

WING SEATING 1/16" SHEET

NOTE IF USING MILLS 1.5 SHORTEN NOSE & FIT MOTOR AS FAR BACK AS POSSIBLE

1/16" SHEET SIDE PANELS

1/16" SHEET ON BOTTOM

BIND TO F1

SOFT BLOCK FAIRING CEMENT TO WING AFTER COVERING

3/16" SHEET

3/16" SQ INSIDE CABIN TOP

3/16" SHEET GUSSETS

3/16" SHEET ON BOTTOM

1/16" X 1/16" HARDWOOD BEARERS

1/16" SQ PACKING BETWEEN BEARERS & SIDE PANELS

1/16" DIA. SCALE WHEEL

1/16" DOWEL

1/16" DOWEL

2" AIRWHEELS

COVER WITH CELLULOID OR FILL WITH 1/16" SHEET

DETAIL OF TAILPLANE TIP

1/16" SQ L.E.

1/16" SHEET GUSSET

1/16" SQ

1/16" X 1/16" SPAR

ALL GUSSETS 1/16" SHEET

3/16" X 1/2" T.E.

SOFT BLOCK FAIRING

PORT WING TIP SHOWN CHAIN DOTTED

1/4" X 3/16" L.E.

1/2" X 1/16" MAIN SPAR

1/16" PLY DIHEDRAL BRACE

3/16" X 1/16" TOP SPAR

1/16" SHEET RIB

1/16" SHEET, TOP ONLY

3/16" X 3/16" T.E.

1/16" SHEET

SOFT WIRE HINGE

NOTE FIN T.E. IS SANDWICHED BETWEEN 1/16" SHEET SIDE PIECES AT BOTTOM

3/16" SHEET GUSSETS

3/16" SQ

PIN

1/16" X 1/16" T.E.

3/16" SHEET

1/16" SHEET, 2 OFF

DO NOT TAPER T.E. HERE

1/16" SHEET

1/16" SHEET

1/16" DOWEL

VIEW OF MAIN SPAR SHOWING CENTRE SECTION JOINT

3/16" SHEET GUSSETS

ALL LONGERONS & SPACERS 1/16" SQ

FILL 2 END FRAMES WITH 1/16" SHEET

HARD 1/16" SHEET

CUT SLOT IN 3 RIBS ONLY

TAILPLANE RIBS R OFF 1/16" SHEET

1/16" SHEET TAILPLANE PLATFORM

PUSH FIT IN BOX

REAR UNDERCART LEGS 14 S.W.G. WIRE (F. LIGHTWEIGHT) WHEELS ARE FITTED TO INCREASE LENGTH OF UNDERCART & NOSE WHEEL STRUTS TO DOTTED LINES.

BEND HERE

12 S.W.G. FRONT UNDERCART LEG

BIND & SOLDER

WASHER IF REQUIRED

1/16" SHEET TIP

DETAIL OF WING TIP

PORT WING TIP SHOWN CHAIN DOTTED

ALL GUSSETS 1/16" SHEET

1/16" SHEET GUSSETS

1/16" SHEET RIB

1/16" SHEET WING TIP

2 OFF 1/16" PLY

2 OFF 1/16" PLY

SHADED PORTIONS SHOWN IN DOTTED LINES ARE FOR MILLS 1.5 CC

2 OFF 1/16" SHEET

2 OFF 1/16" SHEET

UNDERCART BOX 1/16" PLY GLUE TO F4

DIHEDRAL BRACE — 1/16" PLY

DIHEDRAL - 3/16" AT END RIB

PUBLISHED AEROMODELLER JANUARY 1956 PET 437

THIS IS A ¼ SCALE REPRODUCTION OF THE FULL SIZE PLANS WHICH ARE AVAILABLE PRICE 4/6 POST FREE FROM THE AEROMODELLER PLANS SERVICE

A LOW-WING SPORTSTER FOR ·75 to 1·5 c.c. ENGINES

Bob Woollett's

LINNET

About the designer . . . well-known free-lance modeller, designed "Phoenix" . . . aged 34 . . . married, with one child . . . has a variety of other hobbies, headed by woodwork and concluded with cricket . . . employed as a clerk to Kent County Council Fire Dept.

LOW-WING models are a definite minority on any flying field, yet just as much fun can be gleaned from a realistic low-wing sportster like the Linnet as with any of the traditionally conservative high-wing cabin designs. This is a relatively lightweight model, with low loading, and very good stability. It can accommodate any power unit from the ·75 Mills to the Javelin, which all will agree is a wide power range, and, moreover, it is extremely easy to build.

Materials Required

2, ¼"×3"×36"; 1, ½"×3"×36"; 1, ½"×3"×18"; 1, ½"×3"×18"; 10, ⅛"×⅜"×36"; 2, ⅛"×½"×36"; 2, ½"×½"×36"; 2, ⅛"×½"×36"; 2, ½"×½"×36"; 12" ×3" celluloid; 12 and 14 s.w.g. wire. Bearers, cement, wheels, tissue.

Wing. Cut out 19 ribs from 1/16 in. and 4 of ¼ in., with amendments for the centre section. Assemble the ½×½ main spar over the plan, adding 1/16 in. ply brace. Build the C/S first by pinning the completed spar in place on the plan together with the slotted trailing edge. Cement ribs in position, add the leading edge and gussets.

Next build the port half wing over the chain-dotted line on plan in the same manner, after pinning the spar and trailing edge over the plan. When dry, lift off and pin down starboard side. Complete the wing, first supporting the completed wing panel with a block of wood. The small top anti-warp spar is cemented in position after cracking for the dihedral angle. When dry, cement C/S sheeting with the centre section pinned onto the building board. Leave until set. Cement and shape leading edge fairing block and a celluloid strip under the long T.E. up the centre section.

Fuselage. Cut out all formers and sheet components. Glue the U/C box onto F.4 and bend the two undercarriage units to shape. Complete by adding the wheels. Build two side frames over the plan from 3/16 in. sq. hard strips and sheet. Note that the rear fuselage sides on which the tailplane platform is cemented are of ¼ in. sheet. Ensure that this sheet is flush with the *outsides* of both side frames by packing when building over the plan. The resulting gap of ¼ in. formed when the two side frames are cemented together at the rear, is to house the fin trailing edge strip.

Join sides with F.1, F.2 and F.4 complete with U/C box in position and ensure that the assembly is square. Allow to dry, then join the side frames at the tail. When doing this, place a scrap of ¼ in. sheet between rear fuselage sides and pin temporarily until fin is cemented in place. Add all cross struts and members, gussets and reinforcing of cabin top. Bind and cement the nosewheel assembly to F.1. Drill the engine bearers to suit the engine used and glue in position, using Durofix. When dry, glue the appropriate size balsa packing to the outside of the bearers and add the nose side panels of ¼ in. soft sheet. If covering the underside of nose, insert bearer bolts and connect each pair with a short length of wire soldered to the heads and fitted to the screwdriver slots. Finally, cement the 1/16 in. sheet covering to the undersurface of the wing housing. F.3 can now be cemented to the fuselage and the ¼ in. strips forming the planking of the decking added. Cement the ¼ in. sq. windscreen struts in place, the underfin and the tailplane platform.

Tailplane and Fin. Construction is very simple. Both are built over the plan. The fin trailing edge is in one piece, but is cut to allow the trim tab to function when the unit is removed from the plan.

Covering and Finish. Sand all components and coat the interior of the engine bay with Banana oil. Cover the fuselage with heavyweight Modelspan and the flying surfaces with lightweight.

Before colouring, cement in the celluloid for cabin windows. Complete the model with one coat Banana oil or fuel proofer overall.

Flying. Check that the C.G. is approximately as shown on the plan. Use ballast if not so.

Before the first powered flight, offset the trim tab 15 to 20 degrees to starboard. Reduce revs and launch into wind. On the Mills ·75 versions a powered glide will result. Increase revs and a steady climbing turn should occur. A wide circuit to left is the best, followed by a glide to the right.

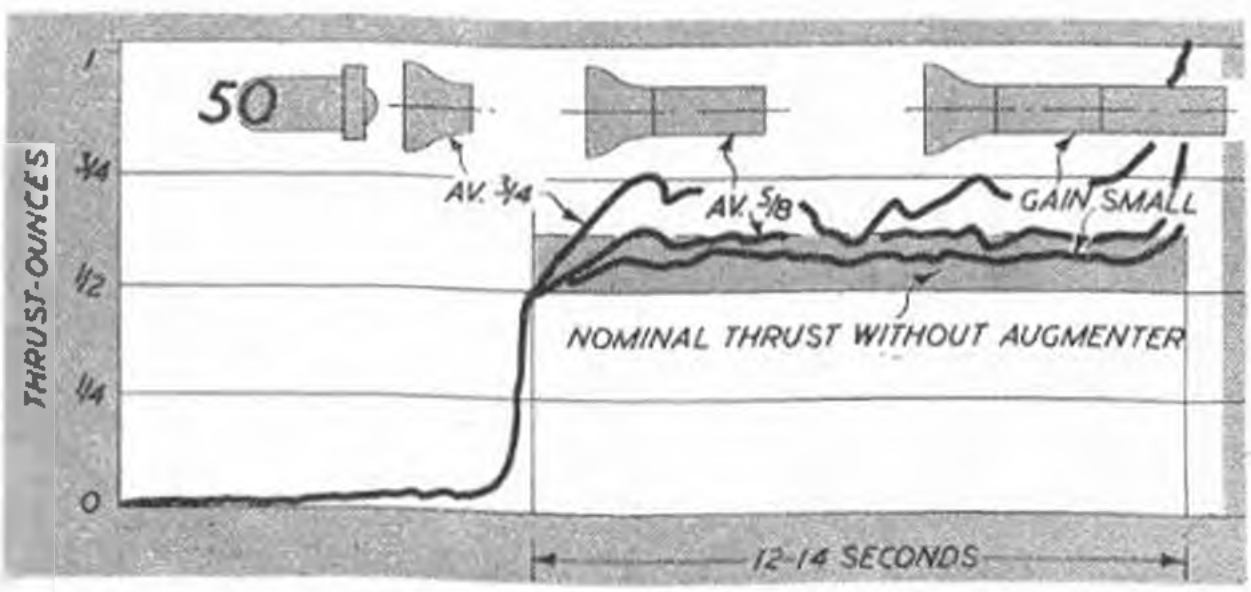
ENGINE JETEX

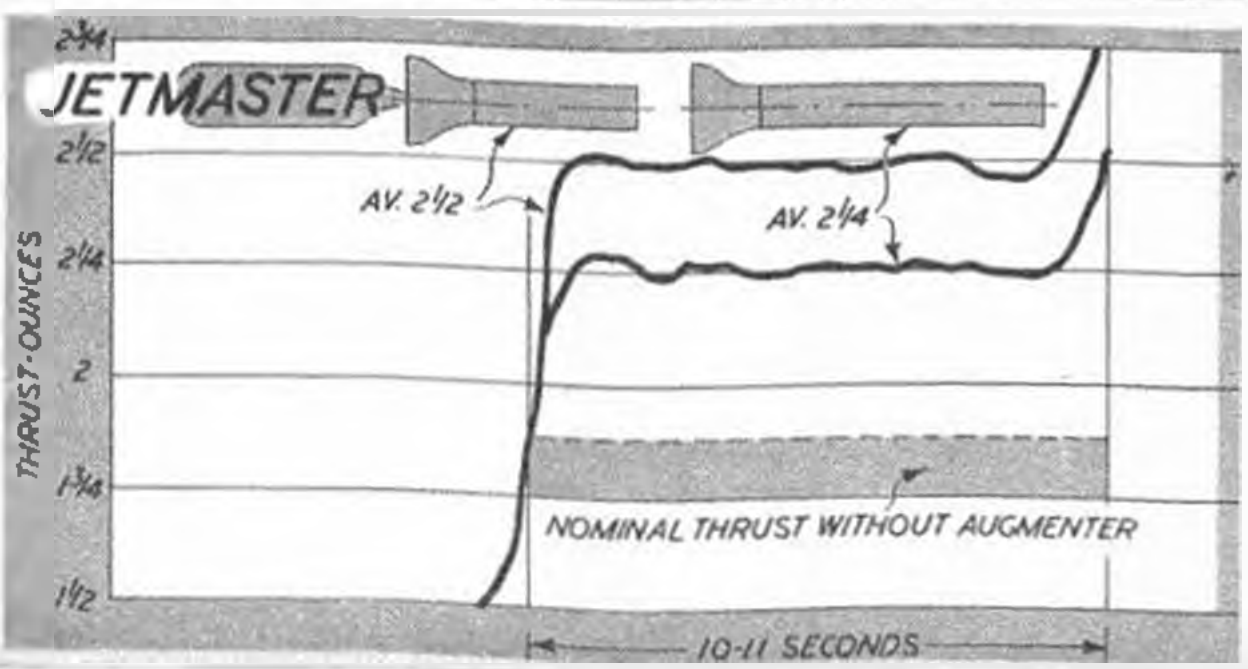
Tested by Ron Warring

THREE sizes of Jetex augmenter tubes are now available, supplied as standard accessories for the 50B, *Jetmaster* and *Scorpion* units. The 50 augmenter tube is made in three parts, drawn from thin walled aluminium tubing, individual lengths fitting together telescopically. The bell-shaped mount can be fitted with one or two extension tubes, making the total length of the augmenter tube 4 or 6 ins. respectively. The *Jetmaster* augmenter tube consists of a bellmouth (made from two pressings with a turned-over flange) and a 12 in. tube (also flanged), in ·007 in. aluminium. The *Scorpion* augmenter employs the same bellmouth but an extension tube of only 4½ ins. in length.

Basically an augmenter tube can be considered to have two main purposes—to boost the jet efflux (*i.e.*, provide increased thrust) and also to provide an efficient extension of the tailpipe so that a Jetex unit can be mounted amidships and the jet itself exhausted from the rear of a fuselage. Thus, more specifically, an augmenter tube makes it possible to mount a Jetex unit in the fuselage of a single jet flying scale model with a true scale or near-scale jet exit, rather than the hitherto standard method of mounting the Jetex in a trough under the fuselage.

As far as static tests were concerned these had, of necessity, to be directed towards measuring what effect the augmenter tube had on the static thrust of the unit to which it was fitted. Being static test figures, these do not necessarily duplicate results which might be obtained under actual flight conditions, largely because there is no airflow through the mount of the augmenter, other than the jet efflux itself being fed into the centre of the tube. Under flight conditions, provided an ample, and smooth airflow is fed to the bellmouth, quite possibly any beneficial effects noticed on static tests may be enhanced.





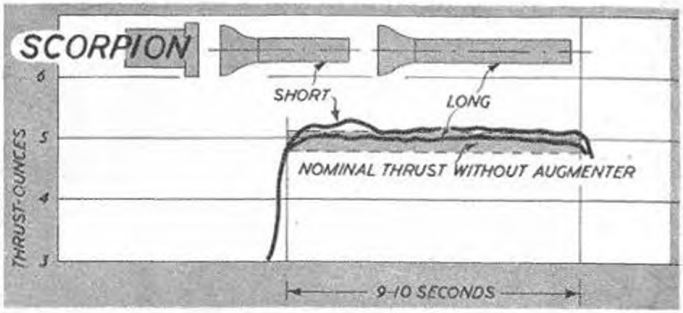
Summarising the tests, the *Jetmaster* did show a remarkable increase in thrust with augmenter tube added and properly positioned. Highest thrust figures were obtained using the shortest length of augmenter tube (*Scorpion* size), but both short and long lengths gave results above the nominal thrust figures for the plain unit. Some lack of consistency is to be noticed, however, which is most probably due to the variation in fuel charges or the state of the charges (*e.g.*, damp charges giving low thrust).

The 50B was another motor with which slight increases in average thrust could be detected when run with an augmenter tube. Highest thrust figures resulted from using the bellmouth only. Thrust gains with the *Scorpion*, using an augmenter, were of a proportionately lower order.

Both the 50B and the *Jetmaster* are, of course, designed with shaped nozzles to match the contours of the bell-mouth. It would appear that this is an essential feature if *marked* thrust increases are to be achieved. A Bluff

ANALYSIS SUPPLEMENT

AUGMENTER TUBES



trailing section in the bellmouth entry (*i.e.*, a "flat ended" Jetex unit) almost certainly creates turbulence of an order seriously to impair the efficiency of the augmenter, hence no outstanding results are likely to be achieved in such cases. The more "flat plate" the trailing section of the Jetex unit, too, the more critical the positioning of the Jetex relative to the bellmouth entry appeared to become. In the case of the *Jetmaster* and 50B it appeared adequate that the Jetex unit be lined up approximately parallel with the tube and substantially central with the longitudinal axis of the tube, the end cap being in line with the leading edge of the bellmouth.

Conclusions would appear to be that the use of an augmenter tube as a thrust booster should show favourable results with the 35, 50B and *Jetmaster* and, to a lesser extent, the *Scorpion* and other motors in the range. For maximum effect a short augmenter tube seemed consistently to give higher thrust figures than any other arrangement and might be considered as a useful feature in a *Jetmaster*-powered duration model.

It is doubtful if the thrust increases obtained with augmenters on the other units is worthwhile from a *duration* design point of view, particularly on account of the fact that if this tube is mounted externally and aligned with an offset motor (frequently employed for trimming), glide trim may be upset by the non-linear airflow through the augmenter. Even aligned with the flight path, augmenter drag may be quite high on the glide, again affecting trim and glide performance.

Using an augmenter tube to solve an installation problem on a scale or near-scale model, however, the designer can adopt the arrangement with some confidence. Provided the set-up is reasonably accurate he should certainly get no *loss* of thrust, and most probably a gain if a properly ducted entry is associated with the location of the bellmouth. This latter feature may be somewhat critical on certain layouts.

Transposing the point of (free) exit of a jet stream without loss of thrust is an accomplishment of no mean order and for this reason alone augmenter tubes are a welcome innovation.

JETEX UNIT PERFORMANCE DATA

Unit	Loaded Weight oz.	Charge Weight oz.	Charge / Loaded Weight	Maximum Thrust oz.	Thrust / Weight Ratio	Thrust / Charge Weight	Charge Performance = Thrust x Duration / Charge Weight	% Improvement with Augmenter: Thrust	% Improvement with Augmenter: Thrust / Weight
ATOM 35	¼	3.32	·375	¼	2·0	5·3	57·3	†	†
50 (Standard)	23/64	7/64	·30	½	1·71	5·7	68·6	†	†
50 (Export)	19/64	7/64	·37	½	2·1	5·7	68·6	†	†
50B	21/64	7/64	·33	½	1·9	5·7	68·6	—	—
50B BELLMOUTH ONLY	27/64	7/64	·26	½	1·78	6·0	82·3	+20	—6·3
50B SHORT AUGMENTER	29/64	7/64	·24	½	1·38	5·7	68·6	—	—
50B LONG AUGMENTER	31/64	7/64	·23	½	1·29	5·7	68·6	‡	‡
100	½	½	·29	1½	1·43	5·0	60·0	†	†
JETMASTER	15/16	½	·27	1½	2·0	7·5	90·0	—	—
JETMASTER SHORT AUGMENTER	1 3/16	½	·21	2½	2·1	10·0	120·0	+33	+5
JETMASTER LONG AUGMENTER	1½	½	·18	2½	1·8	9·0	108·0	+20	—20
200	1 9/16*	5/16*	·20	3	1·92	9·6	115·2	†	†
350	2½*	½*	·14	4	1·45	10·6	128·0	†	†
SCORPION	2	½	·10	5	2·5	13·3	120·0	†	†

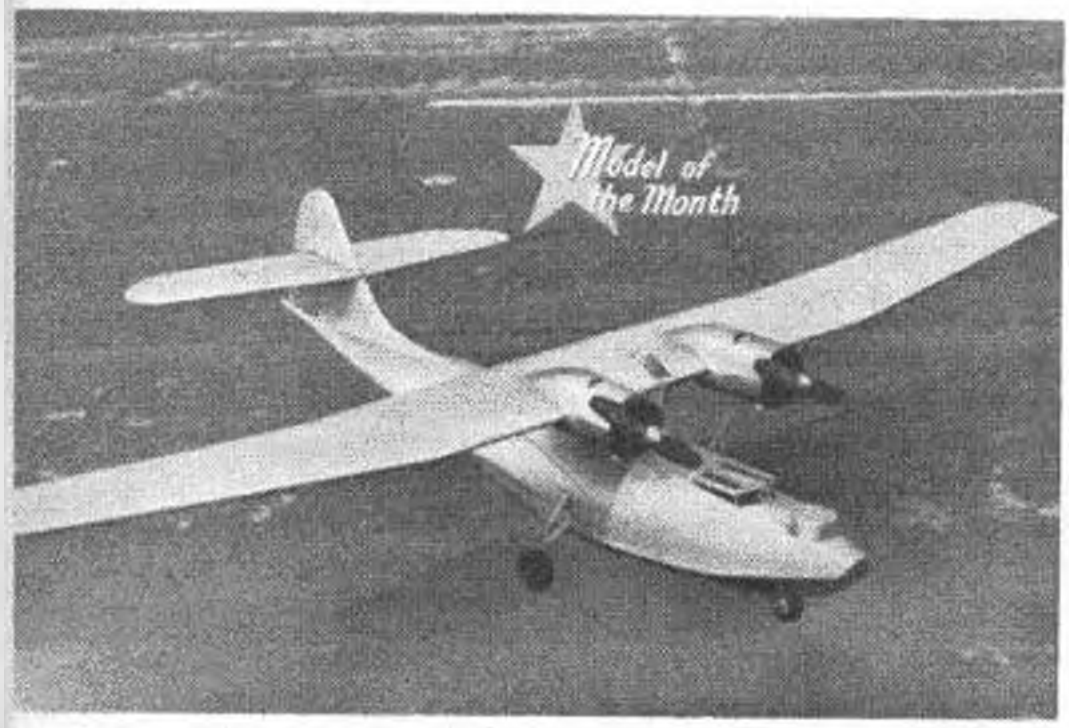
† Not tested with augmenter. ‡ Augmenter tests inconclusive (little definite gain in performance). * Single charge.

