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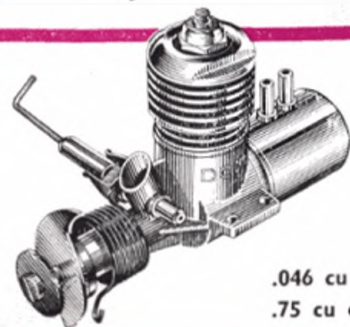
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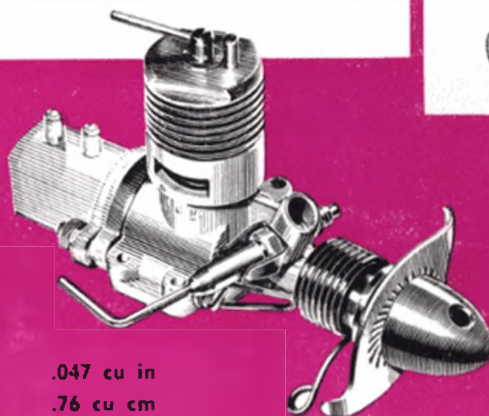
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other modelling angles...

The control of models by means of light beams has been the subject of several expert studies. September issue of *Radio Control Models & Electronics* will carry details for a very simple system well within the means of most dabbling aeromodellers, although in this case the system is applied to boat control. For the more expert there will be an all transistor multi channel transmitter by our Dutch contributor "Windy" Kreulen with all the circuitry and component layout provided to make construction a fairly simple matter. Aerial photography is becoming more and more popular. One very successful system using an inexpensive camera in a radio controlled model is fully detailed. Contest reports and a positively up to date summary of all that is new in the model trade for radio control enthusiasts, complete with photographs, will satisfy the most avid reader. The main test report will be concerned with the Wen-Mac Superhet control system, which is one of the new type non-tuneable outfits. Gadgets & Gimmickry, together with photo features complete a bright issue.

An attractive Siamese "battleship" and a neat electric cabin cruiser are two outstanding features of September *Model Maker & Model Cars*, while on the car side the Rouen-winning Porsche F1 and a useful fault-finding article will appeal. Motor test, regattas, Whitehaven G.P., racing Minis, an unusual R/C boat described, etc., plus all regular features will form the September issue, on Sale August 24th.

Both magazines are the same price... 2s. per copy. If your Hobby Shop or newsagent does not carry a stock send 2s. 4d. for a return post delivery from the address below.

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38 Clarendon Road,
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AERO MODELLER

MAP HOBBY MAGAZINE

September 1962

VOLUME XXVII No. 320

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cover

Examples of the helicopter and autogyro are provided by the Bristol Sycamore above, in Royal Air Force colours, and the Umbaugh U.18 Flymobil. This pusher autogyro has many fascinating features and 2 seats in tandem. In many ways it is a complete contrast to the much older Cierva design detailed in this issue, but still operates on the same principles with a slipstream driven rotor, which can be engaged by clutch for a jump take-off. Plans for a flying model of the Sycamore helicopter are obtainable through Aeromodeller Plans Service as drawing U/713, price 4s. 6d. post included, and are suitable for engines of .5 to .75 c.c.

next month...

Plan sales clearly indicate that there is a tremendous interest in the multi engine control-line model, especially those for smaller engines. Maurice Bodey, who has been responsible for several of the successful A.P.S. multi's, was specially commissioned to produce the Piaggio P.166. With its gull wing, short undercarriage on flying boat like fuselage and two pusher 1.5 c.c. engines, this is a most attractive subject especially if painted in the Dayglo colour scheme as will be seen on his prototype. Full size plans will be included in this issue for a remarkably simple 31" low wing model jinty, which can be flown free flight or under radio control and is made with only a few sheets of balsa, incorporating many novel features, not the least being the simple tricycle undercarriage. Report on the World Radio Control Championships will lead the months selection of Comp. reports and Gus Johnson's "secrets" of successful speed model flying with details of his 'Ginmill' model will be found to be especially interesting. These and many other articles we have ready for your enjoyment all appear in the October issue, on sale September 21st. Don't forget: the third Friday of each month!

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Direct subscription rate (Inland) 28/6 (Overseas) 27/6 per annum including enlarged December edition and index. U.S.A. and Canada direct rate \$4. AEROMODELLER incorporates the MODEL AEROPLANE CONSTRUCTOR and is published monthly on the third Friday of each month prior to date of publication by:—

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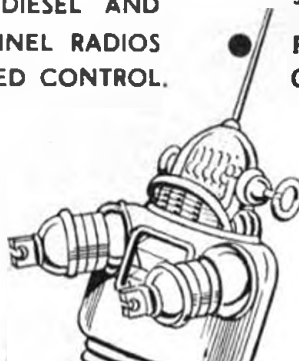
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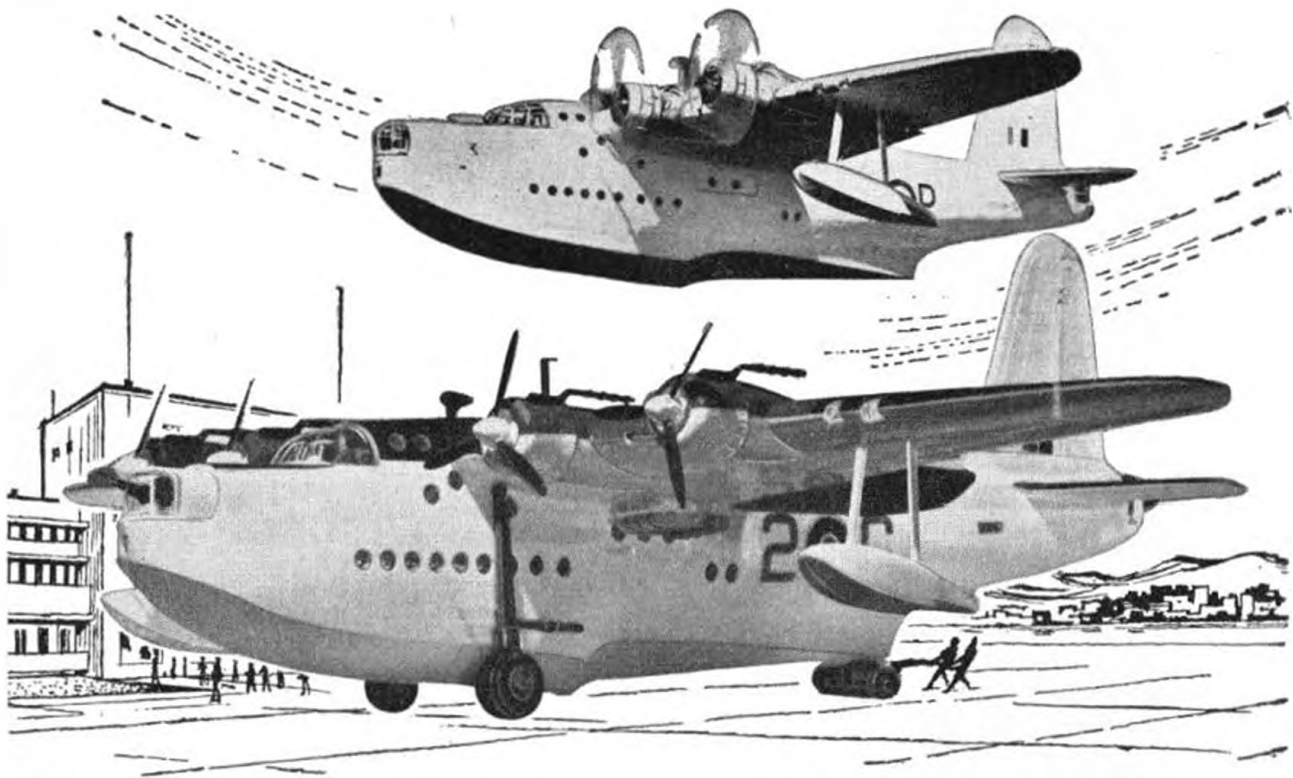
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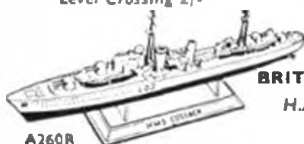
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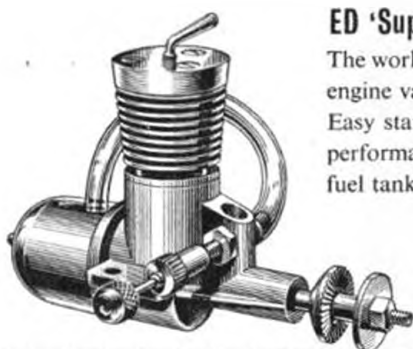
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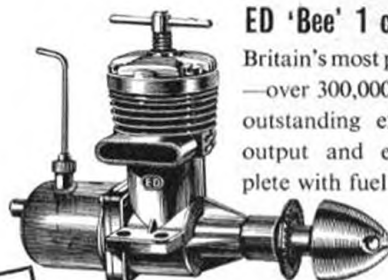