1

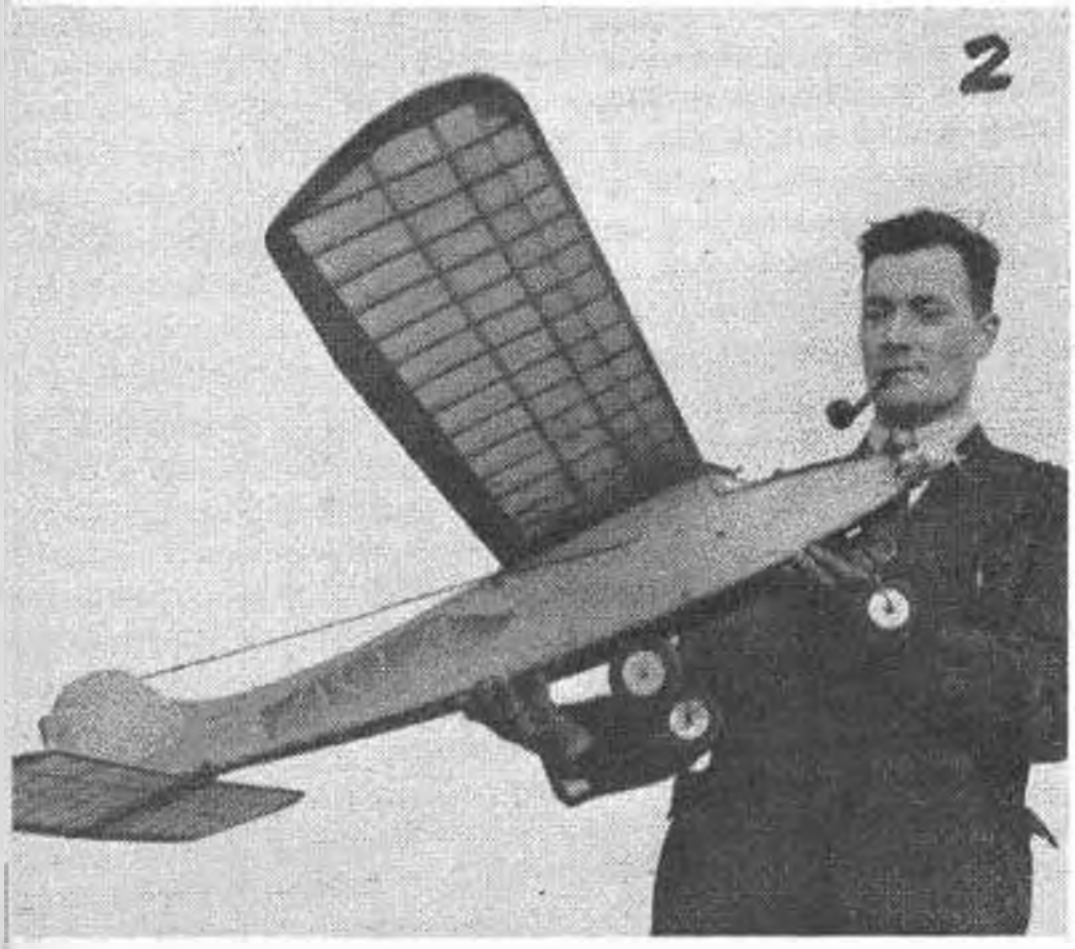

12

MODEL NEWS

WITH so many engines in circulation these days, the popularity of the twin engined control-liner increases monthly. Most of the two-motor models are using 1 to 2·5 c.c., so the choice for Model of the Month is rather exceptional. Built by J. Barnfather of Darlington M.A.C., it has a span of 86 ins., weights 6¼ lbs. and uses a pair of E.D. 3·46 " Hunters ". In flight, we are told, this model is terrific, and is more than satisfactory reward for the twelve months design and construction involved.



Above, in Number **1**, a smart class A team racer with an Elfin 1·49. Speed is 60 m.p.h., plus . . ., and already it has a 1st and a 2nd placing to its credit in Concours d'Elegance events at Stourbridge. Coloured silver grey and dark blue, it was built and designed by C. P. G. Wheldon of Blackheath & Halesowen M.A.C. Pipe smoking W. Trow of Malvern in photo **2** shows off his radio design for the glow-plugged Amco 3·5. Mr. Trow uses his own design throughout, including the radio gear, but had tough luck in the Ripmax event at Long Marston.


2

Another twin appears in **3**. This time, a scale model of the famous D.H. 88 Comet, built by B. Broadbank of Harrogate for two Mills ·75 diesels. Span is 33 ins., and the entire job is sheet covered and neatly hand painted. To the right is a direct contrast, a Helicopter for the Elfin ·5 by P. J. Lambert of the Regents Park club. Seen in **4**, resting in its amphibious undercarriage made up with the aid of table tennis balls, the 'copter displays a gimbal mounted 7 × 5 prop on the Elfin, and mass balanced rotor blades. Flight tests are not reported.

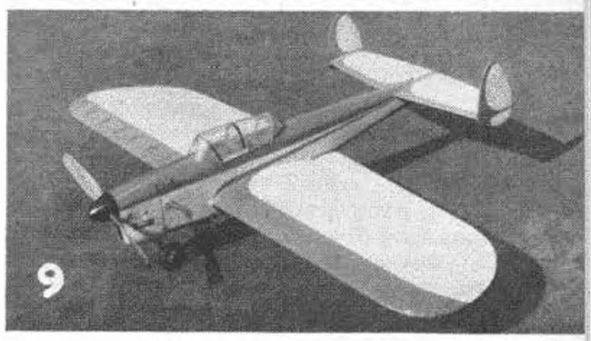
Equally unconventional is the semi-airliner by K. N. Crook of Bickerstaffe, Lancs., in picture **5**. Built whilst stationed in Singapore, it reminds us more than somewhat of Henry J. Nicholl's radio controlled experimental model which was remarkably stable, so we can presume that Mr. Crook's

3

4

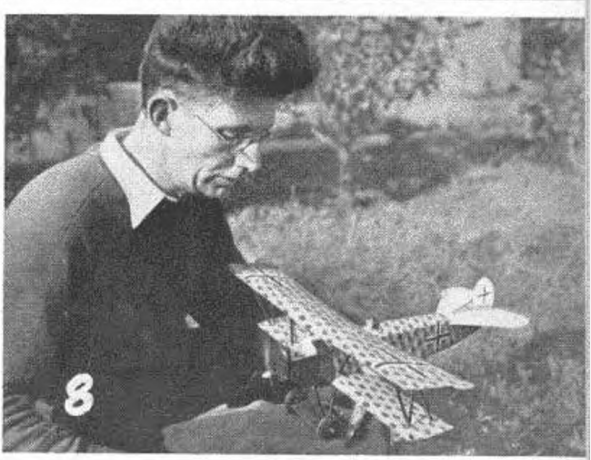
model performs well. More like a crescent moon than the Handley Page wing shape, is W. Wheeler's (**6**) class B racer which got into the semi-finals, by virtue of its long range Miles 5 c.c. diesel, in the Davies Trophy . . . it almost manages five miles non-stop!—it also gives the processors heart failure!! Next door in **7**, is the ever popular A.P.S. Lysander, this time, built by C. East of Mill Hill for his E.D. Bee.

Bob O'Brien, treasurer of the Worthing club, is a keen fan of the baby ·32 c.c. Kalper diesel. Maybe this is because he weighs 13 stone and measures 6 ft. 2 ins. in his socks. In **8** he is running up the Kalper in his 22 ins. Fokker D VII, all-up weight, 6¼ ozs. including camouflage lozenges (Spots, to his clubmates). In **9**, J. Swift from Sheffield lets us have a look at his attractive 40 ins. stunter known as "Geisha", with Fox 35 hidden beneath a beaten aluminium cowling. Trike undercarriage and twin fins go well together and give it an "Ercompe" air. Cockpit slides back for the glo connections.



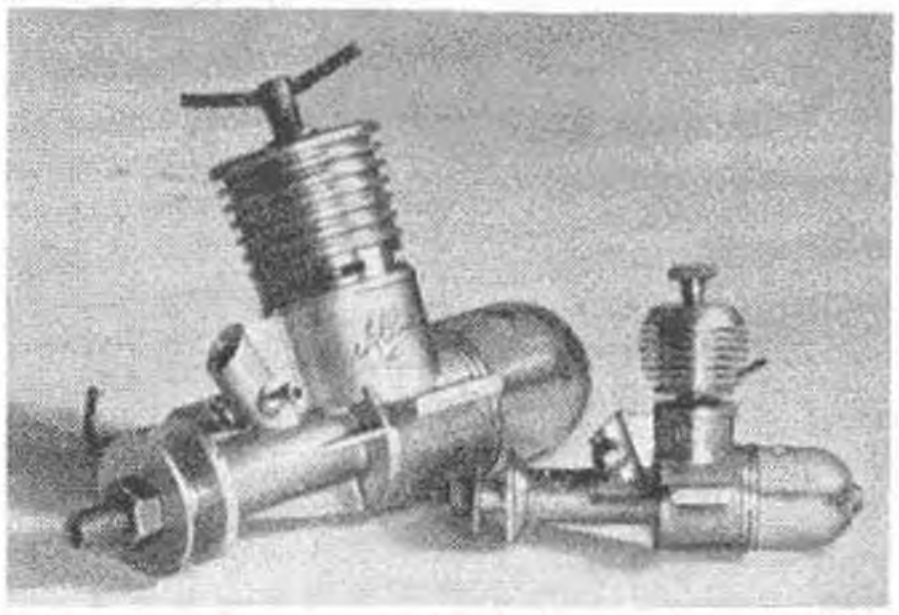
More rotary wings in photo **10**, where Mr. Tiller of Bournemouth is seen holding his modified A.P.S. Jumping Jiminy fitted with an E.D. ·46 Baby diesel. Autogiros are becoming very popular.

For a Handley Page employee, Mr. P. Simmons in **11** has made a remarkably "Avro" delta for the Jetmaster. Model flies well, but a Scorpion unit will be fitted to build up the thrust for better performance.



Round the clock to photo **12** and to a PAA Load design that, curiously enough, did not get entered into the AEROMODELLER design contest. As a pusher design, it is distinctly unique for payload. Weight is 12 ozs., and the engine, an Atwood Wasp ·87 c.c. glow plug. Designer R. Poad of Darlington reports good flying characteristics in general, but stall recovery is to be improved.

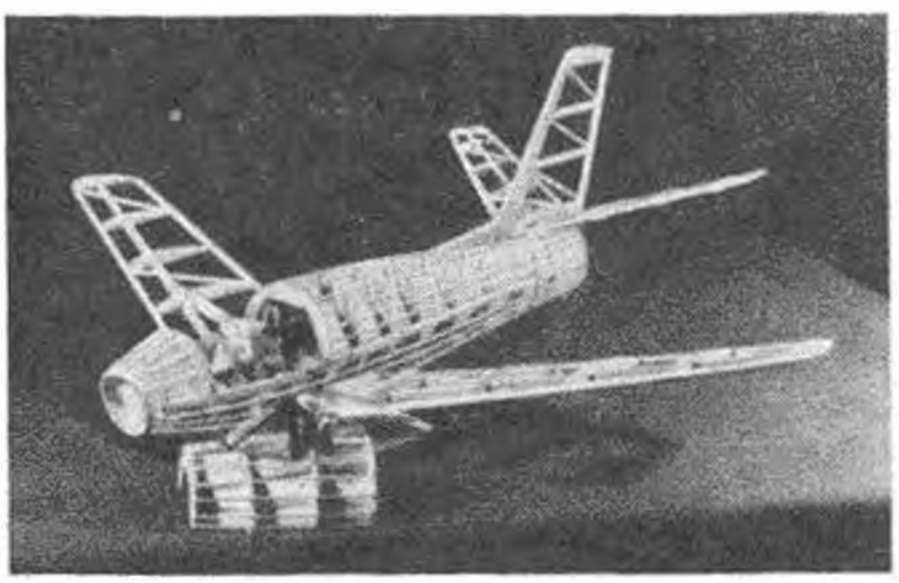
TRADE NOTES



A DOPE supply store on wheels drove into the editorial forecourt the other day, and who should emerge from the driving seat but Peter Smith, of the flowing moustachio, now established as a distributor for **Titanine,** and **Mercury Fuels.** Pete runs a unique service, a regular delivery of dopes and fuels direct to the dealer's door, and those shops not already in touch would do well to contact Croydon 9652 for further gen. Among the stock we noted the range of authentic glossy camouflage tones including Royal Navy Midnight Blue and the ever-elusive Sky type "S" and Med. Sea Grey in bottles ranging from ½ oz. (7½d.) upwards. Matt camouflage tones for wartime models are also included, and coming as they do from the manufacturers of the dopes used on full-size craft, who can doubt their authenticity ?

Urgent call from **Electronic Developments** asks us to stem the amazing flow of enquiries for the six-reed radio outfit mentioned in last month's notes. Production of the Rx begins this month : but the *complete* outfit, beep box and all, will not reach the market for several months. So hold your horses, potential customers—it will be advertised when available, all in good time.

One really outstanding British kit that seems to have made quite an impression on our American friends is the **Veron** Sabre F.86E, for ducted fan propulsion. Photo on this page reveals the structure of the example built up by Mike Smith of Boston, Lincs. Total weight is 12¼ ounces, including cockpit detail and pilot, giving admirable flight performance with an E.D. Bee. The price is 29/2 including purchase tax, and, being a Veron kit the only extras required are dope and cement, the special impeller and starting pulley being part of the kit.

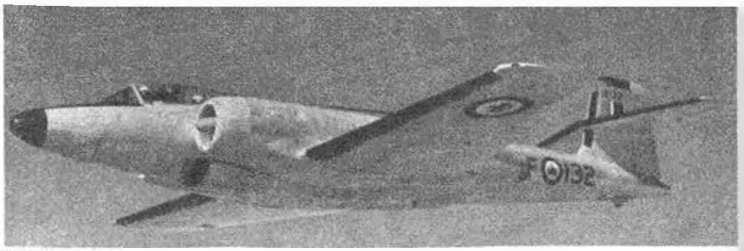


The Humber Oil Company, manufacturers of **Britfix** products, are introducing a new Fuel Proofer which has been developed after many months of research by the Humber Oil experts. Standard size will be a 2 oz. jar in a colourful pack, retailing at 2/6.

Recently added to the already large **Frog** kit range are the six "Senior Series" 18-in. span models. All wood parts are precision cut or shaped, a moulded plastic prop comes completely assembled with nose button and bearing, and the undercarriage is pre-formed. At 4/6 this is real value for money, and a genuine recommendation for the beginner's Xmas stocking. Flight tests of the one vee-tailed version built up by our 10-year-old protégé give regular 30-second flights in spite of its special line in crinkly covering !

Nestling next to big brother "Spitfire" of ten times capacity is the new **Allbon "Bambi"** ·1 c.c. The competition which the manufacturers, **Messrs. Davies Charlton,** ran in our November issue to choose the name brought well over 3,000 entries from all over the world, which proves that aeromodellers like small engines, and that the AEROMODELLER gets around. Our offices were knee deep in postcards to say the least, and we congratulate the, as yet, unknown Norwegian who submitted the winning name. The price of this new motor is not yet fixed but we anticipate that it may be slightly more than the "Dart" owing to higher production costs. Whilst at the Davies Charlton works recently we were privileged to "have a go" at one of these tiny motors. Funnily enough, starting was not difficult ; in fact Bambi liked being flooded, which for an engine of this size is not what one might expect. Control adjustment whilst running and sensitivity to fuel level became apparent, and we understand that these items are being ironed out by the manufacturers at the present time. Supplies for the market are anticipated in late February.

AEROPLANES IN OUTLINE
NUMBER 11
BY G. A. CULL



***Above:** A standard CF-100 Mk. 3 of the type which has given the R.C.A.F. first experience of twin jet all-weather flying. **Left:** The Mk. 4 prototype, now in production, complete with lengthened all-weather nose and wing-tip rocket pods.*

AVRO CANADA CF-100

THE impetus that war gave to the previously small Canadian aircraft industry continued after the war and evidence of this was the formation of A. V. Roe Canada Ltd., in December, 1945. The R.C.A.F. was alive to the need of a high performance fighter to patrol the vast arctic territories which form the backdoor to the American continent and this eventually led to the production of the CF-100, or "Canuck" as it was known until this name lost favour. Requirements called for a fighter able to undertake long range flights in any weather and with the high performance necessary for bomber interception, without sacrificing the short take-off and landing runs essential for flying from small, rough Arctic airfields.

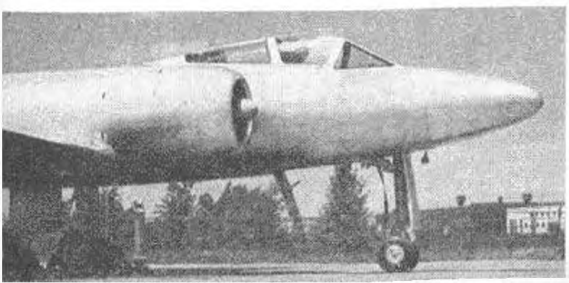
In October, 1946, the new design staff, largely recruited from this country, started from scratch on the ambitious job of producing Canada's first jet fighter and new engines were also designed by the vigorous new company. The 19th January, 1950, saw the maiden flight of the first prototype which was numbered 1801 and powered by two R.R. Avon engines. This was followed by a similar machine, 1802, and this pair won much experience and achieved Mach ·91 while test flying. Wings were strengthened and these prototypes smoothed the way for the Orenda machines to come. A proposed non-stop flight to the U.K. was abandoned after the first prototype crashed while on Arctic tests, and this was caused by failure of the crew's oxygen at altitude.

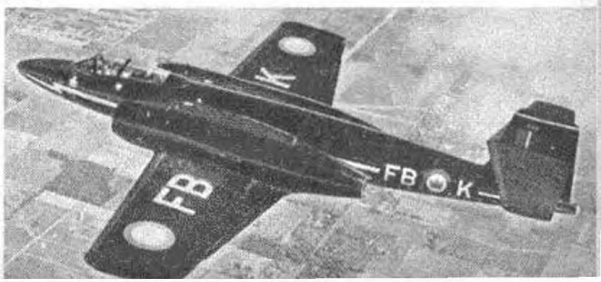
1803 was the first machine with Orenda I engines and first flew on 20th June, 1951. This was the Mk. 2 of which ten were ordered, the second off having dual control and of the five retained by the makers for development work, No. 18112 later became the prototype Mk. 4. Test flying of these Mk. 2's was extensive and ironed the snags out of the CF 100/Orenda combination preparatory to the production of a fighter for the R.C.A.F. This was the Mk. 3 and one batch of these have dual control while the remainder of the orders for some hundreds are fighters, and the first two squadrons formed with these were Nos. 423 and 425. With two Orenda 2's delivering 6,100 lbs. each the Mk. 3 achieves 640 m.p.h. and is fully operational with radar in the nose of the slim fuselage. Armament is eight ·5 guns in an accessible package below the fuselage. As with all CF 100's the two-man crew is housed in tandem under a sliding hood and both have M.B. ejector seats. Twin wheels are fitted to all three undercarriage units and large divebrakes are fitted above and below the wings which have plain flaps outboard and a split flap across the centre fuselage.

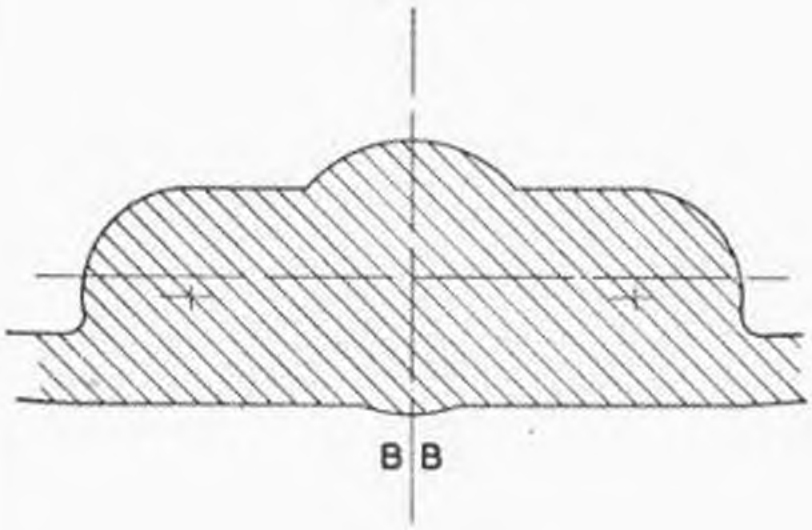
The Mk. 4, the prototype of which has been flying since October, 1952, has now superseded the Mk. 3 in production and with Orenda T.R. 9's of over 7,200 lbs. thrust, exceeds the Mk. 3's performance. Although exact figures are secret, a rate of climb better than 12,000 ft. per min. is certain and with the possibility of afterburners being fitted, further advances are likely. The vital radar gear is more comprehensive in the Mk. 4 and results in a lengthened, blunt nose which is, however, more deadly than the superb profile of the Mk. 3. A less noticeable distinguishing feature is the position of the cockpit air-conditioning intake which has been moved from the ventral location on the Mk. 3 to the top of the rear fuselage on the Mk. 4.

On December 18th, 1952, the Mk. 4 exceeded the speed of sound and so won the distinction of being the first straight-wing production aircraft to do this. With this Mk. a great armament advance has been made, for in addition to the eight guns, rocket "pods" are mounted at the wing tips. These were tested on a Mk. 3 and 30 air-to-air rockets with folding fins may be fired from each pod, from which the nose and tail are first jettisoned. With this armament plus a range in excess of 2,000 miles, full radar and a top performance the CF 100 amounts to a potent seventeen tons of fighting power that makes it the best existing fighter for the specialised job of defending thousands of square miles in arctic conditions.

Third CF-100 built was this Mk. 2 (left) which was first to have Orenda engines, and the early shape of nose, root fairings and cockpit may be seen. First two Avon-powered prototypes (right) were glossy black overall, which contrasted with the matt rubber de-icers as seen here on the second machine.

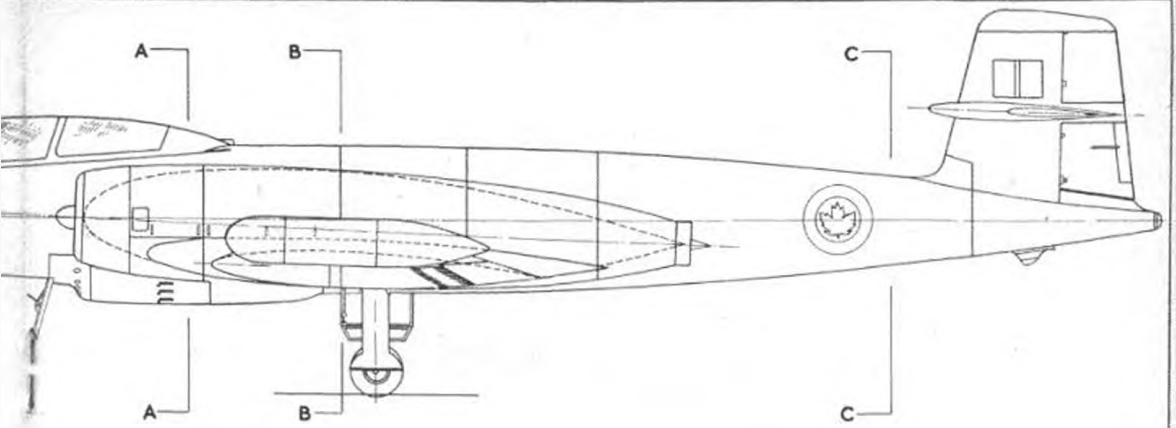


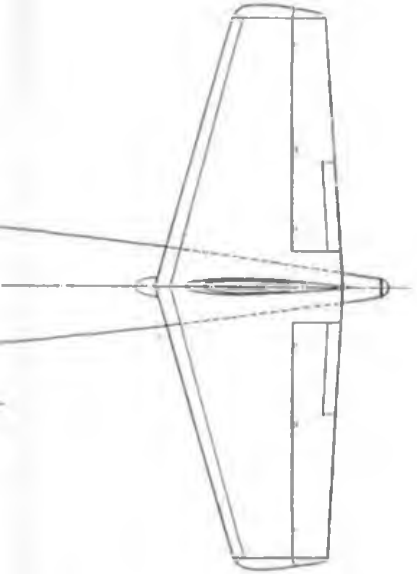




AVRO CANADA. C F - 100 MK 4. (PROTOTYPE)

1/72nd scale "L" type reprints and 1/48th scale "B" type blueprints of this drawin



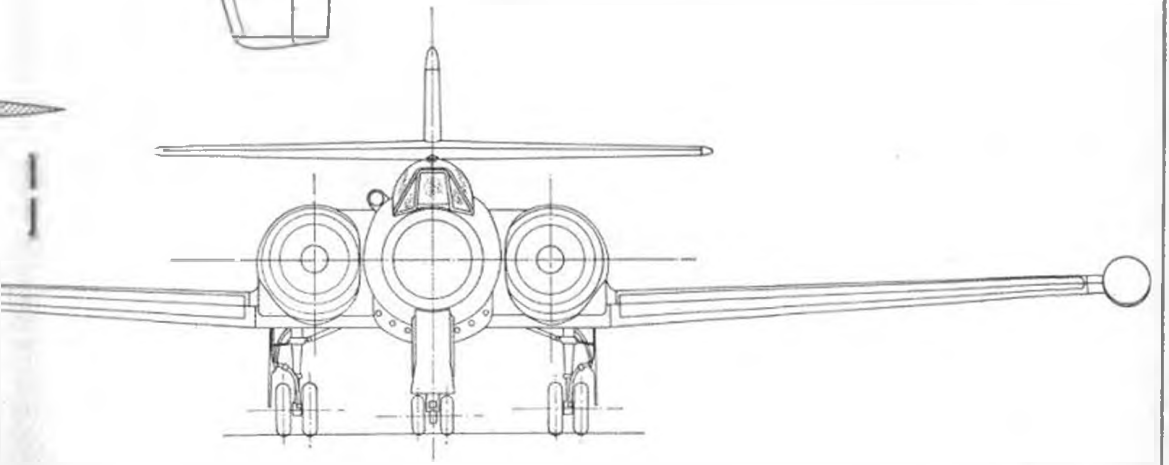


Specification. Span : (Mk. 3) 52 ft. ; (Mk. 4) 53 ft. 6·3 ins. with pods, 57 ft. 5·6 ins. with tanks. Length : (Mk. 3) 52 ft. 6 ins. ; (Mk. 4) 54 ft. 1·8 ins. Height (Mk. 4) 14 ft. 4·1 ins. Gross Weight : (Mk. 2) 33,100 lbs. ; (Mk. 3) 34,000 lbs. No other details released.

Construction. Conventional all metal stressed skin structure. Fuselage has circular frames and longitudinal stringers. Centre fuselage and engine nacelles built as one unit. Fuselage mostly occupied by fuel tanks. Goodrich de-icers fitted to all flying surfaces. Undercarriage employs Dowty liquid-springing. No further details released.

Colour. First two prototypes glossy black all-over with all lettering, etc., in white. All other machines have natural bright alloy finish and plastic nose caps of Mks. 3 and 4 are glossy black or dark grey. De-icer shoes on leading edges are matt black. All unit lettering is glossy black and serial number is in small black figures at top of fin. Last three figures repeated same size on nosewheel door. R.C.A.F. roundels above wings and on fuselage sides of all aircraft and service machines carry roundels under wings also. Roundels consist of blue ring surrounding a white disc with a red maple leaf in the centre. Red white and blue fin flash above tailplane and below serial.

Notes for Modellers. The fuselage is basically circular throughout its length and bulges slightly below wing bottom surface. Fairings forward of leading edge on engine nacelles are cheese-cuked blending into radius of nacelle at forward end. See section AA.



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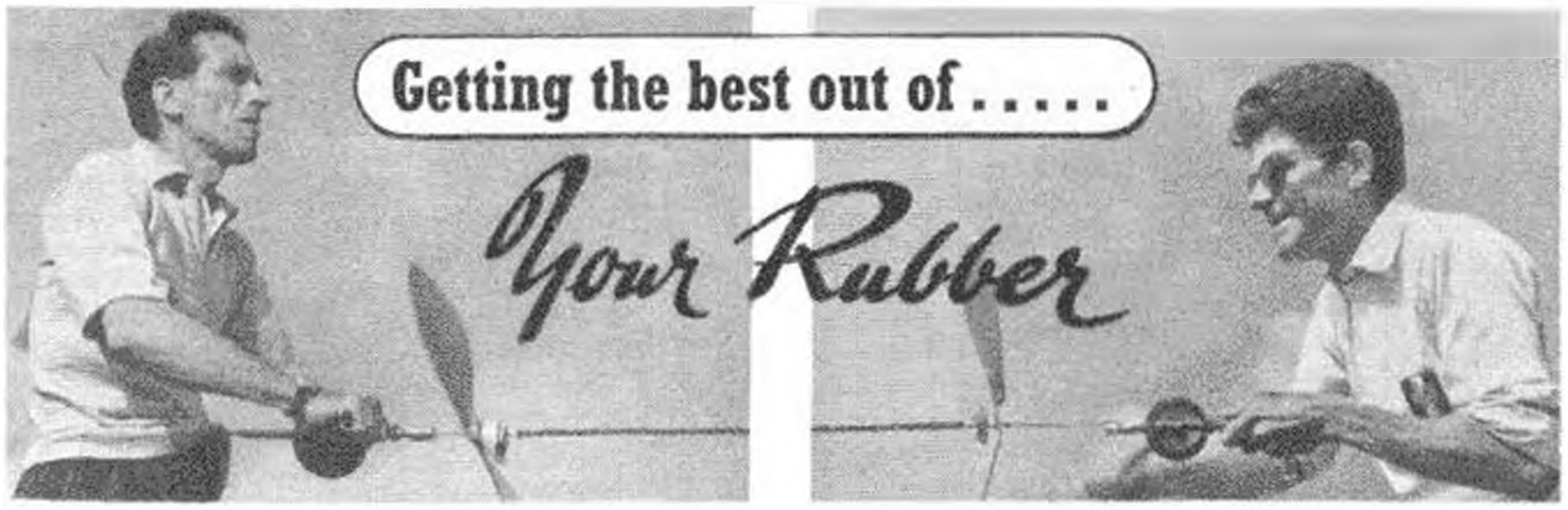


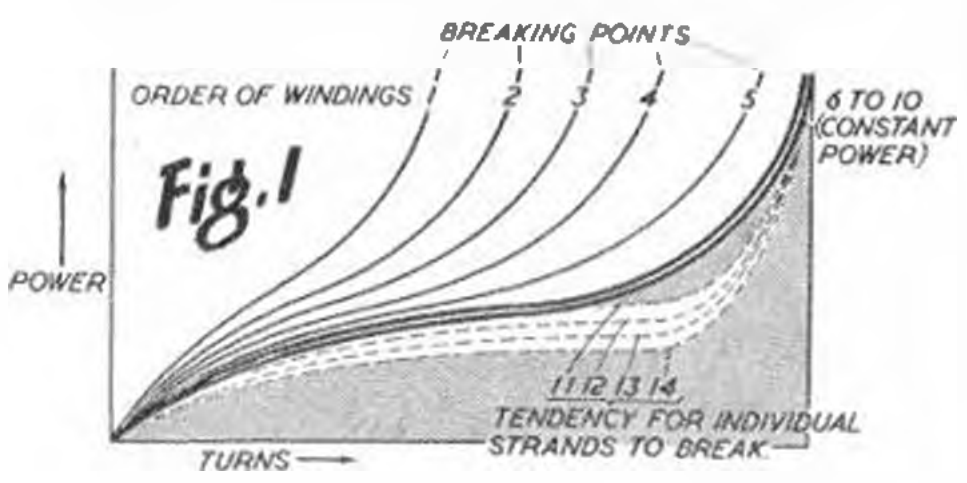
THE rubber-driven model is still the best introduction to " power " flying, relatively cheap, simple to construct and amazingly consistent, once properly trimmed and given the right care and attention. Once trimmed, a well constructed good design should *stay* trimmed. The one factor which may remain variable, however, is the rubber motor.

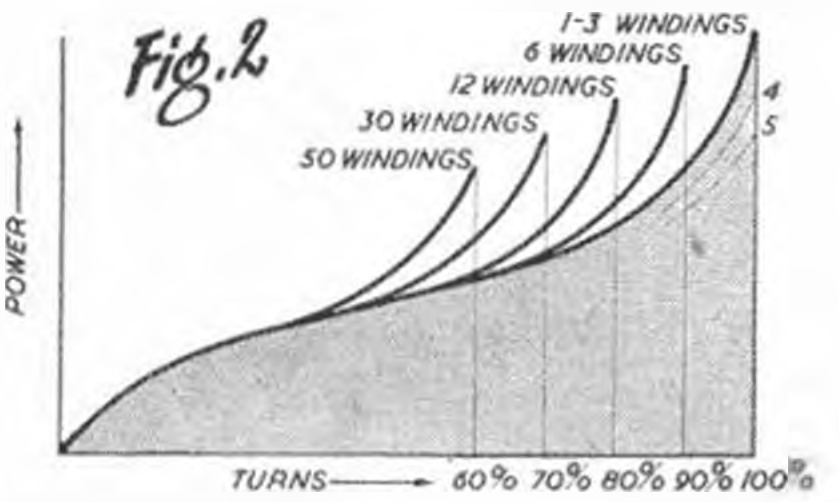
A lot of nonsense has been written about rubber motors, tending to over-emphasise the failures which may occur if elaborate care and attention is not given to the motor. At the same time there is more than a modicum of truth in the assertion that rubber is not always as consistent as it could be.

The basic facts are these. Normally, rubber of the same brand or specification can be expected to give a consistent performance. In other words, if you are using a certain brand of rubber, then new supplies of this same brand can reasonably be expected to have comparable performance characteristics. However, most rubber strip is produced in batches (strip is actually made up in sheet form and cut down to strip lengths after vulcanisation). If the specification or make up of the original rubber mixture is not carefully controlled from batch to batch, some difference may be experienced from skeins of different age. These small variations in the composition may be within limits accepted by the manufacturers as normal to their production methods. Absolutely *fresh* rubber, too (i.e., straight from the manufacturer) is seldom as consistent as aged rubber. After manufacture, rubber characteristics generally tend to improve with storing—up to a period of six to twelve months.

Sometimes, variations in the heat-treatment process necessary to harden the rubber produces a batch which is not uniformly cured. As a result, the physical characteristics of the rubber may vary somewhat from end to end of a single skein. When this occurs, rubber taken from one end of a skein may be denser than rubber from the other end. In other words, if a number of motors are made up from this skein each to the same length, the weights, and the power characteristics, of the motors may vary slightly

Another possible cause of difference is a definite change in the original rubber mixture specification where the manufacturers may decide to try some other ingredient, or alter the proportions of the original specification to enhance certain properties. The properties improved may be beneficial, *or completely the opposite* as far as the application of the resulting strip to aeromodelling is concerned.





These possible variations concern the contest modeller principally, since he is always seeking rubber strip which gives the greatest possible power output for a given weight as a primary characteristic; and rubber which has a good physical strength as a secondary characteristic. We put performance before durability of the rubber for contest work, since it is not uncommon for modellers to adopt a principle of " one motor—one flight " in important contests.

The main advantage of changing a motor each flight would appear to be a psychological one—a fresh motor *should* give peak performance whereas a used motor *may* have fatigued and will consequently give less power. Usually, however, the rubber motor is far more blameless than even

expert modellers give it credit for. A bad flight with a poor climb from an otherwise high-performance model may well be due to adverse weather conditions prevailing at the time, rather than the rubber motor "tiring", or a broken strand. As a point of interest here, static torque tests *have failed to detect any difference in power output* from a wound motor with up to four of its 16 strands broken, provided the loose ends are "caught up" and thus bound in with the bulk of the wound motor.

Running-in

Ultimate performance of the rubber motor will, almost entirely, depend on the way in which it is run-in. Like an internal combustion engine, a rubber motor cannot be expected to develop full power from its initial winding up. Unlike an engine, however, a "fresh" motor develops *more* power until run-in. It cannot be wound up to anything like its potential maximum turns without breaking.

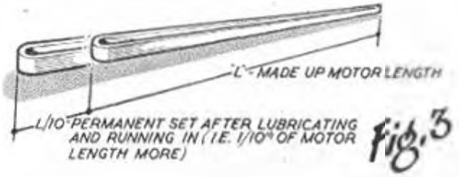


Fig. 3

If the motor is simply made up to length and installed in the model it cannot initially be wound up to, say, about half *potential* maximum turns without fear of breaking. Its corresponding power output will be high, but its duration of run short. For the second winding, the turns that can be put on are some 20 per cent. higher, and so on, stage by stage, until the potential maximum is reached.

In other words, if we had some sort of device which would indicate when the motor was about to break, turns and power output corresponding to successive initial windings, would take a pattern similar to those shown in Fig. 1. Continue with more windings and the maximum turns possible would now *no longer increase*. During this series of windings, too, the power output curve would be identical for each winding. After a certain number of windings, again, maximum turns would still stop at the same level, but the power output curves would gradually get lower and lower. The rubber motor has now become fatigued and its useful life is over.

A proper run-in period is essential with all new rubber made up into motors, first to develop its capabilities to take a maximum number of turns and second to bring it to the state where it will give a constant power output. The "constant power" stage corresponds to the normal useful life of that motor.

It is also interesting to note how the number of "useful life" windings varies with the number of turns applied to the motor. Properly run-in and

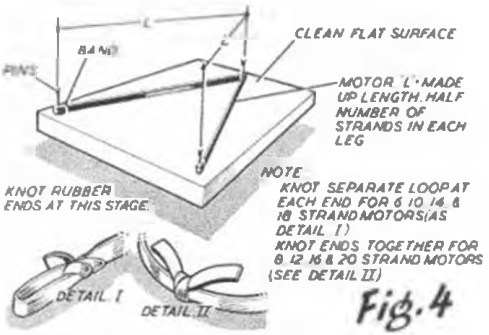


Fig. 4

then wound to maximum turns each time, motors may show signs of fatigue after only three windings—Fig. 2. Wound to 90 per cent. turns each time, "useful life" winding may be double that number, or more. Wound to only 80 per cent. maximum turns each time, "useful life" is doubled again. These are only rough figures, but indicate that "full turns" windings do drastically reduce the useful life of a rubber motor.