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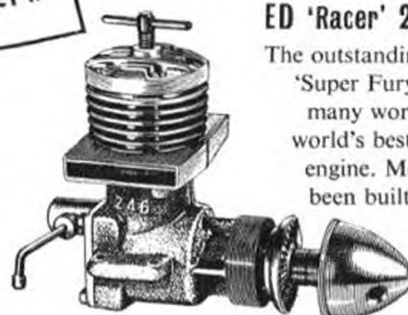
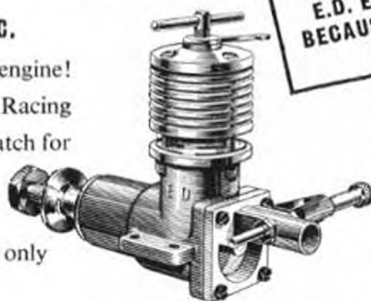
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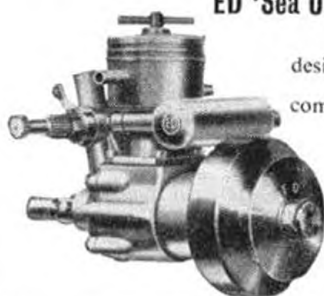


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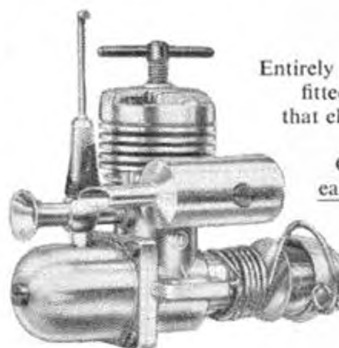
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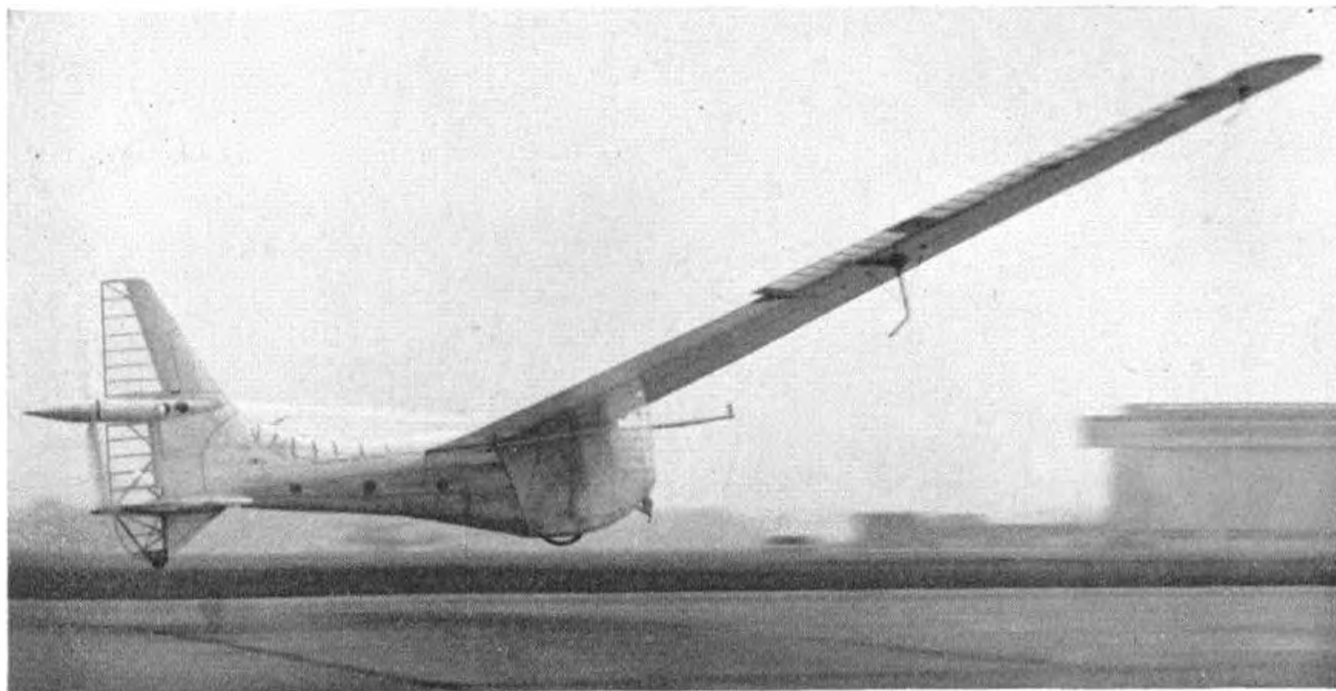
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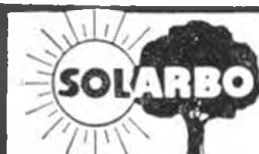
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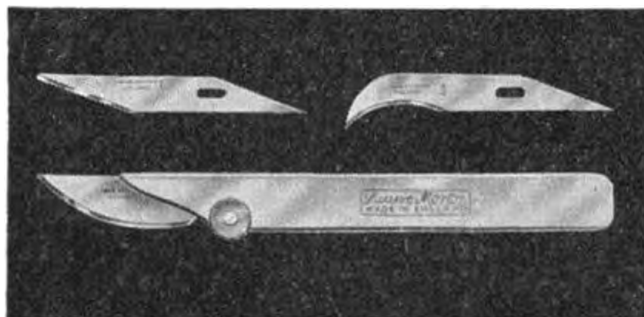
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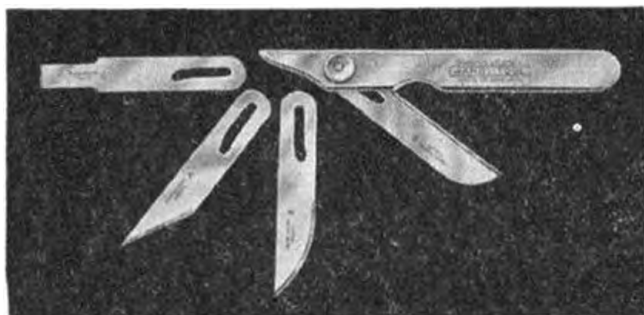
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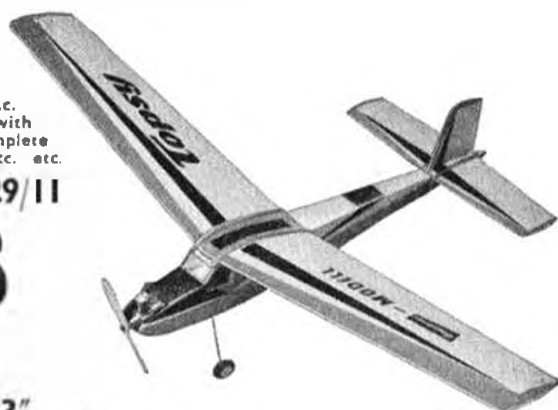
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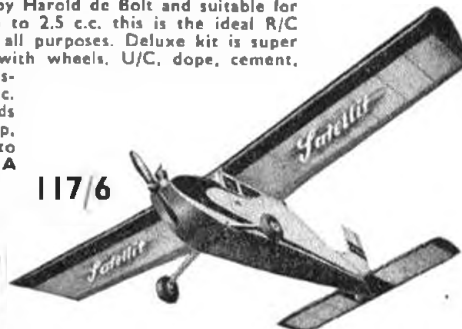
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HEARD AT THE

HANGAR DOORS

What better in our rotary wing issue than to have these U.S. Navy pictures of a jet helicopter picking up space-man Scott Carpenter from Aurora 7 after three orbits?



World Radio Championships

The greatest show ever to be held in Great Britain of radio control flying will undoubtedly take place at R.A.F. Station Kenley on August 17th, 18th and 19th, when teams from 13 countries will compete for the King of the Belgians individual championship trophy and the trophy donated by Model Aeronautical Press Ltd., publishers of this magazine, for the leading team.

Kenley is close to Whyteleafe, Surrey, approximately 7 miles south west of Croydon and 19 miles south of London. The nearest station is Whyteleafe or the 708 green line bus runs direct from Victoria, London, via Croydon to Whyteleafe. Admission will be by programme only for an all in fee of 5s. covering all three days. Car parking will be 2s. 6d. per day, motorcycles 1s. and a small saving can be effected by advance application to the S.M.A.E. Ltd., 19 Park Lane, London W.1. for a programme at 4s.

This will be an ideal opportunity of seeing the world's highest standard of radio controlled multi-channel model flying and should not be missed by any keen aeromodeller.