What the graph does not show is the mechanical failure of the motor on repeated high-turn windings. Individual strands are more prone to break, calling for constant repairs. Normally this does not affect the "useful life" figure, but it is annoying to find strands breaking during winding up, generally calling for a change of motor to be on the safe side. When one strand "pops", quite likely others are beginning to part and the whole motor may break suddenly if winding is proceeded with.

Dealing now with the practical side of making up and running a new motor, there are two main factors to be considered—the number of stages in which the motor should be run-in and the increase in length or permanent stretch the rubber will have after running in. Fresh rubber, properly run-in, has a permanent deformation equivalent to about 10 per cent. of its original fresh length—Fig. 3. In other words, if you made up a 30-in. motor from fresh rubber, ran it in stages and then re-measured its length, this final length would be about 30 + 3 = 33 ins. It should remain at that normal length for the rest of its useful life. The amount of permanent stretch is independent of the number of strands. The permanent stretch must be taken into account in making up the motor length.

The best way to make up a new motor is to lay it out in two "legs" over any *clean*, flat surface, as shown in Fig. 4, having calculated the normal length of motor required. Each "leg" comprises one half of the required number of strands in the finished motor. If the motor has to be made up to a definite *weight*, the resulting length can be calculated from Table I, noting that lubricant increases rubber weight by about 1/12th. Rubber ends should be knotted permanently at this stage and the motor ends bound with a rubber band.

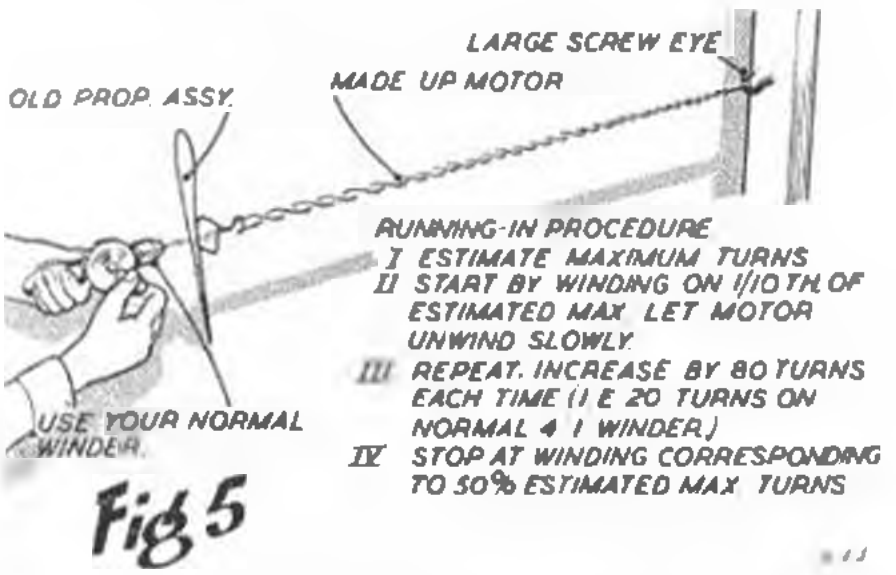


Fig 5

The motor should now be removed from the layout board and lubricated. Ordinary castor oil is satisfactory, if messy, lubricant. Proprietary lubricants based on a soft-soap-glycerine mixture are normally regarded with more favour. The latter do provide slightly better lubricating action, as exemplified by the fact that knots can be tied to hold in rubber lubricated with castor oil, but the same knots will not hold on soap-lubricated rubber. With soap lubricant, any knots which may be necessary in the lubricated strip must be bound, preferably with wool.

The motor is now ready for running in. An old propeller assembly should be used for this, the rear end of the motor being looped over any suitable fitting. A door knob is widely favoured for the latter, although a large screw eye fitted to the workshop door frame is generally better—Fig. 5.

The optimum number of strands for running-in fresh rubber is a matter of controversy. If the stages are few in number (which gets the job over quicker!) there is more danger of the rubber breaking up. A particularly safe process seems to be to start with only *ten per cent.* estimated maximum turns and then work up, increasing the number of turns by a maximum of 80 each time (i.e., 20 turns on a 4 : 1 winder) up to some 80 per cent. of the estimated maximum. There is no real need to go beyond this point, unless the motor is intended for a short contest life on "near-maximum" turns, when a final winding to 90 per cent. maximum turns should be done, after an accurate determination of the *actual* breaking turns on a spare motor.

TABLE 1
AVERAGE WEIGHT OF GREY RUBBER STRIP (Unlubricated)
(Ounces)

	¼×1/30	⅜×1/30	⅜×1/24	¼×1/30	¼×1/24
Per Inch	·0023	·0035	·0003	·0040	·0058
Per Foot	·0278	·0418	·0520	·0556	·0695
Per Yard	1/12	½	5/32	1/8	5/24
Per 10 yds.	⅔	1¼	1⅝	1⅔	2⅓
Per 12 yds.	1	1½	1¾	2	2½
Feet per 1 lb. weight	576	384	360	288	230

It is quite possible that a strand or two may be broken during the running in process. This does not necessarily mean that the rubber has inferior mechanical properties. The broken strands can be re-tied and the motor will be quite satisfactory, although it would be commonsense precaution to reject the motor if more than, say, one quarter of the total number of strands broke during running-in.

There is also the chance that the whole motor will break during the process. This happens with the best of rubber strip. Sometimes with three or four motors made up from the same skein one will break completely during pre-winding, another will break

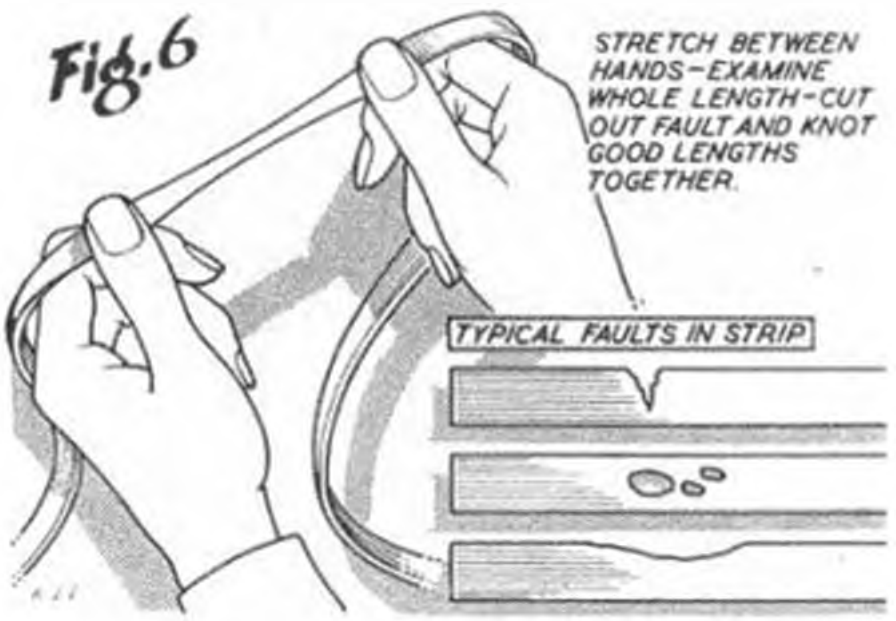


Fig. 6

a strand or two and the others will show no signs of breakage. The danger point for complete breakage appears to be when running-in reaches the stage 50 to 60 per cent full turns. Provided the motor takes up to 80 per cent. maximum turns during the running-in it can be relied upon to take at least these turns on the field and considerably more, provided it is not completely over-wound.

Examination

After running-in, the motor should be inspected carefully along its entire length, pulling a single strand stretched between finger and thumb of one hand, well stretched, as in Fig. 6. This will indicate points of potential failure—nicks started in the edges or imperfections in the strip itself. The rubber must be cut at this point and re-knotted. If made up for use without such a check, strands are almost certain to break at these points on an early winding. Some rubbers are particularly prone to faults of this nature—others are remarkably free of mechanical imperfections.

The run-in, checked motor is then laid out over the marking board again —Fig. 7—re-adjusting the length of the "legs" to account for the permanent stretch achieved during running-in. With a "taut" motor the two ends are brought together and bound, the other end likewise bound with a small rubber band. Corded motors are dealt with as shown in Fig. 8.

Washing of the new rubber strip before lubricating has not been mentioned—simply because it is not necessary. It is sufficient to shake off any chalk adhering to the rubber. Nor is washing off the lubricant necessary after the motor has been used. Lubricant can stop on for a whole season, re-lubricating at intervals as required. Motors can also be left corded for weeks at a time without suffering any apparent ill effect, although the areas covered by the rubber band (end) binding should be re-lubricated before use. Normally, however, corded motors are unwound after a day's flying and re-corded again the evening before the next flying session.

Storing the Motor

Sensible care of the made-up, run-in motor consists of keeping it free from grit and dirt and storing it in a clean container (e.g., a plastic or glass jar) between flying sessions. Motors should not be left in a model from one week to another as this tends to dry out the lubricant. Good rubber, properly run-in, however, is surprisingly resistant to abuse and will seldom let you down if treated with *adequate* care. However, never take risks with unknown motors.

Comparative Tests

For simple " static " comparison of new motors, simply timing the power run on a given number of

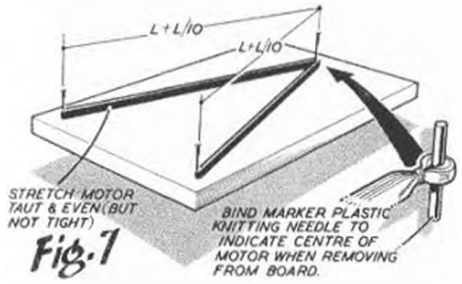


Fig. 1

turns and comparing with the length of run on the same propeller and a proven motor with the same number of turns is a useful check. If the new motor gives a longer run, then almost certainly it is weaker than the original motor. If a shorter power run, a more powerful motor. This test, of course, must be applied *after* the new motor has been run-in.

Another practical check is the " feel " of the motor during the winding stages associated with running-in. With enough experience this becomes a most valuable guide. During the running-in windings, though, a motor always feels more powerful than when wound on the field, partly because it *is* more powerful at this stage and successive windings, increasing the number of turns each time, is more tiring than a single winding. The " feel " check is most likely to detect a weak motor.

TABLE 2
NOMINAL " SAFE " MAXIMUM TURNS
(Based on motor length before running in)

No. of Strands	Turns per inch Motor Length				
	¼ × 1/30	⅛ × 1/30	⅛ × 1/24	¼ × 1/30	¼ × 1/24
6	53	44	42	40	37
8	42	38	36	34	31
10	38	34	32	30	28
12	36	31	30	28	24
14	33	30	27	26	24
16	31	28	26	25	20

The best check of all, of course, is a flight test on the model on each new motor. This need not be carried out on high turns. Most rubbers of the same brand, good or bad, follow a similar power output curve. Knowing the still air flight time on, say, half turns will soon indicate whether they are " up " or " down " on the original. Once again, of course the new motors must be adequately run-in for this check to have a real signficance.

The danger associated with running-in a new motor in the model, during actual flights, is that you *may* break the rubber at some stage. The destructive characteristics of a broken motor are too great to court lightly. For the same reason, high-turn flying in contests should be restricted to a *working maximum* which has been checked as on the safe side by a destruction test on a similar motor, preferably under similar conditions. Extreme cold tends to harden rubber and reduces the maximum turns possible. Extreme humid heat can also lead to premature breakage and, more likely loss of power. Modellers in tropical areas are well aware of the short expectancy of life for their rubber motors ; but similar humid conditions, though to much less a degree, can prevail in Europe, and must be guarded against with the use of reduced max. turns.

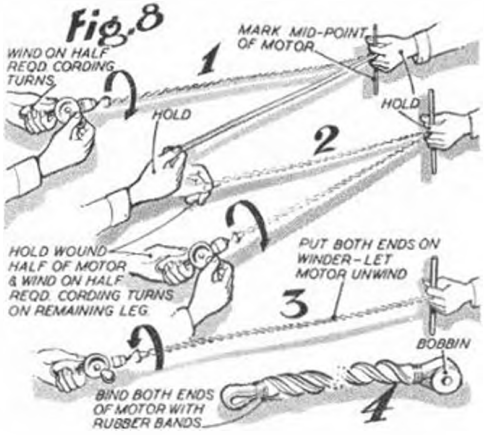


Fig. 8

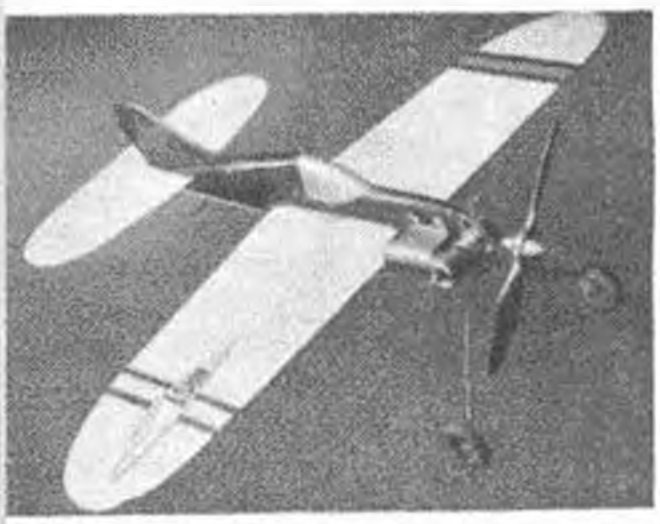
WORLD NEWS

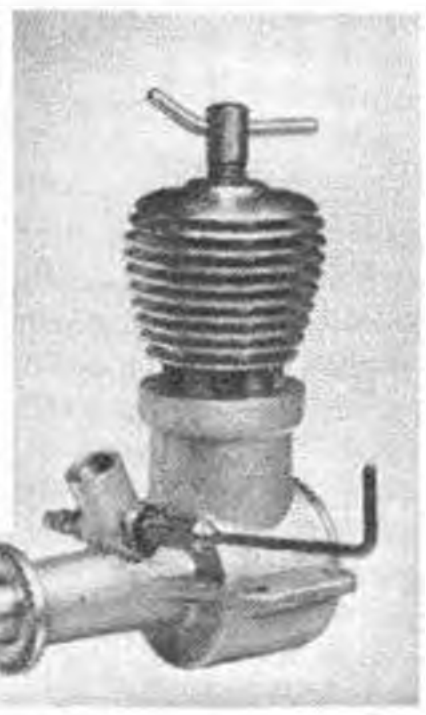
WHILE European modellers settle down to serious winter building for the '54 contests, our confréres in the Southern Hemisphere make preparations for new year Nationals. The **AUSTRALIANS** go to Toowoomba in Queensland to see the new year in, and whilst this is a bit hard on the Melbourne and Adelaide boys, more than a thousand miles away, it should keep the Queenslanders happy. Flying to new rules, Jim Fullarton topped Wakefield with 588 secs. and Ron Bird 892 secs. with a Nordic in the Victorian State Champs. Good times indeed, while Johnny Brebant, now known as "one-stop" still gets 70 team racing laps at 90 m.p.h. with his Fox 29 running on secret fuel. This on 60 ft. lines too! Monty Tyrrell persuaded Johnny to try British 52 ft. 6 in. lines and he covered ten miles in 8:48 straightaway.

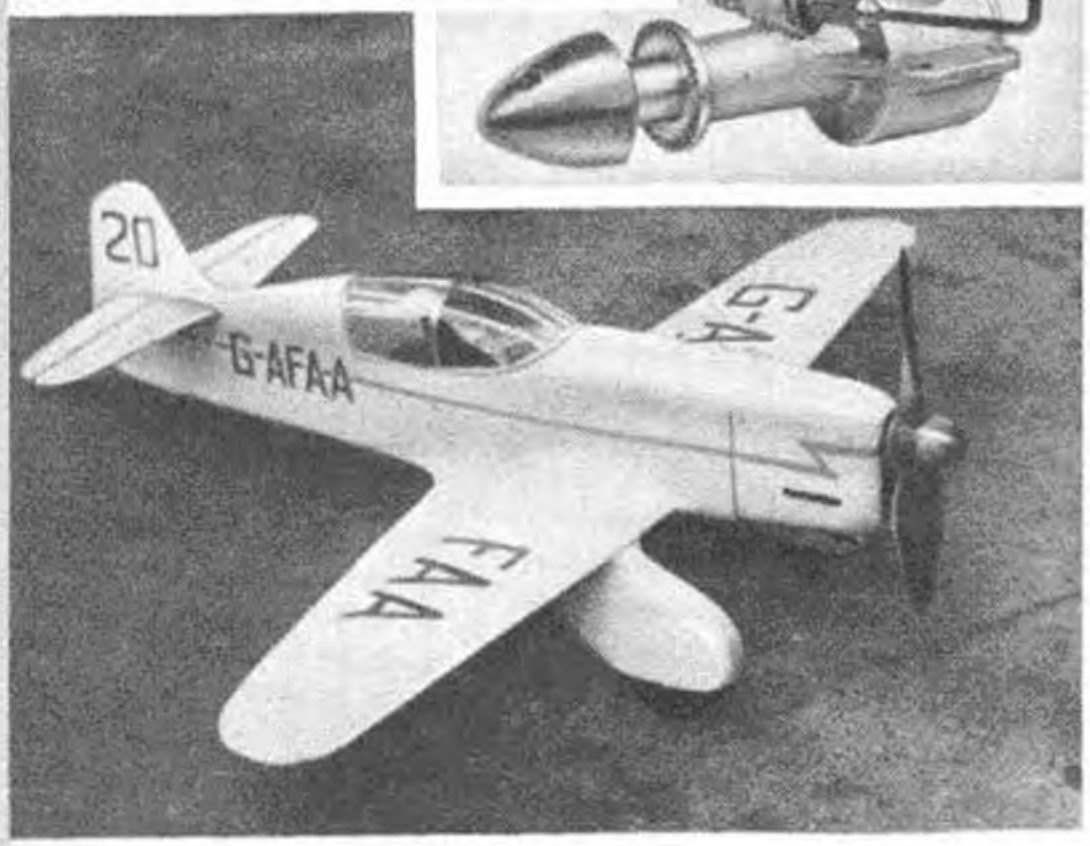
In **NEW ZEALAND** the coming Nationals are to be in the northern quarter of South Island at Omaka aerodrome, near Blenheim. Situated in a valley renowned for glorious weather and early morning calms, this should make up for last year's ill-chosen site. Flying starts at 7 a.m. each day . . . Wakey, Wakey! Frank Bethwaite took his R/C slope soarer out to try and beat his one-hour record, but on the 51st minute, the wind blew up and the model proceeded backwards over Frank's head. Must be quite a slope soaring site for such performance.