Team Trophy for World Radio Control Champs., which has been offered to the F.A.I. by Model Aeronautical Press Ltd., publishers of this magazine. It was specially commissioned from P. E. Norman, renowned modeller and sculptor, to symbolise team effort and r/c. Three orbital bands encircle a black globe, with futuristic model superimposed.

What a Whopper

L. Watson of Market Harborough, has just completed his largest model, though bearing in mind the maximum area for the definition of a model and the fact that there are real aeroplanes around of smaller wingspan and wing area, we would contest his title. It is a scale Auster Mark I, which he has been building since December 26th, 1961, and has a span of 14 ft. 9 ins. Test flights under radio control are anticipated soon at Lubenham airfield, but first Mr. Watson has had to buy a trailer for his car to take his project the three miles to the field. Wing area of the Auster is 4,320 sq. ins., which is just 2,000 sq. ins. too big for the F.A.I. definition of a model and required no less than 13 sq. yds. of nylon!

Indoor Information

Following last months' news of selection of the American team to attend the World Championships at Cardington for indoor models, we now have news from N.I.M.A.S. of the Central Area semi-finals held at Michigan State Fair Coliseum. Bob DeBatty is the leader in what was obviously a close fought contest, ousting last years' U.S. team manager, Dick Kowalski, by a slim margin and setting up the top time of the meeting. Dick led up to the last three flights, then Bob pipped his time by 14 seconds. Kowalski then put on turns for a 28-minute flight, hit a beam after 11 minutes, flipped upside down and lost a precious 30-ft. in recovery. This cost him the time needed to hold a team place.

Bob DeBatty	...	...	24 : 50.4	25 : 40.6
Dick Kowalski	...	...	25 : 32.0	24 : 45
Bill Hulbert	...	...	25 : 20	24 : 51.2

The East Coast representative is to be Bill Bigge, who was selected following a fly-off with Julius Rudy at Lakehurst. Fascinators at the semi-finals were Bill Atwood's twin motor *geared* model at Moffet Field and the swept tips by Sotich, Neumann and Smith to slide off obstructions at Michigan.

World Records

In our "Over the Waves" feature last month we mentioned an Australian claim for a world distance record of 63.25 miles, the flight being made on June 11th. We have now received an up to date listing of the homologated model records from the Federation Aeronautique Internationale and find that this attempt will not, in fact, be recognized because it does not surpass the distance established by Velitchkovsky and Guerassimov of the U.S.S.R. when they flew their Webra powered model from Alma-Ata to Ortakoudouk, a distance of just under 93 miles, on October 11th, 1961. The same aeromodellers established another record for distance in a closed circuit at Baiserke on September 30th, 1961 for a distance of 46 miles. Other radio control records are duration by Ken Willard (U.S.A.) of 5 hours 28:57 on April 15th, 1958. Height by N. Malikov (U.S.S.R.) at Volynitsevo at 7,380 ft. on July 26th, 1961 and speed in a straight line by Bob Dunham and Jack Bentley (U.S.A.) at 123.5 m.p.h. Apart from these three new radio control records, no other model record appears to have been established during 1961.

Damaging Publicity

It is an unfortunate fact that any publicity given to aviation whether model or full size in the National press is usually concerned with sensational accident. Even the most outstanding achievement is very often overshadowed in type space by the report of an incident where risk of life is involved. Press clippings are constantly being sent to us from all parts of the world to prove this point and although we do not mention many of them in these columns, we make an exception this month by bringing to your attention two reports.

The first is from the *Yorkshire Post* of June 26th under the headline "Model Plane Crashes on a House".

A clerical officer at the County Court Hull and his girl-friend were watching television when a 6 ft. span model equipped with radio control crashed through the bathroom window of the house, scattering parts all over the room and creating general havoc. The model was chased to its crash point by the operator who claimed that though radio controlled, the model went out of range. The father apparently agreed to replace the damaged window.

The *Rand Daily Mail* of July 2nd carried a report of a fatality involving a 14 year old schoolboy who was killed when he was hit in the chest by a 42 in. span radio controlled model. He and his friend were watching a demonstration at the Johannesburg Light Plane Club and apparently were standing on the roof of a single storey building. He was watching the model through binoculars and although told to duck, apparently did not realise the model was so close.

We have no need to emphasise the moral of these two reports. Our companion magazine, *Radio Control Models & Electronics*, has also commented on the dangerous demonstration flying by one of the group currently making simultaneous aerobatic flights at the rallies and galas. At every model demonstration where the general public is involved, there is an attendant problem of crowd control, but with a radio controlled model there is positively no reason why any model should be demonstrated above the heads of a crowd. Adverse reports of recent demonstrations have appeared in print and instead of gaining the publicity the demonstrators want, the result is a tendency to antagonism. What may be a thrill for the model operator is very often frightening for the observer. We do hope that those who fly in public places and who take it upon themselves to demonstrate at meetings where crowds are present, will take an adult view of this and fly with absolute care.

Successful Negotiations

Two clubs announce successful culmination of negotiations with local authorities. The Hayes and D.M.A.C. were very pleased to have the official opening of their

surfaced control-line track to be known as "The Hayes Circuit, Charville Lane" on July 28th. The tarmac circle extends to 140 ft. diameter with a 30-ft. wide track and 20-ft. diameter centre circle. Season tickets, lasting twelve months, are to be charged at 12s. 6d. and use is not restricted to members of Hayes club, but Wednesday evenings and all of Saturday and Sunday are official Hayes club flying hours, during which they have precedence.

The Sperry M.A.C. at Bracknell, Berkshire, have been allocated a flying arena by the local rural council in conjunction with a sports centre and no doubt this too will be a great stimulant for further activity in this district.

Action at Liverpool

There is no doubt about it, one has to go to the North Western Area of Great Britain for action (as well as argument) at S.M.A.E. committee meetings! In July issue we quoted their Newsletter concerning the rapid recovery made of stolen items from a car parked outside the committee rooms.

Now, in their latest Newsletter we read of yet a second incident as follows:

"The meeting had been in progress for half-an-hour or so when it was realised that an extremely unsavory looking character was tampering with the controls of a Bond Minicar parked opposite the Y.M.C.A. The thief recovery squad leapt into action and shot out of the building. A smart pincer movement left the criminal with no chance of escape, but in any case the Area greyhound, John O'Donnell was on the starting blocks. Having learnt that it is quicker to collect one's own Policeman, Sid Lawton did just that—from the same place as last time! The Law took away the youth and the meeting restarted after a break of only twenty minutes.

"We hope to break this record at the next meeting in Liverpool!"

"For those that may be interested, the two thieves caught at the meeting on April 28th were fined £10 each.

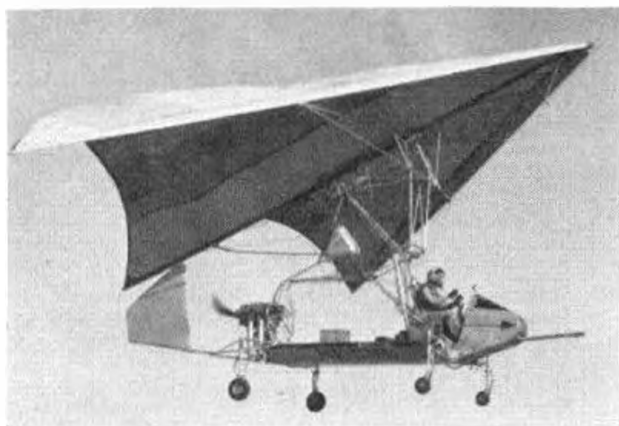
"The bloodhounds can be hired from . . ."

Action at Birmingham

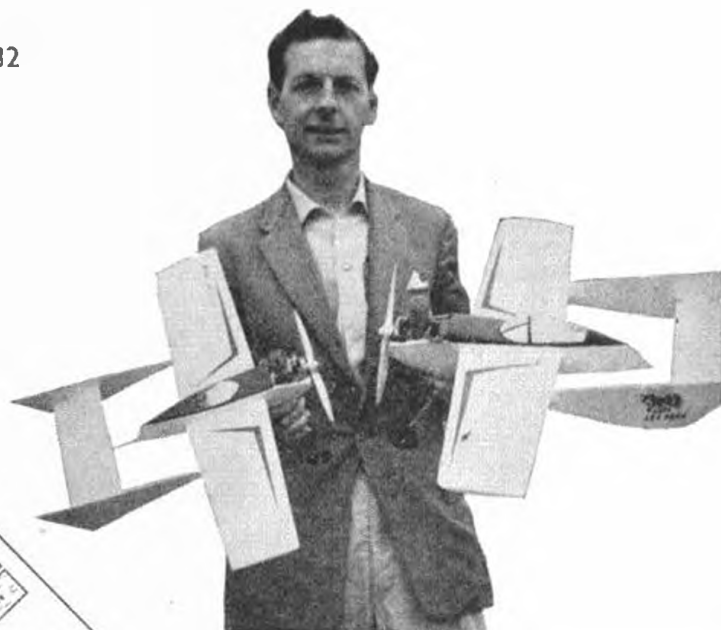
The open general meeting of the S.M.A.E. called at the request of the N.W. area at Birmingham on July 22nd, was well attended by senior members anxious to help in the re-framing of this society's membership structure. Arising out of a most enlightening open discussion, it was clear that the members present fully accepted the council's proposed revision of membership fees to be Junior (up to the age of 16) 12s. 6d. p.a., Intermediate (16-21) 20s. p.a. and Senior (21 and over) 40s. p.a. However, the recommendation that Associates be discontinued met with stiff opposition, and on a representative vote of 30 for, and four against, the motion was carried to retain Associates at an increased fee of 12s. 6d. p.a. The increased fees are aimed at an improvement of the financial status of the S.M.A.E. and to meet the increased commitments of new premises and an improved information service to members.

Insurance cover was extensively discussed with the result that certain improvements are to be written into the existing policy and various anomalies removed. Those who attended can justifiably feel that they have been of good service to the Society in providing the council with adequate guidance as to the feeling of the general membership, and from the number of comments regarding the society's welfare which were made, it is obvious that we are not lacking in enthusiasts who want to see the Society continue to flourish.

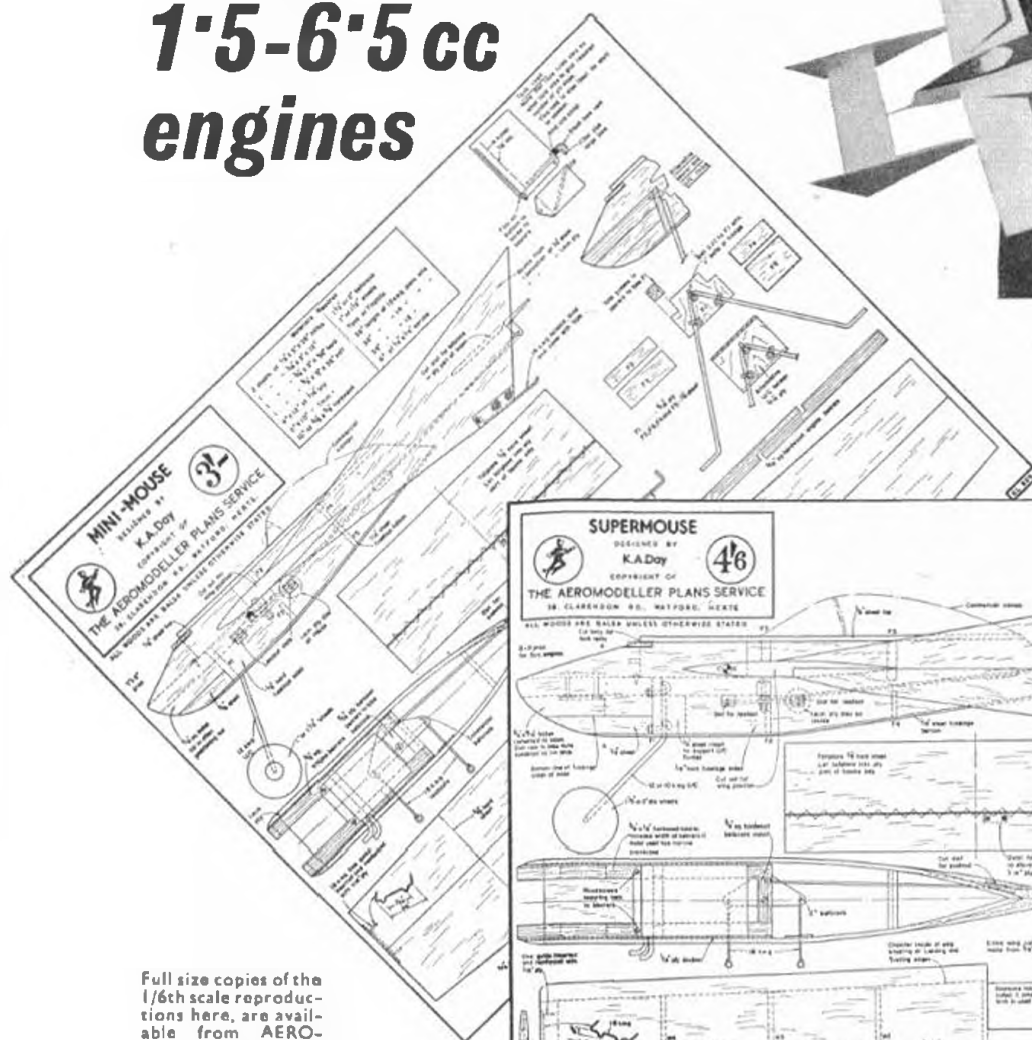
Project Parasol enthusiasts will like this picture of Ryan test pilot Lou Everett airborne in their test Flex Wing. Miniature r/c versions carrying cameras for observation are to be used by U.S. Army as the "Flex Bee", launched from jeep carriers.



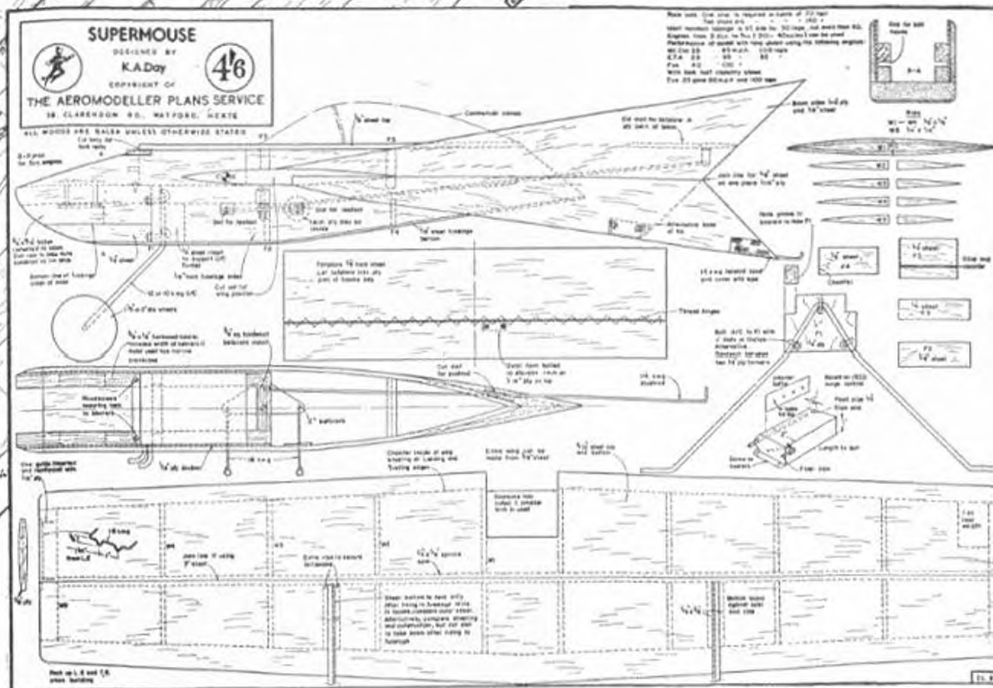
TWO Rat Racer designs, to suit 1.5-6.5 cc engines



designed by
Ken Day



Full size copies of the 1/6th scale reproductions here, are available from AERO-MODELLER PLANS price 3/- for Mini-Mouse, plan CL 825 and price 4/6 for Supermouse, plan CL 823. Add 6d in each case to cover post and packing



Summary of F.A.S.T.E. Club Rat Race Rules (Full details were in July issue)

OBJECTIVE. It is the purpose of the following rules and regulations to give modellers a simplified form of team racing; therefore, rules are kept to a minimum.

GENERAL. All S.M.A.E. regulations covering the flyer, the model, and the flight, shall be applicable, except as specified below.

AGE CLASSIFICATION

JUNIOR—Contestants of 18 years of age and under. All members of the R.R. Team, (pilot and 2 pit crew members) will be 18 years of age and under.

OPEN—Contestants of 19 years of age and under.

MODEL CLASSIFICATIONS

CLASS 1

Engine displacement .000—201 cu. in. (or to 3.293 c.c.).

Line Length. From centre line of handle to centre line of model—52 in. 2 in.

Line Diameter. .012 in. minimum.

Pull Test. 15 lbs. min.

CLASS II

Engine Displacement—.000—.40 cu. in. (00—6.55 c.c.).

Line Length—60 ft. plus or minus 6 in.

Line Diameter—.014 in. minimum.

Pull Test—30 lbs. min.