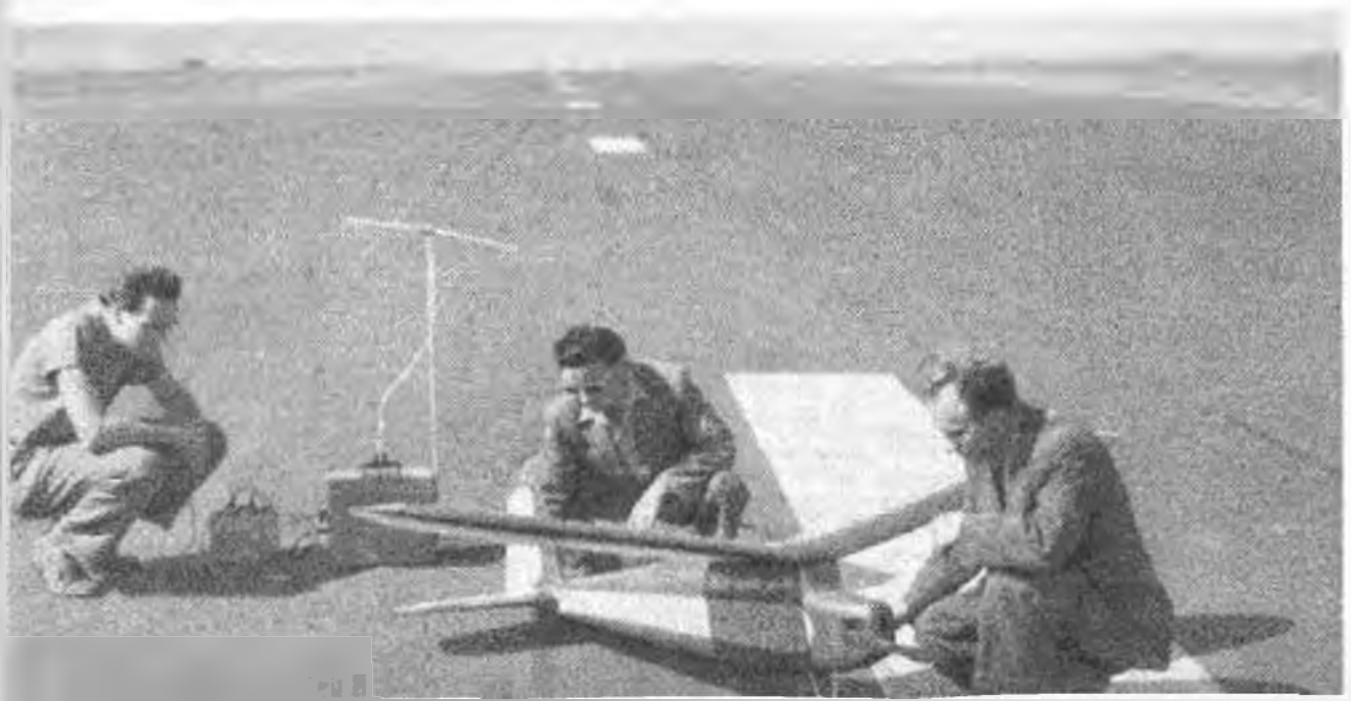
News from **GERMANY** includes details of the new WAF 1 diesel, a 1 c.c. beginner's motor of moderate performance (see photo). A simple control-liner is marketed to suit, and should help to stimulate interest in C/L. Germany will not be sending a team to the U.S.A. for the International contests due to cost of transportation—the Nationals are to be held at Brunswick, in the British Zone. Odd news item tells of a unique swop arrangement by a German modeller emigrant in South Africa, who finds it possible to send African Native souvenirs, spears, shields, knives and the like, in exchange for modelling material from Germany. Now we know how the Germans "developed" those long spear-like Nordic fuselages!

From **SOUTH AFRICA** we learn that the "Flypaper", for long the only official news-sheet on modelling in that country, is now wound up and will in future be incorporated in a printed publication to which we wish every success. In the last issue of Flypaper, full space is given to the official A.M.A. rules for Combat (summarised on page 37),



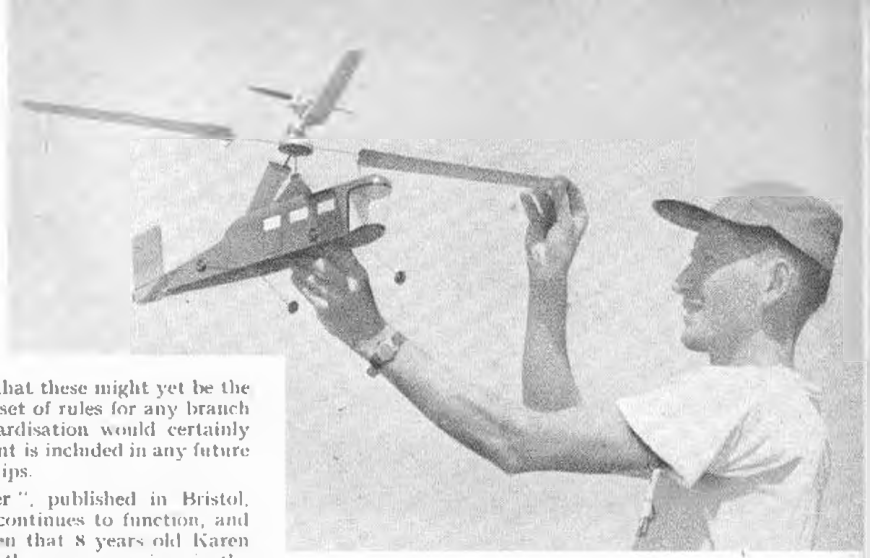






German trio above, left, includes a new kit design by Harald Storbeck, one-time pre-war glider expert, for the beginners 1 c.c. diesel. WAF 1 at right. Engine has 10·2 mm. bore: 12 mm. stroke and is destined to be very popular. Below it is the semi-scale Percival Mew Gull Class "A" team racer with E.D. Racer by Dr. Helmut Ziegler of Bonn.

Radio control group on vast airfield are Czechoslovakian enthusiasts led by Mr. Moravik from Zahreb.

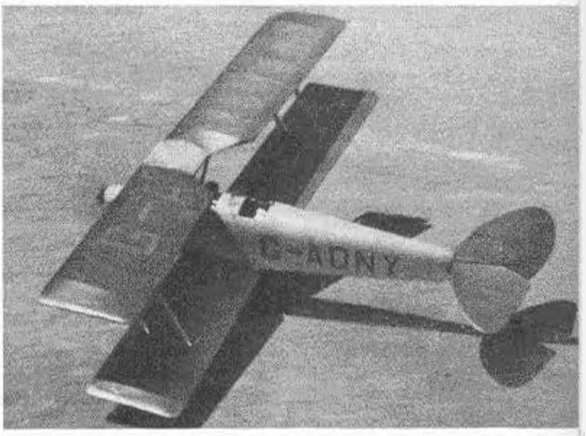


Parnell Schoenky and his Hiller Trophy winning Helicopter. Atwood 049 glo-engine, 6—3 prop., 30 ins. rotor disc. Model climbed high despite strong gusts and turbulence.

leading one to suppose that these might yet be the first fully international set of rules for any branch of control-line. Standardisation would certainly help if this exciting event is included in any future World C/L Championships.

The other "Flypaper", published in Bristol, Pennsylvania, **U.S.A.** continues to function, and from it we glean the gen that 8 years old Karen Biddle has won no less than seven engines in the last twelve months. Must be a very smart young lady!! Operation "Clean-up" is now tapering off after the U.S. Nats at Willow Grove. Models found States away have been returned to their owners, some of whom are as far distant as Mexico (and who was grumbling about Cambridge not being the centre of the U.K. ?). Also from the U.S. Nats, Parnell Schoenky (see photo) mentions the newly introduced Hiller Model Helicopter Competition which it is hoped will reach an international par with other conventional contests. Strong winds, likened to typical English conditions, television and press camera men hampered this first contest at the Nationals. Parnell flew his Class III model to first place in the power section, and also stayed up all night working on a rubber entry which refused to R.O.G. . . such is life. One interesting helicopter, too large to be eligible for the Hiller, and very complicated with two-bladed main rotor driven by a 16 c.c. Forster, made a waltzing demonstration. The tail rotor, as on full-size, was clutch driven from the main rotor. After a bit of hovering and sallying about, it encountered the wake of a running spectator and slid towards him, spanking the appropriate hind quarter soundly with a tough rotor blade, so ending a lively demonstration.

Who could be lonely in a crowd ? Such is possible, we assure you, for David Mascarenhas of Poona in **INDIA** tells us that he appears to be the only modeller in a population of 500,000, at this city of retired Colonels. Import duties on materials sent over from Britain almost double the original cost, to add to his hardships. Pen pals who would like to contact him, will find the address on page 49.



Right: Sac. Simon's Tiger Moth takes off at R.A.F. Kasfareet in Egypt, was winner of R.A.F.M.A.A. Flying Scale Championships in that country. Centre, beautiful scale Fokker D.21 by D. G. Hartman of Holland has Frog 500 totally enclosed. Bottom: Maltese modellers George Curmi and Joe Gauci set off for an afternoon's Hydro-modelling with converted Frog 45 and 'aithful Tomboy as floats.

Readers' Letters

Why does the grass grow green daddy?

DEAR SIR,

Heaven preserve us ! With the 1954 rules hardly in operation yet, some people are rushing into print with claims of Wakefield models " that can definitely exceed 3 minutes without Thermal assistance ".

Thank you for Mr. Bower's article debunking the " still air " nonsense ; perhaps it may stop these wild claims.

More debunking please, such as the subject of " *ruining-in* " rubber motors, for example.

Yours faithfully,

" OPTIMUM DOWNDRAUGHT ".

(The name and address of the prominent modeller who submitted this letter has been withheld on request:— we trust that he will find an answer to his last suggestion on pages 30-33 of this issue.)

Reflections

DEAR SIR,

Reading your Christmas editorial I found it very interesting in-as-much as I have grown up with, if I may use the word, " our " magazine.

Although I would be only about 11 years of age at that time, I can remember the " Model Aero Constructor " (later merged in the AEROMODELLER) and how keen I was to get hold of a copy and the maddening wait when it didn't arrive on the proper date. Since then I have hardly ever missed seeing a copy, except during part of the late war.

I think, if I may say so, your success is due to the interest you have shown in the movement and the very wide range of subjects you touch upon.

I well remember the Skybirds, Hall and Bell stick models, and the coming in of the all-balsa Megow kits.

Yes, things have changed a great deal since those days, and I sometimes wonder if by showing G.A. drawings of D. A. Paveley's compressed air engine in your pages whether it would stimulate renewed interest in this cheaper form of propulsion.

Toton, Notts. F. ADCOCK.

(Mr. Adcock was an aeromodelling friend of our own early days, and no doubt he and others will find great interest in our new feature " Those Were the Days " starting next month.)

Missing Men

DEAR SIRS,

With the ever increasing number of flying scale models it would be nice to see in the photos published of open cockpit types, a model pilot. I believe some were marketed some while ago (*they still are—Ed.*) in two sizes and they would certainly add realism in flight.

How much more interesting the photos on pages 733, 735 and 737 of the December issue depicting the Miles Hawk, Luton Major and Swordfish respectively would have been with pilots in the cockpits.

London, N.W.1. VERNON J. DAY.

News for " Stringbag " Fans

DEAR SIRS,

Congratulations on the best Christmas AEROMODELLER yet, especially the Fairey Swordfish features.

A film may be borrowed from the Petroleum Films Bureau, of 29 New Bond Street, London, W.1, called the " M.A.C. Ship ". This tells the story of the wartime conversion of oil tankers into Merchant Aircraft Carriers. An interesting film in itself made more so by the fact that the three (only) aircraft carried (on deck) are " Stringbags ". There are many good action shots of the 'planes landing.

I hope this information may be of interest to " Stringbag " ' fans '.

Farnham. M. P. HAYTER.

For new thrills and spectacular performance in control-line stunt flying build . . . . . .

KOMBAT KAPERS

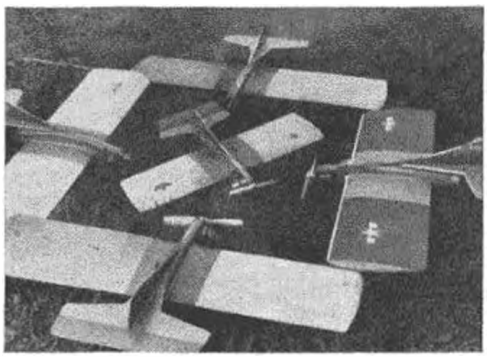
designed by R. GIBBARD

FOR the stunt man who feels he has reached a zenith in his control-line career—or for that matter, *any* modeller bursting with confidence in his aerobatic abilities—combat is the coming thing. All the thrills of straight stunt flying combine with the spectacle of team racing to make combat flying the most exciting event at any model meeting. Try it—you'll like it just as much as the Meanwood Independent Modellers of Derby, who developed the specially tough "quickie" overleaf. With four engine bearers, solid fuselage and stout wing structure, this is as strong as any stunt model could be . . . and it will go through any manoeuvre you care to name. The originals, usually built in three evenings apiece, were powered by Amco BB 3·5 diesels; but so adaptable is this four-bearer system that any beam mounted engine of 2·5 to 5 c.c. will fit without alteration, except perhaps removal of a sliver of wood on either side to accommodate the larger crankcases of some engines.

Ready to start? Here is the materials list:—

4—$\frac{3}{8}$ × $\frac{1}{2}$ × 8 in. Bearers
1—$\frac{1}{8}$ × 1 × 36 in. Trailing Edge
3—$\frac{1}{8}$ × $\frac{1}{4}$ × 36 in. Very Hard
1—1 × 1 × 18 in. Soft for Tips
1—$\frac{1}{8}$ × 2$\frac{1}{4}$ × $\frac{1}{4}$ in. Ply
2—$\frac{1}{4}$ in. Medium Hard Sheet
1—$\frac{1}{8}$ × 2 × 12 in. Elevator
1—$\frac{1}{4}$ × 3 × 12 in. Tailplane
1—$\frac{1}{4}$ × 3 × 36 in. Hard
1—$\frac{1}{8}$ × 3 × 18 in. Soft

22 and 16 s.w.g. Piano Wire; Mercury Pressure Tank, 2 in. Bellcrank; Four 1 in. 6 B.A. Nuts and Bolts; Four 1$\frac{1}{4}$ in. 6 B.A. Nuts and Bolts.



Full size parts are given on the next pages, and all layout detail is easily obtained from the $\frac{1}{4}$-size scale drawings. In fact, no plan is needed for you to build Kombat Kapers since a few lines measured on the building board will suffice for the wing construction, and the tail parts can be drawn straight on to the balsa sheet.

Start with the $\frac{1}{4}$-in. sheet, cutting out the fin outline and the centre core of the fuselage. The four bearers are cemented *and* bolted on each side of this centre core, the fin added, and soft $\frac{3}{8}$-in. packing used to fill out the sides to a total of 1 in. thickness. Note that between the bearers, the $\frac{3}{8}$ in. packing should have its grain running vertically. Carve to a streamline shape, with a round "jet" type rear end, and bind the area just behind the engine with gauze bandage. Offcuts from the tailplane go to make the tail strakes after the tail has been cemented in place.

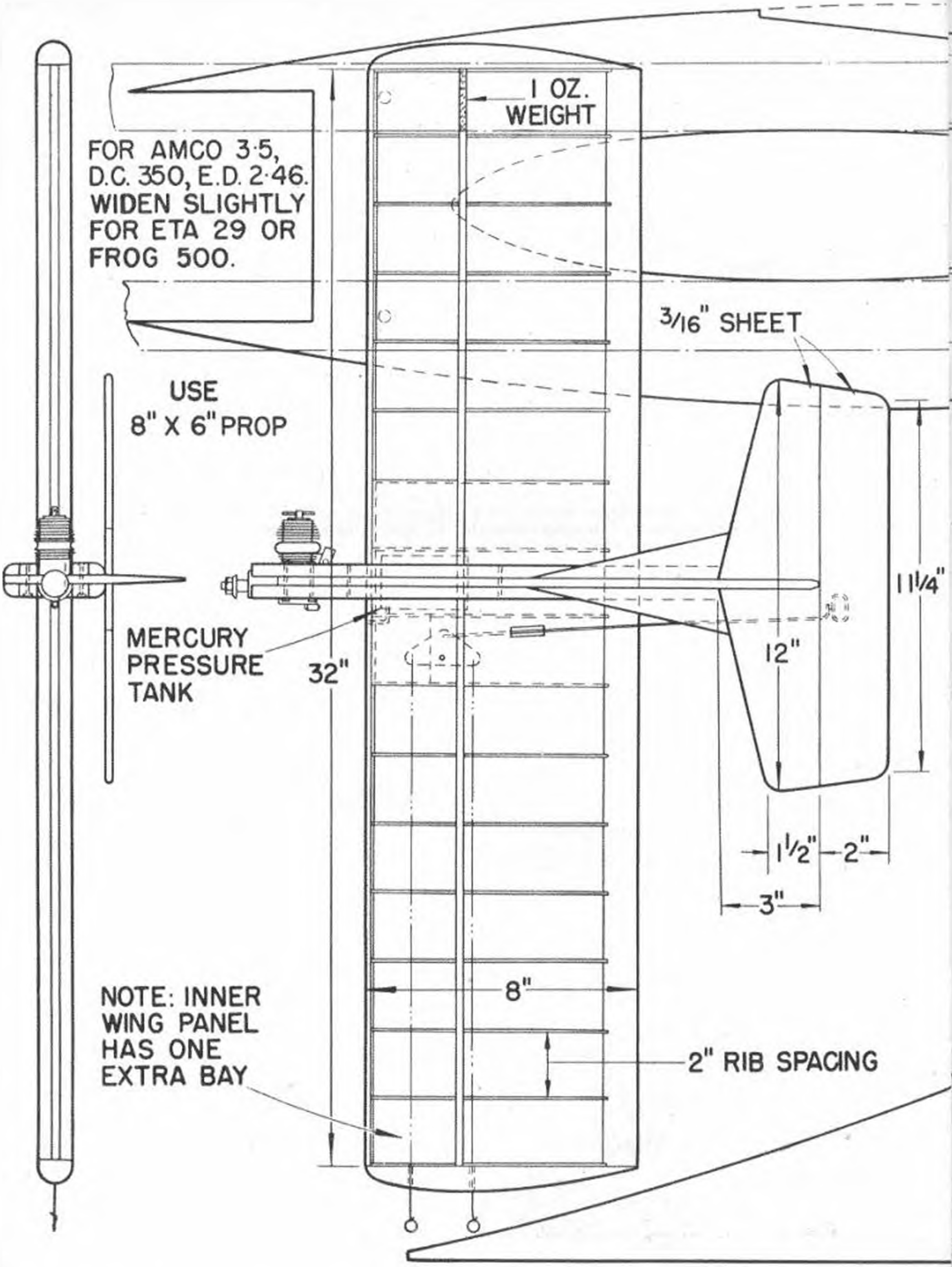
Pin the bottom spar on the building board, add 17 ribs, the upper spar and trailing edge. Fit the tank, bellcrank assembly and lead-out wires, planking the centre section after fitting leading edge. Sand smooth and slide through fuselage to correct position with one extra bay on the inner wing panel. Add 1 oz. ballast to the outer tip, tip blocks, and cover with heavyweight Modelspan. Give as many coats of dope as you can afford, finishing with a colour such as orange. You now have an *almost* un-smashable combateer capable of all stunts at over 70 m.p.h. One thing more remains—fit a screw eye into the centre of the "jet" end of the fuselage, attach a 36-in. thread onto which three 96-in. streamers are tied, and be ready for battle with your clubmates.