1. Models shall have a fixed two wheel, conventional undercarriage.
2. There shall be no restrictions placed on wing area, fuselage cross section or tank capacity.
3. Models shall be arranged for counter clockwise flying.
4. Models shall pass a general safety inspection prior to each race or heat.
5. Team will consist of one pilot, two pit crew.

RACES

1. 70 Lap Heat—one refuelling stop is mandatory. Motor must be completely stopped for refuelling. Best times go forward.
2. 140 Lap Final—two refuelling stops mandatory.
3. Failure to make necessary pit stops will result in disqualification.

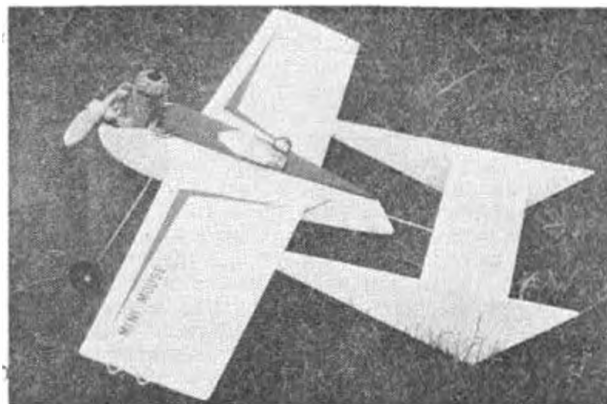
Mini-Mouse

CLASS I for up to .19 cu.ins

and

Supermouse

CLASS II for up to .40 cu. ins



Smaller of the two versions is Mini-Mouse above, fitted in this case with a Fox 15 glow plug engine & clearly displaying its functional lines. The fin cum tailbooms are surprisingly rigid and make for a change from the usual fuselage, arrangement, moreover they speed up construction considerably. Mini-Mouse has a solid sheet balsa wing but is otherwise of the same type of structure as its bigger brother. For the novice it makes an ideal introduction to model racing and teamwork.

THESE "MICE" LAY no claim to a long series of successes or development, having been designed and built in three weeks for the first British Rat Race. The larger model took second place on its first outing, and second only to Chas. Taylor and "Razzamachas", the Class B model (from October 1961 AEROMODELLER).

The top speed with an ETA 29 was about 100 m.p.h., but dependability and ease of operation are one of the main requirements, so streamlining and speed was sacrificed to that end. Many motors have been tried, and although the Combat Special engines give more speed, the ETA 29 keeps on going when the rest have stopped or can't start. The cool, exposed, head saves burnt out plugs too. One plug has lasted over fifty miles so far.

So if you want the thrills of team racing without the bother of engine, tank or airframe specifications, in fact a free for all approach, here are your ideal models.

They are as simple as possible, fairly strong but easily repairable. The main advantage however, is versatility. They can be flown with any motor from a 1.5 diesel to a 6.5 c.c. Glow. So either is ideal for the newcomer to racing.

Construction is straightforward, starting with the wing. Damp the outside of the balsa sheets so that they bend easily to the rib section, and use contact adhesive for the L/E and T/E. The bottom T/E sheet should be cut in three pieces, the centre one being fitted only at first. Build the fuselage around the tank and engine, and vary the width to suit; or *vice versa*, vary the tank and engine to suit the model until you hit your right combination. In other words, use the engine you've got, don't go out and buy one.

After assembling wing and fuselage, fix the laminated tailbooms to the wing and complete the sheeting. Mark a parallel line on the inside of the boom first, to assist in aligning the tailplane.

Add a cockpit canopy if you like, plenty of paint and polish and there you are.

In a Rat Race it is usually compulsory to make one pit stop in 70 laps and two in 140. So the tank size must be varied to give about 50 laps. The tank shown is 60 c.c. or 2 ozs. and averages 55 laps with the ETA. There are many theories on tank design, but a large baffle is essential in this form of tank to give a constant feed, and to avoid richening up after take off.

Now get to it and show the boys your tails!

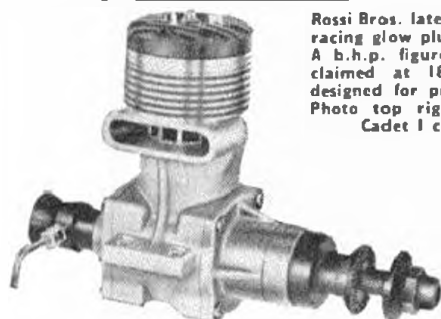


Constructional view above is of the Mini-Mouse before painting. The all sheet surfaces of either design make for easy finishing, and repairs, should they ever become necessary. Below is the larger of the two designs, the Supermouse with Fox 35 fitted in this case, though many other engines have been tested in prototypes. Apart from a revision to the underflins, shortening of vulnerable points (which are shown on the plan) there have been no design changes since the original model was flown to a second place on its first outing



THIS MAGAZINE'S CONSTANT campaign for trade attention to the silencer problem has at long last borne fruit in the announcement by E.D. Engineering Electronics Ltd., 1 c.c. *Cadet* diesel (pictured at right) When George Fletcher joined the E.D. company at its West Molesey factory, he set out to produce two widely contrasting engines. This is the first, and will be in full scale production soon. It is based on a modified *Bee* crankcase with two additions to the casting. At the rear there is a tapped stud for the screw in carburettor intake for side port induction, and in the centre of the exhaust stub there is a tapped bar to accept the exhaust silencer screw. Thus the silencer is detachable; but every *Cadet* will have the silencer fitted from new together with the spring starter, all in the economic price of 46s. 6d. plus 8s. 5d. Purchase Tax. The result is an engine aimed specifically at the mass market and for the novice, yet with silencer fitted, the r.p.m. figure on an 8 x 4 in. prop is the same as that for the disc induction *Bee*.

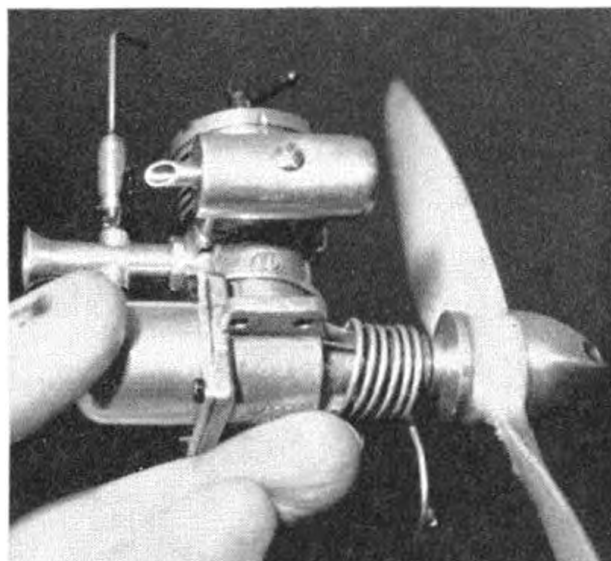
MOTOR MART



Rossi Bros. latest effort is a 10 c.c. racing glow plug engine seen here. A b.h.p. figure of 1.84 has been claimed at 18,500 r.p.m. It is designed for pressurised fuel feed. Photo top right shows the E.D. *Cadet* 1 c.c. prototype

Changes in design affect the cylinder in the main. It is thicker than before and is parallel from base to top, with a small locating flange on the exterior. Transfer passages are on the outside of the lower cylinder leading up to $\frac{1}{8}$ in. diameter pair of ports, set at 45 degrees so that there is an overlap over the exhaust timing. Induction is of course piston timed and the flat top piston has no change from that of the *Bee*. By using the same crankcase, the *Cadet* will fit many existing models, kits and plans, a wise move indeed! Incidentally, George's other engine will be a 10 c.c. radio control special known as the *Condor*.

The *Model Trade Federation* is concerned about the silencer problem to the extent of issuing a memo to all engine manufacturers urging them to fit new products with silencers. A letter from the Leatherhead & D.M.F.C. stating local experience has stimulated this move. Apparently this club had insisted on silencing of all engines over 1.5 c.c. in the case of glowplug and 2.5 c.c. diesels. Not many silencers have had to be made as the



majority of members used smaller capacity engines but following complaint, the local council is reviewing the licence given to use a sports ground. The Club appealed to the Model Trade Federation for availability of crankcase/silencer attachments to suit a list of 19 British engines and asked for information on likely developments in view of their position. This wise approach has at least brought the MTF into the picture and we hope will result in some action.

There is one type of engine which is excluded from the silencer requirement mainly because of its prime purpose of obtaining maximum speed and also because it is usually employed in remote parts of airfields. This is the racing engine and the other announcement in picture form this month is the Rossi Brothers' 60. With a definite McCoy ancestry, this rear induction 10 c.c. unit has practically 15/16 in. bore (actual figures quoted are 23.9 mm. bore and 22 mm. stroke) for a weight of just under 15 ounces and a claimed power of 1.84 h.p. at 18,500 r.p.m. This is indeed an ambitious claim but already the motor has made its mark in Italian contests. At the "Coppa Shell" on July 7/8th Cesare Rossi came 2nd at 151.6 m.p.h., beaten only by brother Ugo who knocked up 160.3 with a McCoy 60. At the same meeting, Ugo also won the other 3 classes including 2.5 c.c. standard 75/25 fuel at 140.43 m.p.h.! This was with a 5½ x 8 in. propeller and Monoline, Super Tigre G. 20.