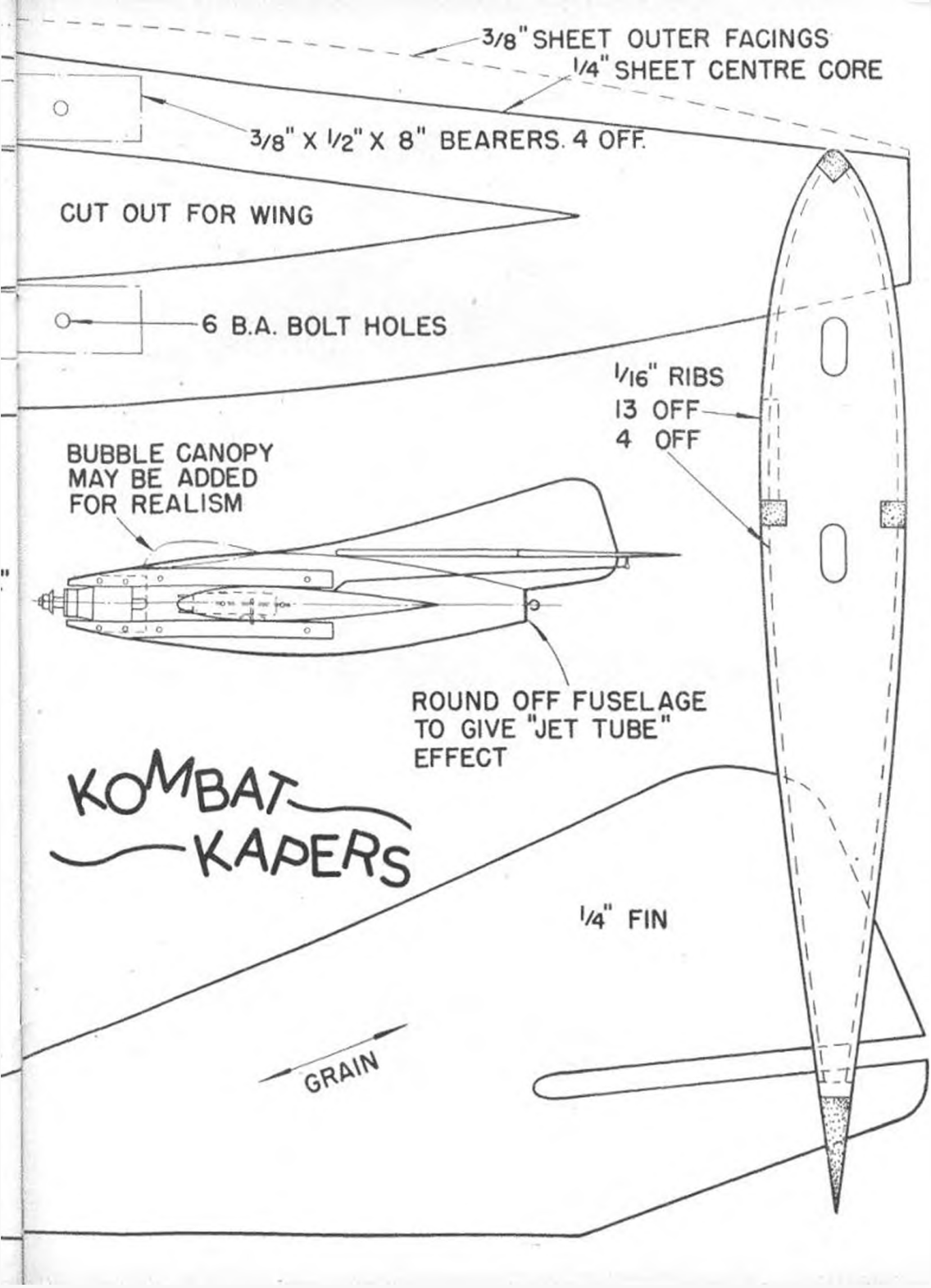
BRIEF RULES FOR COMBAT FLYING

All models use same length line (52 ft. 6 ins. to 60 ft.) of ·014 in. wire. Two models per combat flight, which lasts five minutes beginning from moment both models are airborne. Refuelling and repairs allowed in those five minutes. Pilots to keep within 5 ft. radius. Prolonged low level flight (below 8 ft.) or more than one lap low inverted disqualifies pilot. Deliberate crash on grounded model also disqualifies. **Points**—Per cut, 20; per "kill" (complete removal of streamers) 500 if in 1 minute; 400 if within one–two mins.; 300 if two–three mins.; 200 if three–four mins.; 100 in last minute.

R. Adamson and R. Gibbard display their "Kapers" in the heading picture, whilst a quartet surrounds Kiddie-Kapers with Mills ·75, at left.

FULL-SIZE PARTS OVERLEAF

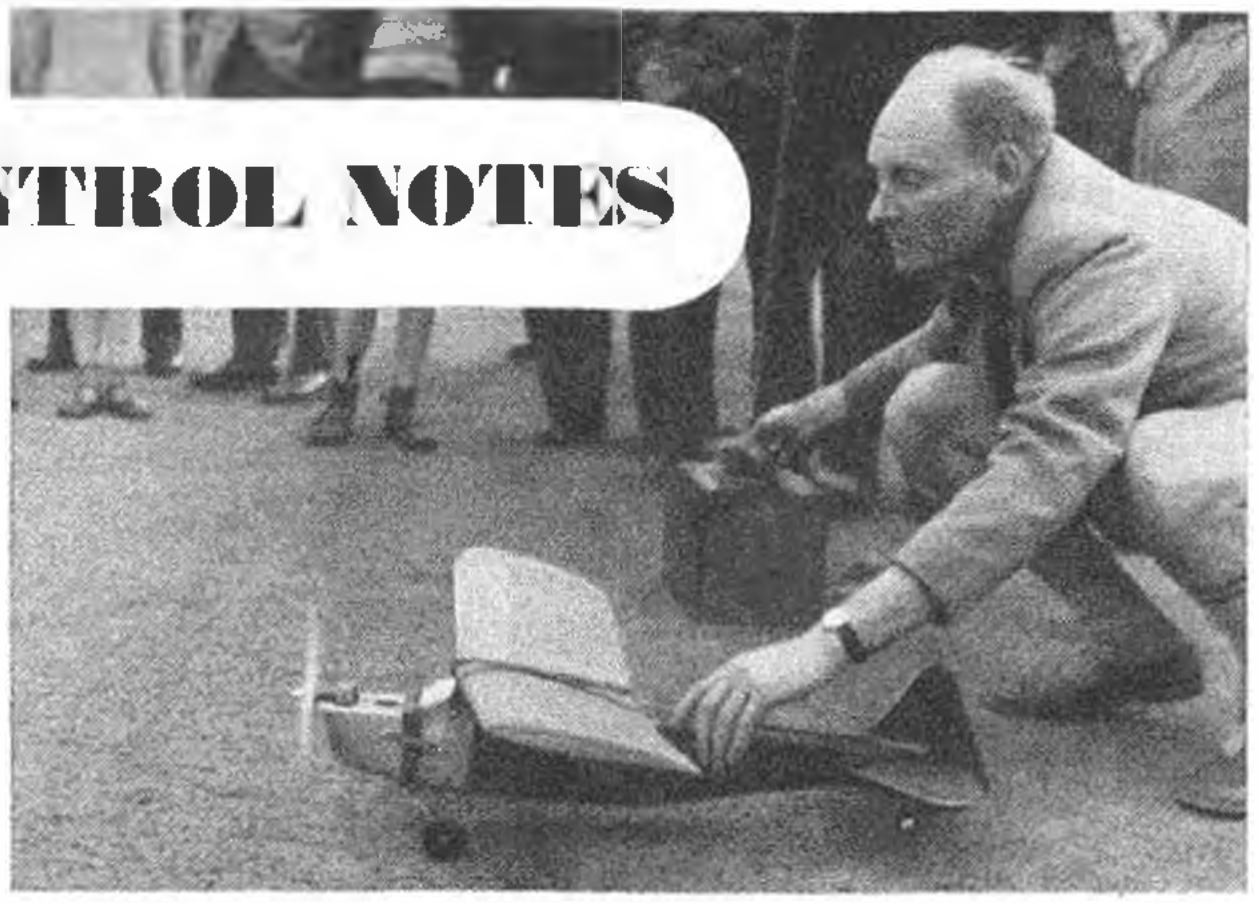

FOR AMCO 3·5,
D.C. 350, E.D. 2·46.
WIDEN SLIGHTLY
FOR ETA 29 OR
FROG 500.
1 OZ.
WEIGHT
3/16" SHEET
USE
8" X 6" PROP
MERCURY
PRESSURE
TANK
32"
11¼"
12"
1½"
2"
3"
8"
2" RIB SPACING
NOTE: INNER
WING PANEL
HAS ONE
EXTRA BAY


3/8" SHEET OUTER FACINGS
1/4" SHEET CENTRE CORE
3/8" X 1/2" X 8" BEARERS. 4 OFF.
CUT OUT FOR WING
6 B.A. BOLT HOLES
1/16" RIBS
13 OFF
4 OFF
BUBBLE CANOPY
MAY BE ADDED
FOR REALISM
ROUND OFF FUSELAGE
TO GIVE "JET TUBE"
EFFECT
KOMBAT KAPERS
1/4" FIN
GRAIN

RADIO CONTROL NOTES

by

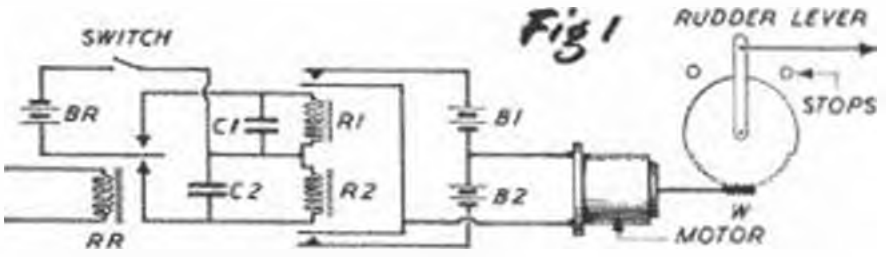
Howard Boys



Seen competing in the Rip-max Trophy at Long Marston, Hurcurdis about to release his Ilin Mills powered model for a most impressive controlled take-off with rudder waggling at a furious rate.

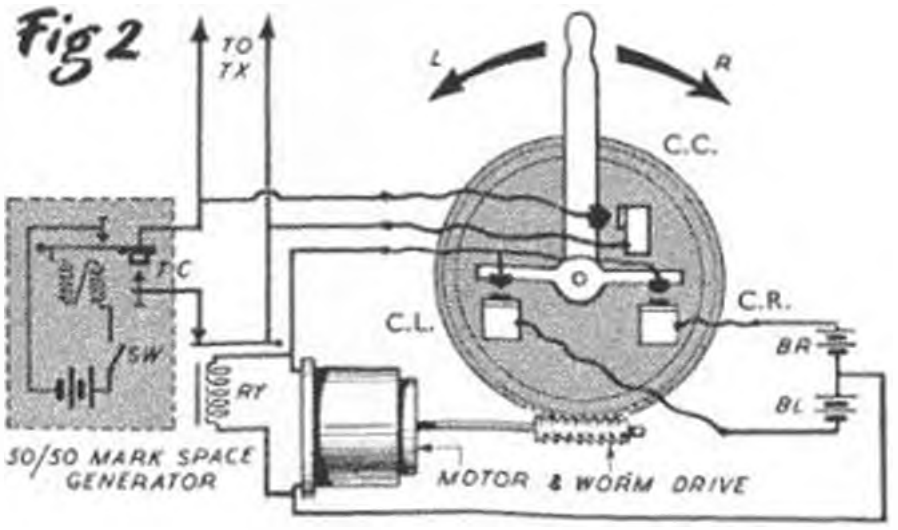
ABOUT the most ingenious system for producing proportional control was demonstrated recently to the Birmingham group of the International Radio Controlled Models Society by Mr. George Bradwell. George is well known in the Midland Area as the man who can usually be relied upon to turn up at a Contest, and spend all day time-keeping or recording, or some similar job.

Fig. 1 shows the scheme of things at the receiving end. R.R. is the receiver relay and this switches the battery BR. to energise the relays R1 or R2. The operation of these is delayed by the condensers C1 and C2. If R.R. vibrates due to the transmitted signal, R1 and R2 will not close their contacts. With no signal or full signal, one or other of these relays will close and cause the motor to rotate and



move the rudder operating lever through the worm or screw gear W. The polarity of the batteries B1 and B2 is arranged so that one relay rotates the motor in one direction and the other relay the opposite direction, giving left or right rudder. Due to the inclusion of R1 and R2, no current flows through the motor except when changing from one position to another, and the rudder can be left in any position from full left to full right. The most brainy part of this scheme is the way the transmitter signal is sorted out to put the rudder in a position corresponding to the lever position on the transmitter. This is illustrated in Fig. 2. The 50/50 mark/space generator is made from a buzzer, but could be a commutator driven by a motor. It is adjusted so that the transmitter contacts TC. are closed and opened about 100 times a second, and the time closed must equal the time open. TC. should be insulated from the buzzer armature, though spring mounted, and the adjustments made when the whole outfit has been made and installed. The relay R.Y. is energised whenever the motor is running, and this cuts off the 50/50 contacts from the transmitter. This leaves the control contacts C.C. to operate the transmitter while the motor is running.

These contacts are closed only while the lever is being moved to the right. The lever is mounted on a shaft on which the worm wheel is also mounted, there being a light friction drive between the two. In between is an insulated disc on which is mounted one side of the contacts C.C., C.R., and C.L., the disc being fixed to the wormwheel. With the lever at rest these contacts are open, the relay contacts closed, and the transmitter will be pulsed by TC. When the lever is moved to the right, the contacts C.C. and C.R. close, giving transmitter fully on, with R.Y. contacts open and the motor drives the

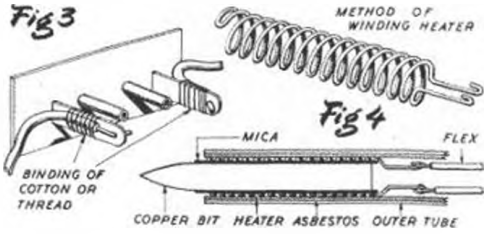


wheel clockwise. This continues until the lever is stopped, when C.C. and C.R. open, stopping the motor, and closing R.Y. contacts to continue the pulsing of the transmitter. When the lever is moved to the left, contacts C.C. close, starting the motor and opening R.Y. contacts, thus keeping the transmitter off, and the wheel turns anti-clockwise until the lever is stopped. At this contacts C.L. open to stop the motor, and close R.Y., returning the transmitter to the pulsed condition. It will be seen from this that when the lever is moved to the right, the rudder will also move to the right, and vice versa. While the lever is stationary no current will be flowing through either motor.

Safe Joints & Field Repairs

The writer has sometimes found friends experiencing a trouble he has himself suffered and cured. One such is the wires pulling away from the tags on a socket, and has been known to happen while taking the model to the flying field. A preventative is to bend the wire back along the tag and bind it with cotton as Fig. 3. The binding is best round the insulation to prevent the wire fraying due to vibration or other movement.

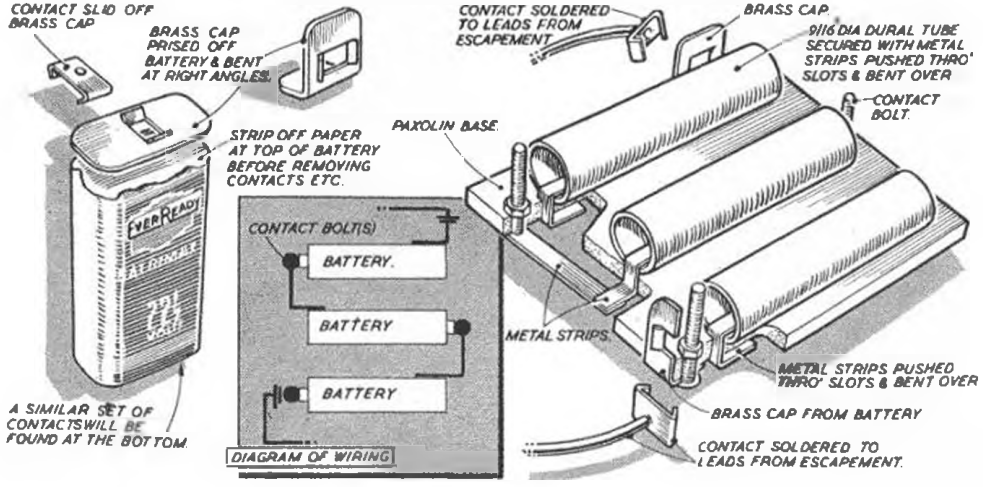
Sometimes it is discovered that a wire has come loose and needs soldering on the field, either after a heavy landing or after transport. For this purpose a small soldering iron has been made to work from a six volt car battery, or the six volt battery in the writer's transmitter. The heating element is made from a few inches of old electric fire element. The length is such that when connected to the lamp sockets of a car, the ammeter registers 4 amps. This is then folded in two and wound round a piece of copper wire about ¼ in. diameter and 1½ ins. long. A thin piece of mica is wrapped round the copper, and the heater gently eased on again (see Fig. 4). The ends should



be left straight for about an inch and twisted and soldered to pieces of thick bare flex. Insulating beads of ceramic or porcelain should be threaded on the straight part of the heater and the bare flex, though binding each with asbestos string will do. Asbestos string is then bound over the whole assembly and it is pushed into a tube. Aluminium will do, but ceramic would be better. Ordinary lighting flex is used between the bare flex and the battery.

Battery Contacts

Poor battery connections are all too frequently the cause of flyaways or bad crashes. K. N. East, of Cheltenham, has a couple of suggestions, as illustrated below, which obviate all trouble and are worthwhile adopting. Break the paper cover off a Batterymax B. 122 and you reveal a sliding contact. Remove this, clean off all wax, and solder up with flexible wire connectors for series or parallel hook-up for H.T. To replace old batteries, simply slide off the contact and slide on a new battery. Same connection is useful for L.T. battery pack connections, and if dural tubes are used for battery holders on a paxolin base, and paper removed from the pen-cells, positive and permanent contact is assured.



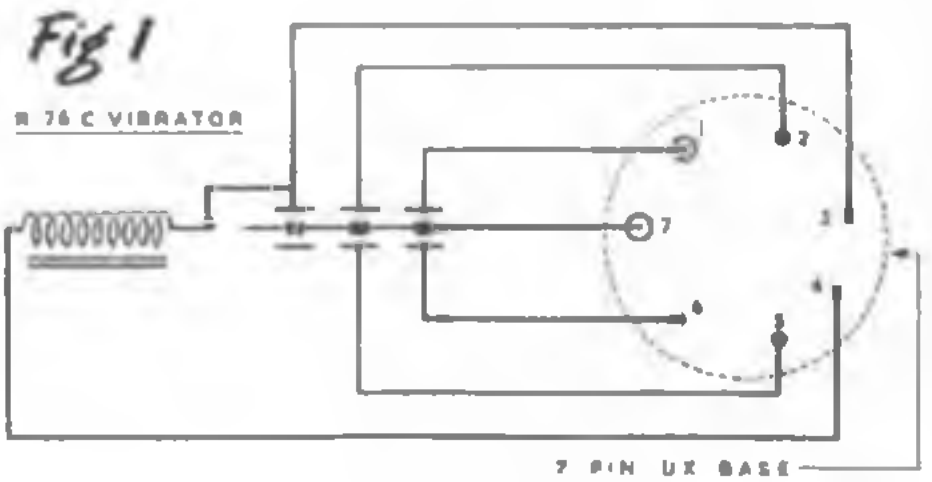
A Vibrator Pack for Transmitters

By D. E. BOLTON

VIBRAPACKS, as they are usually called, have certain advantages for use in R/C transmitters for supplying H.T. current, especially the low to medium power types. They are more efficient than the motor generators, can be made to work off 2 or 4 volts as well as 6 or 12 volts, and are not too difficult for the home constructor. The 6 and 12-volt types are obtainable on the government surplus market at very reasonable prices and are suitable for high power transmitters, and can be run from motor-cycle or car batteries. The 2 or 4-volt type can be home made, and run from an accumulator that can also be used for starting glo plug engines which are quite popular these days, for powering R/C models.

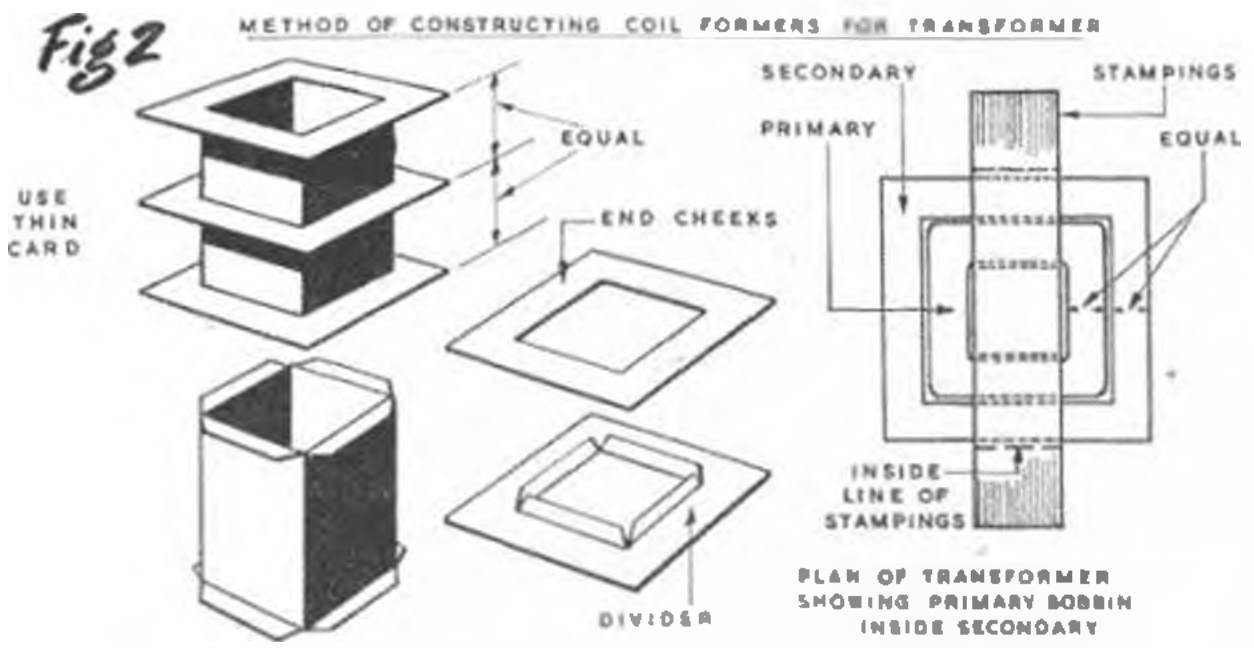
A vibrapack consists of a vibrator that produces an intermittent current of low voltage from an accumulator, a transformer that turns this low voltage into a high voltage A.C. current, and some means of rectifying and smoothing this H.T. There are two types of vibrator, the non-synchronous which requires a metal or valve rectifier, and the synchronous, in which the H.T. is rectified by extra contacts on the vibrator itself. The only government surplus 2-volt vibrator available is the synchronous type, which conveniently dispenses with an external rectifier, and it has a 7-pin base—see Fig. 1.

Fig 1



It should be possible to obtain a burnt-out transformer cheaply from a radio dealer, the stamping being about 3" × 2" with a stack thickness of 1". Smaller stampings should not be used, but it does not matter if they are somewhat larger. The stampings are removed and two cardboard formers made to fit, one inside the other as Fig. 2. Each former has a central dividing strip to split each winding into two. One half of the secondary (outer) is wound full of No. 38 s.w.g. enamelled wire, counting the turns. The exact number will depend on the size of the transformer, but will probably be about 1,500 to 2,000. Make sure it will still go into the stampings and then wind a similar number of turns on the other side, but in the opposite direction. The two outer ends are then joined to form the centre tapping. The primary is wound into 18 s.w.g. enamelled or D.S.C. wire, the number of turns being determined as follows. Multiply the input voltage by the number of turns on one half of the secondary, divide by the output voltage, then multiply by $\frac{3}{4}$. Suppose the secondary turns are 1,800 and the input voltage 2, and we want an output of 150 volts, we get $\frac{1,800 \times 2}{150} \times \frac{3}{4} = 18$ turns on each half of the primary. The two windings should again be in opposite directions and this time the two inner wires are joined to form the centre tap. The transformer is then temporarily assembled for testing.

Fig 2



Make up the vibrapack to the circuit in Fig. 3. For test putposes C1 can be ·01 mfd. 1,000 volts working, but C2 should be omitted. Across the H.T. output connect a resistor of about 6,000 ohms about 2 watts or more capacity. Switch on and test the output for voltage and polarity. If it does not

work properly it may be for any of the following reasons :—

(1) *Output of incorrect polarity*.—The leads from the secondary to the vibrator should be reversed.

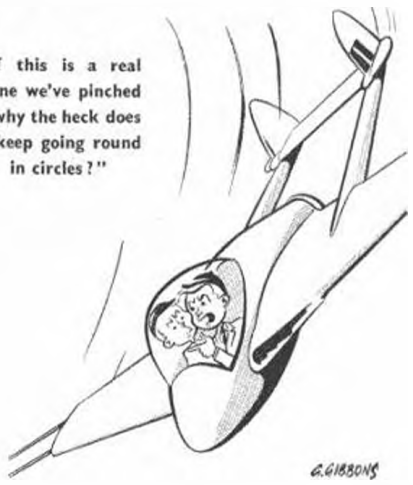
(2) *No output*.—Check for short circuits or breaks in the wiring. One half of one of the windings may be the wrong way round. Disconnect one half of the secondary and again test for output.

(3) *Very low output with high input current*.—Probably a short circuit somewhere. Disconnect each side of the secondary in turn, and test the voltage across the other. If very low on one side, some of the turns may have shorted on that side and a rewind will be necessary.

(4) *Output voltage too high or too low*.—Dismantle the transformer and increase or decrease the turns on each side of the primary. The output voltage is approximately inversely proportional to the number of turns on the primary, so if the output is to be increased by 10 per cent. the number of turns must be decreased by 10 per cent. Due to losses the ratio is not quite true, but the optimum number of turns can be found by trial.

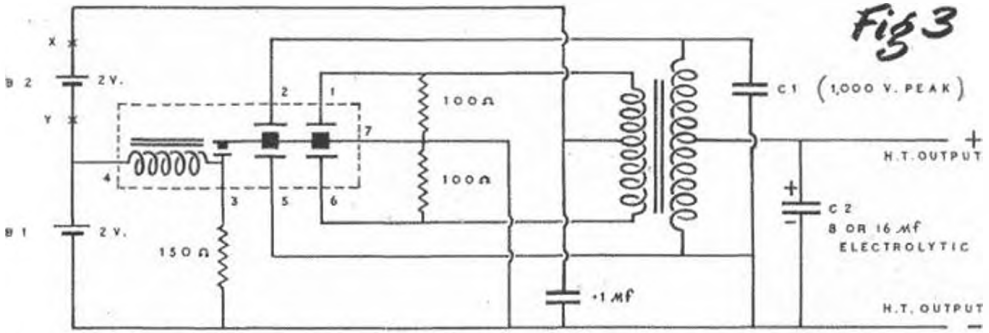
When the vibrapack is working satisfactorily C1 can be adjusted. Ideally the output should be observed on an oscilloscope, but an easier method is to disconnect all load from the output and vary C1 from about ·003 to ·02 mfd. in steps of ·001 mfd. if possible, and use that which gives lowest input current from the accumulator. It may be necessary to borrow some condensers for this purpose, but a wide range can be obtained by adding them in parallel.

This completed, the vibrapack can be assembled into a suitable box, together with the transmitter if desired. The layout of components is not important except that the vibrator should be mounted vertically. Keying the transmitter is best done in the H.T. lead in the usual way. One advantage being that off load the H.T. voltage is higher than on load. If the voltage is, say, 130 with the transmitter keyed, it may easily go up to



150 with transmitter off, and C2 will charge up to this. On keying, the transmitter will effectively be working on this voltage for the short time it takes C2 to discharge from 150 to 130 volts. This effectively gives greater range than would be obtained with 130 volts from a dry battery, at least as far as the usual single valve receiver is concerned. With these, when once a signal has caused the anode current to fall, a much weaker signal will hold it down.

The accumulator for the vibrapack can also be used for the valve heaters when the usual battery valves are used. If a 4-volt accumulator is used the valve can be connected for 3-volt operation and a suitable dropping resistor used. If a 2-volt accumulator is used then the valve should be connected for 1½-volt use. With a 3A5 valve on 4 volts the resistance should be 15 ohms for safety, and on 2 volts it should be 3½ to 4 ohms.



VIBRAPACK USING 2V. SYNCHRONOUS VIBRATOR AND 4V. INPUT. FOR 2V. INPUT, OMIT B 2 AND CONNECT X—Y

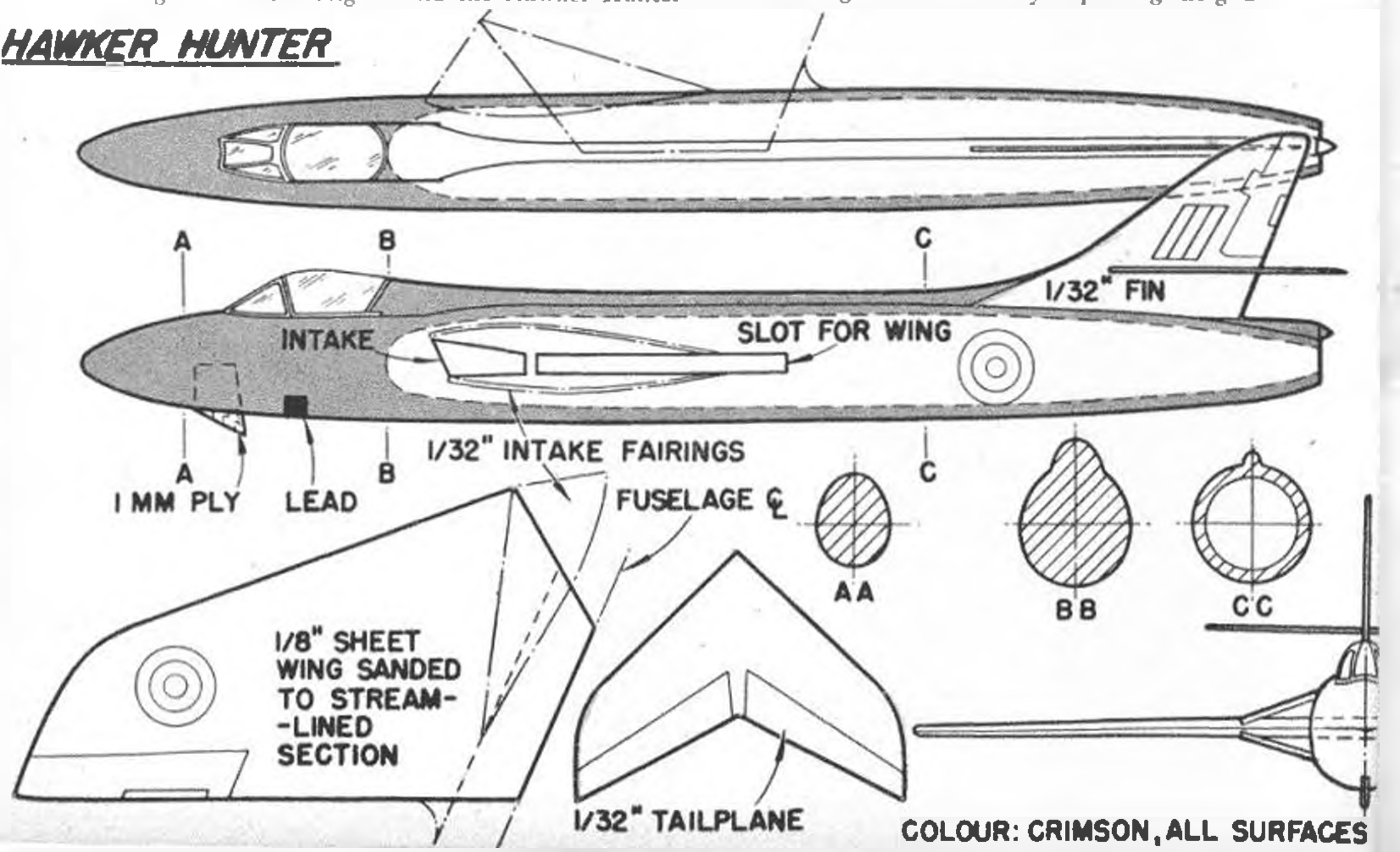
CATAPULT 'SOLIDS'

BY A · G · PIELL

TAKE one solid model, add weight and a ply launching hook, connect to a length of rubber and catapult at 45 degrees . . . That, in brief, is the idea underlying this latest branch of the hobby, and the results are most fascinating. Two models sent to the editorial offices for examination and flight test were soon put through their paces, amazing all, including mystified passers by in the street, with a rate of climb second only to the real thing. What's more . . . they glide!

Built slightly smaller than 1/72nd scale, the originals were a Mig 15 and the Hawker Hunter illustrated here. Larger models may be even better in performance, and in that case, the 6d. 1/72nd scale plans in the AEROMODELLER PLANS SERVICE range will come in handy should you want to build up a series of jet fighters. The Vickers-Supermarine 510, 541 Swift and 508, De H Vampire Trainer, N.A. Sabre and Hawker Sea Hawk and Hunter are all ideal subjects for these scale projectiles which can be bought from A.P.S. in 6d. plan form. Construction is simple, the fuselage being made in two halves so that the rear portion can be hollowed out to save weight at the rear. Make sure the wings are cemented firmly in place, and that the ply launching hook is secure. The catapult is simply a length of 3/16 in. flat strip rubber held firmly between forefinger and thumb, and with a loop tied in one end to engage the model. Launching angle for first flights should be around 45 degrees, but a variance in the angle of bank will be found advisable for best turning trim, whilst a warp in the elevators can be arranged for high speed aerobatics. Air intakes at the root of the Hunter wings serve effectively to prolong the glide.

HAWKER HUNTER

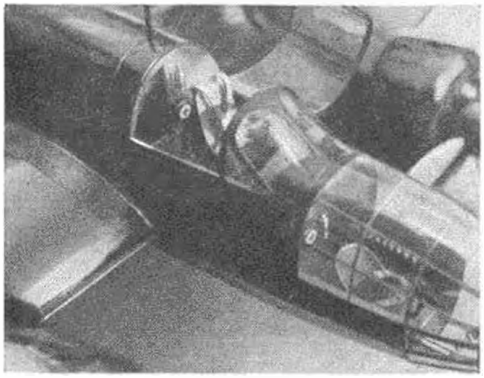


Z. Wojda's

fully detailed Control-line

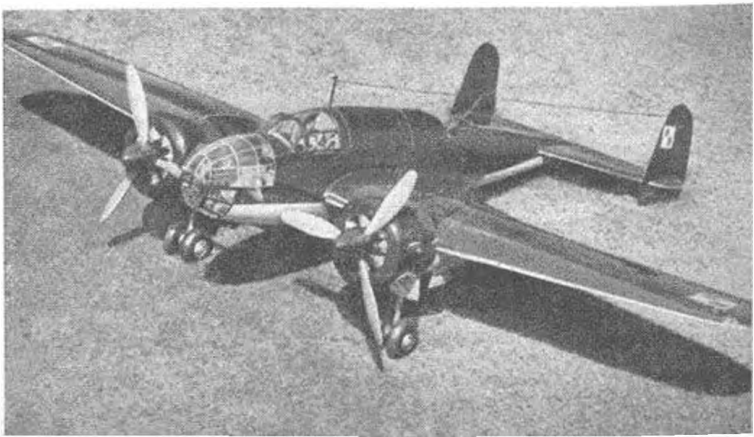
Polish PZL 37

PRODUCED with the co-operation of the designer of the actual full-size aircraft, this magnificent example of a perfect scale model deservedly won the Championship Cup at the 1952 *Model Engineer* exhibition. Readers will remember the description of a super detailed Spitfire Vb by this same ex-Battle of Britain Polish fighter pilot, which appeared in our July '52 issue. The PZL 37 employs a similar rubber driven, geared and fully sprung working undercarriage: but on this occasion, the flaps too, are arranged to go up and down in co-ordination with the wheels. All detail is faithfully reproduced in the cockpit, even to the neat row of Very cartridges alongside a realistic pistol—and at the touch of a correctly placed switch, the landing lights swing out from their retracted position and shine forth!



A pair of E.D. 2·46 Racer diesels are almost completely disguised by the dummy engine cylinders, their compression screws replaced by Allen keys to avoid any untoward protrusion that would offend the faithful adherence to scale. Exhausts are partly blanked off by a special manifold, so that, just like the real thing, there is only one exhaust port in the cowling, while specially turned spinners maintain the scale curve not quite obtained by commercial products.

Total weight, ready to fly, is in the nature of 5 lbs., representing quite a high wing loading: but one which is easily overcome by the power of the two engines. The magnificent finish on the authentic camouflage colouring was, we understand, obtained by rubbing down between successive coats of sprayed undercoating and top colour cellulose. The whole model is covered with 1/16th sheet balsa, including the streamlined fuselage, for which it was necessary to heat the sheeting to the doubly curved shapes. All of which represents some hundreds of hours meticulous workmanship and reflects once more on the very high standard of model-making achieved by the relatively few members of the Polish A.F.A. Model Club.



Designed in 1937 as a medium bomber, the 300 m.p.h. PZL 37 became standard equipment of the pre-war Polish Air Force. Some 40 of them saw action in 1939, and a few survivors of that year found their way to Roumania, where, perhaps, there is still an airworthy example. Mr. Wojda's model is completely accurate to the last detail. Guns are movable. Undercarriage, flaps and lights work. Above all it flies!! All credit to the builder, seen in heading photo.

S.M.A.E. PAGE

BRITISH NATIONAL MODEL AIRCRAFT RECORDS

as at 22nd November, 1953

OUTDOOR

RUBBER DRIVEN

Monoplane	Boxall, F. H.	Brighton	15/5/49	35 : 00
Biplane	Young, J. O.	Harrow	9/6/40	31 : 05
Wakefield	Boxall, F. H.	Brighton	15/5/49	35 : 00
Canard	Harrison, G. H.	Hull Pegasus	23/3/52	6 : 12
Scale	Marcus, N. G.	Croydon	18/8/46	5 : 22
Tailless	**Woolls, G. A. T.**	Bristol & W.	10/5/53	3 : 03
Helicopter	Yangney, J. F.	U.S.A. & Croydon	2/7/50	2 : 44
Rotorplane	Crow, S. A.	Blackheath	23/3/36	0 : 40
Floatplane	Parham, R. T.	Worcester	27/7/47	8 : 55
Flying Boat	Parker, R. A.	K. Nomads	24/8/52	1 : 05

SAILPLANE

Tow Launch	Best, F.	Leeds	20/7/48	63 : 46
Hand Launch	Campbell-Kelly, G.	Sutton C'fld	29/7/51	24 : 30
Tailless T.L.	Lucas, A. R.	Port Talbot	21/8/50	22 : 34
Tailless H. L.	Wilde, H. F.	Chester	4/9/49	3 : 17
Nordic T.L.	Whittall, L.	Birmingham	2/7/50	29 : 52
Nordic H.L.	Campbell-Kelly, G.	Sutton C'fld	29/7/51	24 : 30

POWER DRIVEN

A (0–2·5 c.c.)	Springham, H. E.	Saffron Walden	12/6/49	25 : 01
B (2·5–5 c.c.)	Dallaway, W. E.	Birmingham	17/4/49	20 : 28
C (5–15 c.c.)	Gaster, M.	C/Member	15/7/51	10 : 44
Tailless	Poole, W.	C/Member	23/8/50	2 : 10
Scale	Tinker, W. T.	Ewell	1/1/50	1 : 37
Floatplane	***Lucas, I. C.**	Brighton	11/10/53	4 : 58
Flying Boat	Gregory, N.	Harrow	18/10/47	2 : 09
Radio Control	**O'Heffernan, H.**	Salcombe	24/6/53	60 : 35

CONTROL LINE SPEED

				m.p.h.
Class I	Scott, R.	St. Helens	9/7/50	80 : 0
Class II	**Wright, P. L.**	St. Albans	23/5/53	106 : 5
Class III	***Hall, J.**	Chingford	20/9/53	114 : 7
Class IV	Wright, P. L.	St. Albans	14/7/51	124 : 5
Class V	**Wright, P. L.**	St. Albans	24/5/53	124 : 3
Class VI	***Claydon, J. W.**	East London	20/9/53	139 : 8
Class VII (Jet)	Stovold, R. V.	Guildford	25/9/49	133 : 3

INDOOR

FREE FLIGHT

Stick-H.L.	Copland, R.	N. Heights	22/1/37	18 : 52
Stick–R.O.G.	Mackenzie, R.	Blackheath		8 : 42
Fuselage–H.L.	Parham, R. T.	Worcester	18/8/51	7 : 15
Fuselage–R.O.G.	Parham, R. T.	Worcester	18/8/51	7 : 30
Tailless–H.L.	Parham, R. T.	Worcester	18/8/51	2 : 59
Tailless–R.O.G.	Parham, R. T.	Worcester	18/8/51	2 : 28
Helicopter	**Read, P. W.**	Sth. B'ingham	19/12/52	4 : 04
Ornithopter	**Parham, R. T.**	Worcester	20/2/53	0 : 44
Rotorplane	Mawby, L.	Ealing		0 : 32

ROUND-THE-POLE

Class A	Muxlow, E. C.	Sheffield	10/12/48	6 : 05
Class B	Parham, R. T.	Worcester	20/3/48	4 : 26
				m.p.h.
Speed	Jolley, T. A.	Warrington	19/2/50	42 : 83

OUTDOOR — LIGHTWEIGHT

RUBBER DRIVEN

Monoplane	Barnacle, N. A.	Leamington	14/10/51	17 : 55
Biplane	O'Donnell, J.	Whitefield	18/5/52	6 : 46
Canard	Harrison, G. H.	Hull Pegasus	28/9/52	1 : 47
Scale	Dubery, V. R.	Leeds	14/7/51	1 : 11
Floatplane	Taylor, P. T.	Thames Valley	24/8/52	5: 15
Flying Boat	Rainer, M.	North Kent	28/6/47	1 : 09

SAILPLANE

Tow Launch	Hunt, P.	Bury St. Edmunds	25/5/52	32 : 10
Hand Launch	Gates, G. K.	Southern Cross	16/2/52	8 : 45
Tailless T.L.	Couling, N. F.	Sevenoaks	3/6/51	22 : 22
Tailless H.L.	Donald, K.	Southern Cross	23/5/52	3 : 29
Canard T.L.	Caple, G.	R.A.F. M.A.A.	7/9/52	22 : 11

POWER

Class A	Archer, W.	Cheadle	2/7/50	31 : 05
Class C	Ward, R. A.	Croydon	25/6/50	5 : 33
Tailless	Gates, M. M.	Non-member	28/1/51	2 : 47
Floatplane	***Mussell, A.**	Brighton	11/10/53	2 : 53

(* denotes claim awaiting ratification.)