We apologise to readers for the lack of an "Over the Waves" feature this month, but draw their attention to a most comprehensive review of all that is new from the World's radio control industry, in our companion magazine *Radio Control Models & Electronics* this month. *AEROMODELLER* for October will of course include a full report on the World Radio Control Championships to be held at R.A.F. Station Kenley August 17/18/19th.

Reader's Letters

Wakey-Wakey!

DEAR SIR,
"How to run a Club" (July issue) gives sound advice to secretaries, with particular emphasis on the encouragement of new members and their all-important subscriptions.

Having the urge to resume active modelling and flying, I wrote to the secretaries of two local clubs (addresses supplied by S.M.A.E.) asking for details regarding facilities and club meeting nights.

Six weeks later one replied, stating that a 'phone call would be more convenient. In spite of a second letter (each accompanied by a stamped addressed envelope) nothing was heard from secretary No. 2.

My enthusiasm has somewhat evaporated! Norwood, A. H. BEETS.
London, S.E.27

Who lost them?

DEAR SIR,
Can you help by locating owners of the following "found" items—

1. A kit "Slicker" found in the Woodley, Stockport area a few weeks ago. This was probably, although not necessarily, lost from the Woodford rally. No address label, but has "Huddersfield Aeromodellers" in pencil on the wing. Practically undamaged. Currently in possession of Mr. Nelson of Wythenshaw.
2. Battery leads with Cox type clip, tin of Cox Glow Fuel. Left at Area Champs., Barkston Heath. Now in my possession. Salford 6. JOHN O'DONNELL.

DEAR SIR,
I found a black and yellow K.K. Halo powered by Mills 1.3 at High Eldwick, the model had evidently been lost from Baildon Moor.

The model is without name or address and is evidently a beginner's work.

As a once keen modeller, I would not wish anyone to have to lose what may be a precious engine.

Guiseley, Leeds. ROBERT S. WALKER.

(We will gladly forward claims to the respective correspondents and also point out the other model found at Whitchurch, mentioned in Club News this month—what a lot of trouble a permanent address label saves!—Ed.)

Toujours la politesse!

DEAR SIR,
How rude can people get? Whilst flying C/L on Stokes Bay common with a friend, a maniac on a bike came tearing towards our lines, which were laid out on the ground. When asked to stop, he wouldn't and rode into them, breaking the "up" line. He then had the nerve to tell us WE were a menace to the general public (there were 3 people on the common at the time). We suitably singed his ears with the appropriate comments and then left. Some people!

R. S. CRAIK.

Gosport, Hants.

Whichaway?

DEAR SIR,
Someone may learn something from the following:—

Two friends each built an Empress Glider fitted with R.C. "A" towed his model up 200 ft. Sunday morning. R/C didn't function, model flew dead into north wind and kept

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



going. "A" warned "B". "B" taking no chances towed his model 50 ft. Model caught thermal, lost in cloud flying south, no D.T., no address. Maybe we don't deserve it, but we would be very glad to get even one back. Has anyone found one?

E. HICKINGBOTHAM.

Radlett, Herts.

Drop elanger

DEAR SIR,
Reading through the reports of Club activities—page 352 of July copy, Para 6, re Horsley M.F.C. and counteracting blushing after doping. Oil of Wintergreen additive. The proportions seem rather misleading. It is stated "Proportions are about half an ounce to the pint." Say, 9 or 10 drops to the pint—to be really scientific — 1/300 to the pint."

In the first instance half an ounce is 240 minims or drops—apothecary's measurement being 480 minims to the ounce.

Secondly

9-10 drops seems to be the real proportion to the pint.

Thirdly

1 300 part to the pint seems to work out at 32 minims or drops 480 mins to the ounce. 20 ounces to the pint. 480 x 20 = 9600 minims or drops.

300

300/9600(32 mins.

A. DONNITHORNE.

Wotton Under Edge, Glos.

(Sorry lads! We've prescribed an overdose—but it depends on the size of your drops!—Ed.)

Model shops

DEAR SIR,
Re letter the "Right Retailers", July issue. Mr. Saunders is certainly right regarding the sale of model kits. To see these being sold in any bric-a-brac store is pure desecration, in fact degrading to the hobby. This type of retailer couldn't tell the difference between a spray bar and a pitch fork and couldn't care less if the box contained only cotton wool, so long as his turnover is maintained. The cure!!—is for local club members to protest in a body, to the kit maker and supplier. The traveller is at fault. The aeromodelling movement is a specialized hobby and when it drops to the level of plastic kits, just gluing together, it will not be a constructive hobby any more. The establishment where the gentleman behind the counter knows what he is talking about is a gem, and let us hope

the day will never come when the multiples push this type of shop out of business. Most British firms realise this; but German firms are beginning to knock at the door, in fact one is travelling to supply direct from Germany. I wonder will they supply anybody? The perks of the aero trade is engines, and what does happen is precisely this. The enthusiast goes to his local model shop, buys a tin of dope and a tube of balsa, spends half an hour in the shop keepers hair, getting the latest gen, then goes down the Post Office and orders his engine, but mark you he still expects his model shop to potter with his 2d strips of balsa and his two sheets of Modelspan. Another oddity at Barkston Heath (and mind there were some, my uninitiated friend who was not an aeromodeller, made the prize remark "Here comes another Wierdy"),—was a Club caravan—cum retail shop, selling from fuel to hair pins, cum plastics from 6 o'clock on a Sunday morning in the Holy of Holies—The Nats. Praise be, what with the rise in rates, the competition of postal selling, the banning of flying fields, the advent of plastic flying kits and the rise in balsa cement, why not pull the lever and hang the Poor Old Hobby Shop Proprietor.

W. EVANS.

Sunderland, Co. Durham.

Glass fibre tanks

DEAR SIR,
May I add a word on G/Fibre fuel tanks. Tanks made on a MALE mould I can briefly dismiss as O.K. However, tanks made in a FEMALE form are a much trickier proposition. Bondaglas do in fact publish a pamphlet (sixpence. I think) on the construction of motorcycle petrol tanks and the warning against female moulded tanks will also be found here.

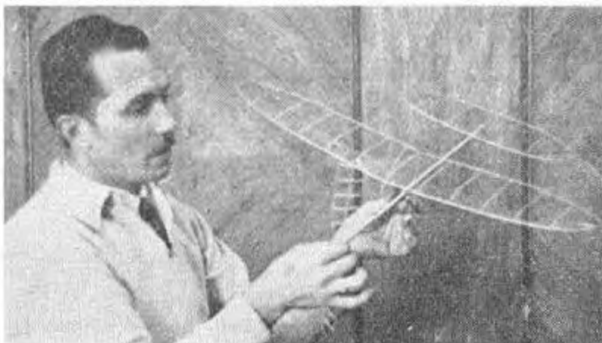
The fact is that, on all glass fibre mouldings having only one side in contact with a mould, the side exposed to the air will have a microscopic layer of uncured resin, this is due to a little thing known as "air inhibition". Petrol, oil, indeed all "hot" fuels will attack this uncured layer and leave it finally in the works of an engine, gumming up jets, bearings and rings where fitted—and this happens in an incredibly short time. In fact, I know one chap who owned a Vincent motorcycle who absolutely wrecked his motor when it seized solid at high speed due entirely to this phenomenon. He was of course using a G/Fibre petrol tank.

B. R. NEWMAN.

Chippenham, Wilts.



"Herbie—it's quite plain in the instructions—this is an Autogyro, not a 'copter—the engine drives the prop not those rotors!"



WORLD NEWS

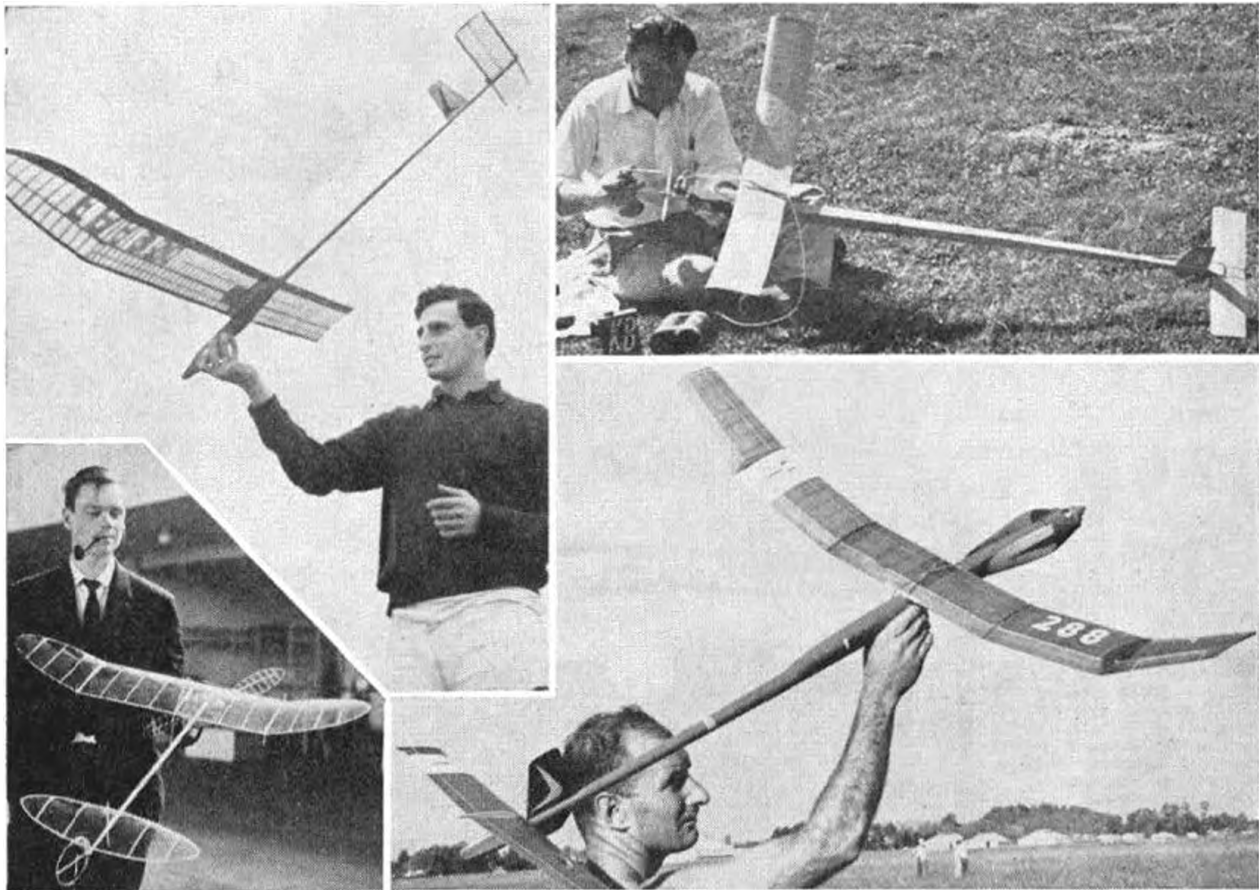
THE FIFTH German Championships for slope soarers took place at the Wasserkuppe 9—11th June, attracting 69 A/2 size and 14 tailless magnet steered models plus 56 radio controlled soarers. Beautiful weather made it a memorable event, Helmut Schubert winning the magnet class for a second year, this time with 5, five minute max's while his daughter became junior champion. Joachim Heise won R/C and in the tailless class, Zikesch's winner featured a novel forward fin of symmetrical section and having a slot right through the centre. Two weeks later there was an International slope event at the Tauernpass in Austria where 31 entered. Since the site is about 5,000 ft. altitude, there was snow around, making a picturesque background. Italian, German (including Berlin) and Austrian modellers enjoyed ideal conditions. Bavarian entrants led in each class.

In Switzerland, the team trial for the R/C reps to come to Kenley resulted in two leading places for the Orion flying, C.G. equipped Geneva men, Claude Sauthier in first place and Andre Mathey 2nd. Third man is Freddy Bickel using the well known low winger. Other team trials in Hungary for the control-line Champs have produced the stunt team of Dr. G. Egervary, G. Masznyik and L. Ordogh while from the first speed elims, Krizsma, Toth and Vitkovics are familiar leading names. Other trials in Finland appear to have placed the Sundell brothers, Guy and Olof along with junior Juhani Kari as the stunt team and the Saukkonen and Sundell bros. in team race. Finnish Aero Association set a qualifying time of 5:15 for racers and 180 k.p.h. for speed. Thus far there are no speed qualifiers. The Finnish Indoor team is Esko Hamalainen, Arto Tauria and the ubiquitous Harry Raulio with R. Hyvarinen as manager. Elims were held under a 43 ft. ceiling.

While the British Nats were taking place, the Finns held the 11th Chrysler-Plymouth sponsored meeting in gale winds and rain at Helsinki for the first rounds. Then amazingly, the sun broke through and dead calm prevailed. Lucky Finns! Once more, the Sundell Bros. and young Kari fought out top three stunt places. Team race went to Saukkonen at 5:40. His trials time was 4:57.

Maybe this is just in time for holidaymakers in the area. The "Aero Club of Walldorf" in Germany

Top: Brotherly team race winners in FINLAND, L to R, R. & K. Sukkonen (2nd), O. & O. Niemi (1st) G. & O. Sundell (3rd) . . a record? Top left is elegant tailless magnet model by Ing. Dokuli of Salzburg AUSTRIA, made 2 max's then lost at International reported in text. Other swept for'd & back T'less is Heinz Unger's 5th placer from GERMANY. Team racer is a 1/4 A all the way from F. Boer, S. AFRICA using Oliver Cub, 6 x 7 Tornado prop, has made 5 miles in 4:21, this at 6000 ft. altitude weighs 13 oz. based on Miss F. A. I. Bottom is ARGENTINE indoor champion Nereo Beggiato who made 8:19 flight with this model.



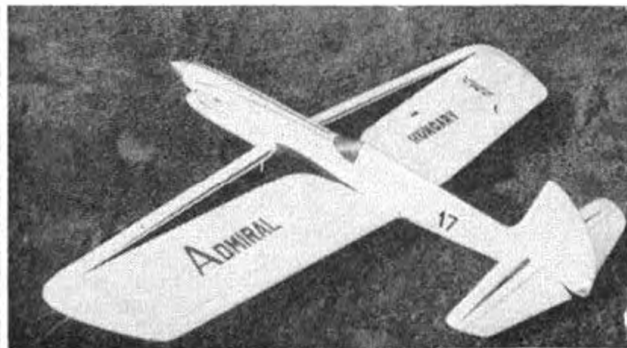
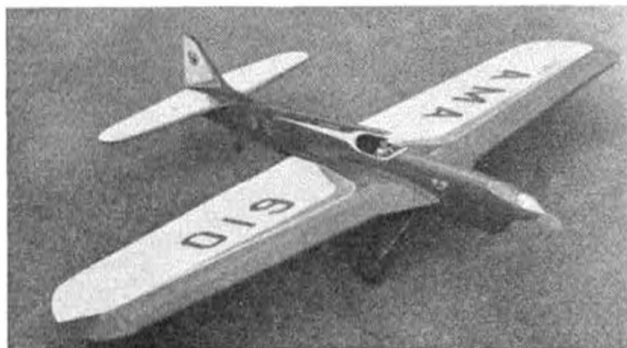
Top left: Almar Mattano, who leads ARGENTINE A/2 team with own design. Bottom right is E. Colombo's Wake leader, his latest, showing fences at dihedral breaks & short motor section. Top right is Rudy Thomas who believes in making his models long,—this a 1/4A power type from Calif., U.S.A.—where else? Left is Harry Raullo, taking to peaceful indoor and now qualified in '62 team for FINLAND

announces an International free flight contest near their town which is close to the Autobahn, 10 miles south of Mannheim, on September 9th. Earlier announcement might have attracted a few British modellers.

The Argentinian National Championships took place at Buenos Aires in April with a total of 268 entries made in the range of twelve contests. Best supported was A/2 glider with 70, and lowest, multi R/C with 4. Marcelo Ley won single channel with an A.M.25 powered *Spirit* and Enrique Arance, multi with CG Midas/Hercules *Stormer* combination that amassed a 5,850 pt. lead! In the A/2 glider class, Hansen's Danish *Aurikel* was popular, taking top 2 places, Hector Carcano leading

with 618 secs. while Wakefield went to Alberto Sandham with 781 secs., using a 20 strand motor of Pirelli 1 x 4 mm. Stunt was as ever, a *Thunderbird* and *Nobler* mixture, Carlos Garibaldi taking a narrow lead with Veco 35 *Nobler* over Favale's Fox 35 T'bird. In A/2 glider, A.P.S. *Aiglets* were first and second, Pablo Carcano's winner knocking up 651 secs. Juan Godoy used a Cox TD 15 *Space Rod* to win F.A.I. power and he also retained first position in the team trials which follow the Nats. F.A.I. free flight classes are repeated so that a strong Argentine contingent is selected for the S. American Internats. After the second contest, Mattano led A/2 and Colombo the Wakefield teams (see pictures).