INTERNATIONAL RECORDS HELD BY GREAT BRITAIN

Class III—1 (Special Aircraft) **J. O'Donnell** (Whitefield)

Duration : 4 : 20. Distance : 1,720 metres.

MERIT CERTIFICATES

Class "C" and INTERNATIONAL GRADE

No. 533	Brooks, A. J.	Grange	gained 24/10/1952
,, 450	Chinn, J. I.	Norwich	,, 17/10/1951
,, 496	**Cooke, A. W. M.**	Henley	,, 10/5/1953
,, 366	Gorham, J. A.	Ipswich	,, 21/10/1950
,, 872	**Male, K. D.**	Tynemouth	,, 10/5/1953
,, 509	North, E.	Halifax	,, 18/11/1951
,, 862	**Pollard, R. C.**	Tynemouth	,, 18/5/1953
,, 228	Tubbs, H.	Leeds	,, 2/9/1951
,, 215	Wilmott, D. T.	(Belfairs)	,, 29/8/1952
,, 407	**Wrigley, A.**	(Prestwich)	,, 23/3/1953

SOCIETY OF MODEL AERONAUTICAL ENGINEERS 1954 CONTEST PROGRAMME

March 14th	**Gamage Cup.** Unrestricted Rubber **Pilcher Cup.** Unrestricted Glider	D/C.
March 28th	**S.M.A.E. Cup.** 2nd 1954 A/2 Eliminator **Farrow Shield.** Team Rubber. **Women's Challenge Cup.** Unrestricted Rubber/Glider. **Jetex Challenge Cup.** Jetex.	Area.
April 25th	**Weston Cup.** 2nd 1954 Wakefield Elim. **Astral Trophy.** 2nd 1954 Power Elim.	Area.
May 22/23rd	**International Team Trials.**	Cent.
June 5/6/7th	**BRITISH NATIONALS.**	
Saturday	**Taplin Trophy.** Radio Control. **Lady Shelley Cup.** Tailless. **Bowden Trophy.** Precision Power. ***Control Line Speed.** Class I and Class IV	
Sunday	****Thurston Cup.** Glider. **PAA Load.** Payload. ****Model Aircraft Trophy.** Rubber. **Team Racing.** Class "A". ***Gold Trophy.** C/Line Stunt. ***Control Line Speed.** Class II	Cent.
Monday	****Sir John Shelley Cup.** Power. **S.M.A.E. Radio Trophy.** Radio Control.	
Monday cont.	**Super Scale Trophy.** Power Scale. **Team Racing.** Class "B". ***Control Line Speed.** Class III	Cent.
July 4th	**Hamley Trophy.** Power.	D/C.
August 1/2nd Sunday	**NORTHERN "GALA".** †**C.M.A. Cup.** Glider. †**Frog Senior Trophy.** Power. **Ripmax Trophy.** Radio Control. **Davies Trophy "A".** Team Racing. **Control Speed.** All Classes.	Cent.
Monday	***Flight Cup.** Rubber. **Aeromodeller R/C Trophy.** Radio Control. **Davies Trophy "B".** Team Racing. **Control Line Speed.** All Classes.	
August 29th	**Kell Trophy.** Power. **Frog Junior Trophy.** Junior Rubber/Glider	D/C.
Sept. 12th	**Gutteridge Trophy.** 1st 1955 Wakefield Elim. **Model Engineer Cup.** Team Glider.	Area.
October 3rd	**K. & M.A.A. Cup.** 1st 1955 A/2 Elim. **Halfax Trophy.** 1st 1955 Power Elim.	Area.

* Indicates C/Line Team Trials. ** Includes Area Championships. † Includes nominated entries for U.K. Challenge.

The R.A.F. Model Club from Calshot had a "smashing" day at the Davies Trophy contests, Long Marston, and appear to be very pleased with themselves in spite o mishaps.

THE article entitled "The Official Approach" in the last AEROMODELLER appears to have gone down rather well with many clubs. It is therefore of special interest to note that one of the cases outlined in that article—concerning objections to a byelaw—is actually at the moment being put to the test, independently, by the Southern Cross Aero Club. Draft byelaws on the subject of flying in the Hove Parks and Gardens met with indignation in the club, and objections were entered. Two local daily newspapers gave this prominence, and a week-end paper gave the story space on the front page. A national evening paper also mentioned it. In view of this extensive publicity and the adoption of the correct procedure by the Southern Cross members, it will be interesting to hear the outcome of this case, and we shall refer to it again in these columns when full details are available.

South Eastern Area

Visitors are welcomed to **GILLINGHAM M.F.C.** weekly meetings, 7 p.m. any Tuesday at the Napier Arms, Paget Street. With the big population of the Medway Towns there could be a really large club in this district, so what about dropping in, non-members?

K. Donald proved **SOUTHERN CROSS A.C.** champion for 1953, with a total score of 35 : 28; E. W. Gravett was runner-up with 32 : 41. The "Swallow Cup" for tailless gliders went to G. Gates' 21 ft. wing with a 2 : 34 score, while A. Nichols aggregated 8 : 17 to win the "Nordic Shield".

The **CANTERBURY PILGRIMS M.F.C.** once more topped the list of eastern clubs in the E.M.M.A. Championships, accumulating 125 points over the season to second place **DEAL SWALLOWS M.F.C.'s** 104. Individual champion was J. Brind of Deal. Power, rubber, joint precision glider, and concours champions respectively were E. Rigden (Pilgrims), P. Harris (Sittingbourne), D. Hopper (Deal) and J. Howard (Sittingbourne), J. Brind (Deal), and C. Ashby (Pilgrims). More than half of the top-placing models throughout the year were A.P.S. designs, incidentally. Special mention should be made of the newly-formed **HERNE BAY M.F.C.**, who placed fourth in the club list against several experienced clubs.

East Anglian Area

A Jetex 200 powered D.H.110, unofficially clocked R.T.P. at something over 50, proved a big draw at **CAMBRIDGE M.A.C.'s** stand at a local model engineering exhibition. The stand gave a lot of the public an actual view of what they frequently read about in the model-conscious local press. It is hoped that a PAA-load trophy will shortly be added to the eleven trophies already floating about in this club—this will mean a model a month, all the year round, for the keen man who hopes to compete in each club event!

WARE D.M.A.C. continues to be active, with interest largely in the sailplane sphere. At a recent meeting, D. Skinner's 7 oz. **Marauder** started club records off with 7 : 14 o.o.s. and J. Steel won a restricted rubber event, clocking 3 : 16 with his **Trump Card.** Junior members are building a club-designed A2.

Limited space is popularising small free-flighters in **ILFORD D.M.A.C.**, and the weakened F/F section is being reinforced by C/L fans building this type. Indoor R.T.P. models are appearing again, Jetex speed attracting a lot of interest and proving quite startling, especially the job which went through the book with its tail-boom burnt off!

East Midland Area

Gloom at the chapter of accidents which beset **FORESTERS M.F.C.** at the Davies Finals has been dispelled by a wave of spook-hunting, caused by the overnight appearance on the club-house walls of a natty line of cartoons, the instigator of which remains unidentified. Winter contests are under way, the first power event falling to T. Woodward's Dart-powered job.

North Western Area

Radio is attracting more and more **HYDE M.A.C.** members, and the club is thinking of a winter R/C rally. Any interested clubs please contact. Biggest laugh of late was a Jetex-powered **Cub** which, after a 3 : 17 flight, disappeared into a barn and was shot to ribbons by the irate farmer who had confused it with a bothersome hawk! He compensated owner R. Wilson with good humour.

Results of a scramble event held under atrocious conditions by **WHITEFIELD M.A.C.** are interesting. Flights of between 20 secs. and 2 mins. counted, over a period of 45 mins., and H. O'Donnell came out top, recording 18 : 27 with a chuck glider. Second was E. Horwich, flying a power job for 13 : 36, and every other entry flew a sailplane. J. O'D. finished third with 12 : 49. Despite being drenched, everyone enjoyed the really hectic flying.

BLACKPOOL & FYLDE M.A.S. have altered

their winter meetings to fortnightly Mondays, so if you want to go along to the Kite Club, Squires Gate, make it on Dec. 28th or Jan. 11th.

London Area

Twelve models took part in **EPSOM D.M.F.C.'s** open speed and scale speed Jetex R.T.P. contests held at a recent indoor meeting. V. Bolt's Jetmaster job knocked off 97 m.p.h. in open, while D. Bolt turned in 88 with a scale **Skyray** to win scale. Second and third in the latter were V. Bolt, 75 m.p.h., **Northrop X 4** and W. Tinker, 52 m.p.h., Dassault **Mystere.** All these models used Jetmasters and spanned between 6 and 8 ins., and the Skyray has been clocked at 106. More stately are the normal rubber R.T.P. jobs, top duration so far being 2 : 20 by J. Berry.

Similar activities have been taking place in the **REGENTS PARK M.F.C.** clubroom and despite the line length being restricted to 5 ft., 50 powered models are doing 40 m.p.h. A rubber R.T.P. team-race nearly brought the house down, so great was the amusement as purple-faced competitors wound frantically to save precious seconds. A slightly modified **Elf** eventually won.

Midland Area

A general expansion of the **DERBY M.A.C.** has been evident, but new members are still needed. C/L has held the floor lately, but A2 gliders and F/F power get a look in now and then. A recent C/L contest day saw stunt won by R. Gibbard flying a **Kombat Kapers** fitted experimentally with twin booms; D. Perrett came second with a version of this design called **Kopy Kat.** R. J. Harrison rolled in first in "A" team racing, flying a **Black Chiffon** which, with the aid of a piece of string, just managed to stay together for the final.

Northern Area

Mixed contests, with all classes of models competing, seem popular among **BRADFORD M.A.C.** members, and it appears difficult to say which type of job holds any advantage. In the club's latest event of this nature, S. Eckersley's A2 clocked 8 : 33, S. Lanfranchi's **San de Hogan** 7 : 30 and C. Miller's Wakefield 7 : 26. The last contest in the '53 programme has so far been postponed three times . . . !

South Midland Area

Team-racing is the main interest of the **HIGH WYCOMBE M.A.C.** In seven class "A" races

Tony Lanfranchi (Bradford M.A.C.) releases his version of the popular "Eliminator" under (or over ?) the watchful eye of Poppa Silvio.

entered this season the club has been in every final and has achieved three firsts, four seconds, and two thirds. R. Edmonds Tiger-powered model which won the Davies "A" was doing 55 laps at 82 m.p.h. in the final, and other clubsters were doing 80–90 in practice. When it was too late they found that the 21 c.c. speed event on the same day had been won with a meagre 81·41

Western Area

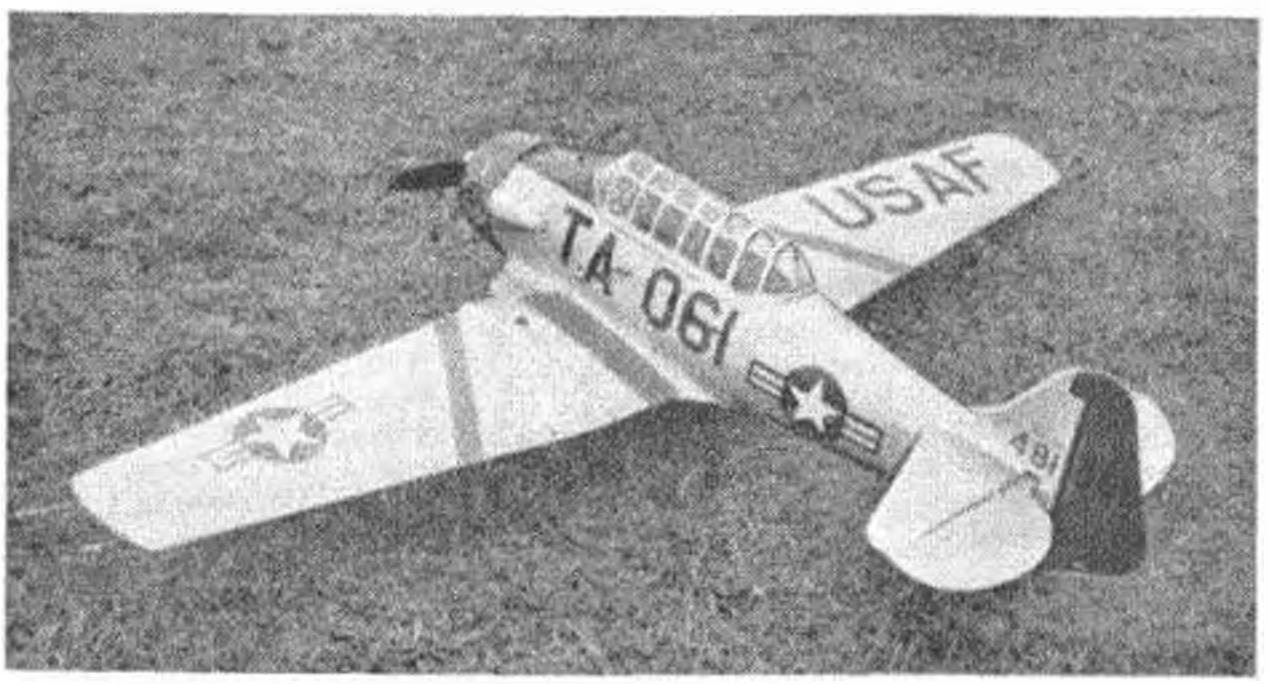
The Wiltshire Downs must offer many possibilities for slope-soaring, and the **SWINDON M.A.C.** recently staged such an event with great success. Winner was T. Rogers of Swindon with 5 : 38, and clubmates took another eight of the first ten places.

Indoor meetings of the **BRISTOL & WEST M.A.C.** are held fortnightly at the Moravian Hall, half of each evening being devoted to a talk and the remainder of the time seeing a weird variety of ornithopters, helicopters, C/L rubber models, Jetex speed jobs, etc., in action.

Southern Area

WEST HANTS A.A. is another group with the use of a fine club-room, in this case St. Michael's Church Hall, Poole Hill. A lot of fun is promised by the introduction of a tethered glider competition, the gliders being ultra-light and of 12 ins. span or less. Each is tethered in turn to a clockwork gramophone motor, on the shaft of which is erected a 24 in. pole. The highest and slowest flyer wins.

The monthly journal of the **BOURNEMOUTH M.A.S.** reflects satisfaction at the steady improvement in the general quality of members' flying over the past season, and hopes that a greater interest in contest flying will be evident next season as a result. The current issue also contains contributed thoughts on Wakefields (how about de-



Everything about this beautiful Harvard is scale, except the airscrew. Built by Tommy Shortt of Shankhill, Ireland, it won for him the scale event at the Drogheda M.F.C. Annual C/L Rally.

CONTEST RESULTS

AREA CHAMPIONSHIPS

Long Marston — 30th August, 1953

	Rubber Points	Glider Points	Power Points	Total Points
1. Midland	20	14	10	44
2. London	3	20	14	37
3. Northern	4	5	20	29
4. N. Western	14	10	3	27
5. R.A.F.	10	1	5	16
5. Southern	5	7	4	16
7. W. Scotland	2	3	7	12
8. S. Eastern	7	2	0	9
9. S. Midland	0	4	2	6
10. E. Anglian	1	0	0	1
10. Western	0	0	1	1
12. S. Wales	0	0	0	0

INDIVIDUAL CHAMPIONS

Power	S. Lanfranchi, J. McMasters	Joint Holders
Rubber	J. O'Donnell, P. Allaker	Joint Holders
Glider	A. Geesing	

GUTTERIDGE TROPHY (1954 Wakefield Eliminator)

September 13th — 161 entries

1.	J. Palmer	Croydon	15 : 00 – 4 : 43
2.	A. Albone	Croydon	15 : 00 – 2 : 58
3.	F. Branch	Hayes	15 : 00 – 1 : 58
4.	B. Hausman	Whitefield	15 : 50
5.	R. Monks	Birmingham	14 : 34
6.	R. Warring	Zombies	14 : 30

MODEL ENGINEER CUP

September 13th — 55 entries

1.	Croydon	32 : 38
2.	Birmingham	31 : 31
3.	St. Albans	30 : 36
4.	Northwick Park	30 : 28
5.	Surbiton	29 : 05
6.	Grange	25 : 39

K. & M.A.A. CUP (1954 A2 Eliminator)

September 27th — 342 entries

1.	P. Martin	Birmingham	15 : 00 – 2 : 05
2.	E. Sprason	Birmingham	15 : 00 – 1 : 02
3.	R. Yeabsley	Croydon	14 : 21
4.	M. Hanson	Birmingham	13 : 55
5.	B. Smith	Boston	13 : 53
6.	F. Young	Sutton Coldfield	13 : 30
6.	J. Lamble	West Herts.	13 : 30

HALFAX TROPHY (1954 Power Eliminator)

Sept. 27th — 190 entries

1.	G. Perkins	Croydon	15 : 00 – 5 : 53
2.	P. Buskell	Surbiton	15 : 00 – 5 : 44
3.	G. Upson	Northwick Park	15 : 00 – 4 : 53
3.	V. Jays	C.M.	15 : 00 – 4 : 53
5.	J. Hancock	Surbiton	15 : 00 – 3 : 35
6.	J. Blunt	Croydon	15 : 00

limiting rubber, barring gears and bringing back the old cross-section rules?) and an analysis of the possibilities of radio in A2's, all of which makes interesting reading.

Ireland

A C/L rally was again organized this year by the **DROGHEDA M.F.C.** under the sponsorship of Butlins, and four events were flown off. Stunt entries were disappointing, and the "A" team race final saw all four planes tangle; however, T. Morelli (Dublin) put up a good show to win stunt comfortably, and T. Noonan (Shankhill) retrieved enough of his "A" job to complete the course and win. G. Woodworth (Dublin) won the "B" race by half a lap, and the scale event winner was a very much scale Harvard by T. Shortt (Shankhill) who, by also collecting second in stunt, became the recipient of the Butlin Trophy for the highest points score. Perfect weather, a good crowd, excellent organisation, and the general free-and-easy atmosphere made this one of the best comps. ever.

Radio fans wishing to obtain the list of R/C pamphlets issued by the I.R.C.M.S. should note that the person to whom application should be made is now J. P. Millar, 20a, Beaufort Road, Reigate, Surrey. And if you have any old stunt or large free-flight plans you're intending to throw away, Miss K. Rennox, of 23, Townhead Gardens, Whitburn, W.L., Scotland, says would you mind throwing 'em her way.

Pen pals are sought by David Mascarenhas, Villa Philomena, 1107/A Shivajinagar, Poona 5, India, who is 18, taking intermediate science at college, and builds small F/F and C/L models, and Georges H. Rhobba, Aero Club de Roussillon, Perfignan, Pyrenies Orientales, France, who would appear to need a French-writing club-member of around 20.

Encore une fois, alors, au 'voir. Or words to that effect! The CLUBMAN.

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PARK VIEW A.S.
J. A. Gear, Park View, 33 Abbey Road, Malvern, Worcs.

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