Left: Bob Palmer's latest,—the "Skyscraper", a 60 in. large area 55 oz., model for the 45 & 49 engines, has differential elevators, flies slow and with precision, Bob's best yet. Right is Moki 6cc powered "Admiral" with obvious Steve Wooley influence by Gabor Masznyik of HUNGARY, will be flying in World Champs at Kiev





R.F.C. SQUADRON MARKINGS

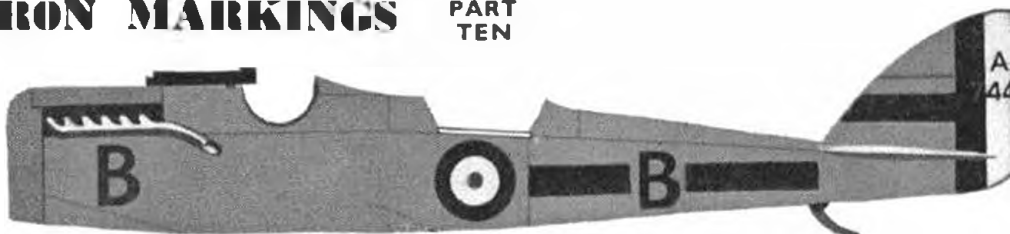
PART
TEN

Described by

Leslie A. Rogers

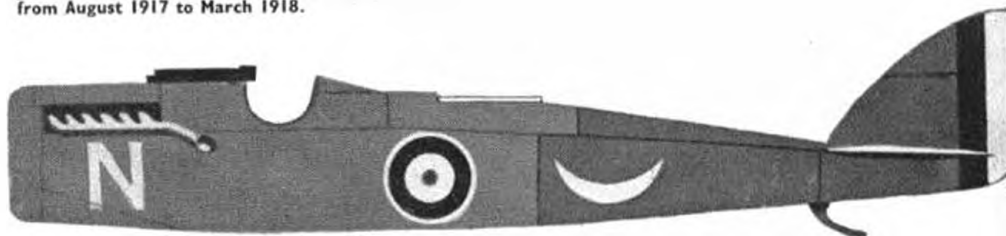
Drawn to 1/72nd scale

by K. McDonough



F.E. 2b/2d drawings at top show two markings on nose. Early type D.H.4 Sqn. and individual markings on A7442 June 1917, all in black, above. Later D.H.4 markings below, from August 1917 to March 1918.

"The Scotch Express", a 25 Squadron F.E.2b showing the pillar mounted gun for aft firing and the gunner in firing position for forward action. Note the Squadron marking variation in this case. H.H. Russell photograph.



Number 25 Squadron R.F.C.

Went to France on February 20th, 1916 equipped with F.E.2b's later receiving F.E.2d's until June 1917, when re-equipped with D.H.4's.

Using F.E.2b's/2d's. Squadron Marking. The Squadron claim to have been the first Squadron to use distinctive Squadron markings. Not officially, as became standard later on, but nevertheless a definite Squadron marking.

An access panel on the nacelle sides was outlined in black to prevent overstripping with fabric. This produced two horizontal black bars in parallel joined vertically at the ends. This marking incidentally has remained with No. 25 Squadron throughout its long and distinguished service. Some F.E.s had the black bars painted horizontally round the nose. (See picture.)

Using D.H.4's (Early period).

Squadron Markings. Again the Squadron used a non-standard marking to start with, and again in black as the first batch of D.H.4's were clear doped. A single horizontal Black band ran from behind the fuselage cockade to the leading edge of the tailplane. This band was repeated on the fin.

Individual markings were by letter, painted in black on the fuselage sides about half way along the Squadron marking which was broken to take the letter. Letter was repeated in black on the nose, below the exhaust manifolds.

The original establishment was 16 aircraft and below are given the individual letters and serial numbers of each D.H.4.

Aircraft "A"	A'2159	Aircraft "J"	A'7562
Aircraft "B"	A'7442	Aircraft "K"	A'7602
Aircraft "C"	A'7470	Aircraft "L"	A'2176
Aircraft "D"	A'7497	Aircraft "M"	A'7609
Aircraft "E"	A'7505	Aircraft "N"	A'7626
Aircraft "F"	A'7527	Aircraft "P"	A'7664
Aircraft "G"	A'7652	Aircraft "R"	A'7823
Aircraft "H"	A'7535	Aircraft "Z"	D'8372

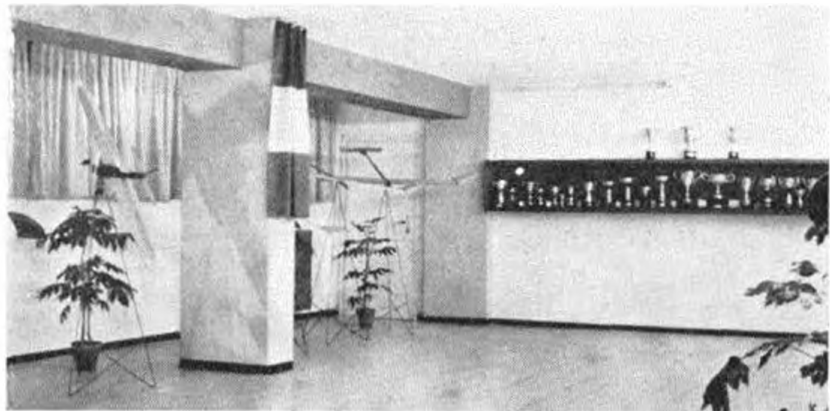
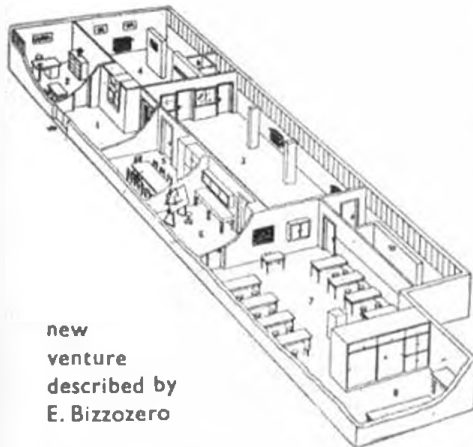
Using D.H.4's (Later Period)

Squadron Marking (carried from August 1917 to March 1918) was a Crescent painted white on the then standard khaki finish behind the fuselage cockade.

Individual Markings. There is uncertainty but it seems from a very poor photograph that the letter was painted on the nose panels only, and not on the fuselage sides. The letters used are almost certain to be the same as those used before, with the addition of, probably, O, Q, and S.

After March 1918 the Squadron marking was not used, and presumably the letters remained the same.

(Many thanks to Flt Lt C. P Cowper, R.A.F. No. 25 Sqn. History Officer.)



Italian Aeromodelling School

THE AERO CLUB of Bologna in Italy has just established its "Zanotti" school for the instruction of aeromodellers. The scheme has been so effectively adopted that it is likely to become an inspiration for many other Italian groups and the first of a whole series of aeromodelling instructional sections among the regional and town aero clubs.

Ing. Aurelio Ortelli has been responsible for the promotion of this school at Bologna through his indefatigable work. As the diagram shows, room 1 by the entrance is for reception and is decorated with a very large picture of a modeller launching the sailplane. Turning left into room 2 there is a secretary's office equipped with desk, files, typewriter, etc. Forward from reception into the largest room, No. 3, which measures some 21 x 42½ ft. and is suitable for meetings, prize distributions, etc. A display of the numerous cups, which the Bologna group has won during its many years of activity, is mounted along one wall and from this room there is access to others. Room 4 is for the pupil pilots of the aero club. Room 5 is a quiet library well established with Italian and foreign aeronautical magazines and books. Room 6 is equipped with a drawing board and all accessories for designing, and room 7 is the lecture room which will take eighteen pupils in a class, seated at work tables and divided by a large store cabinet for materials from room 8 so that uncompleted work can be removed from the tables and put

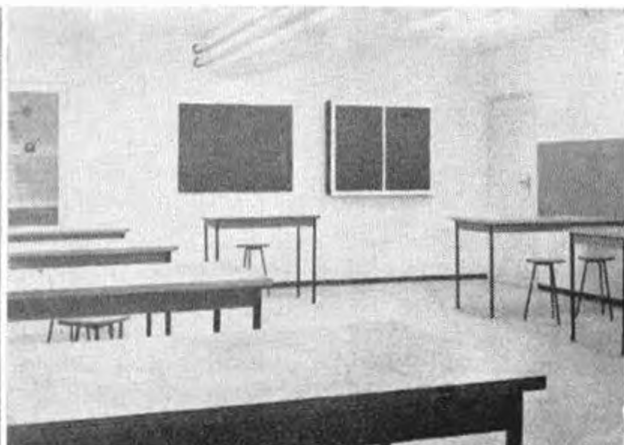
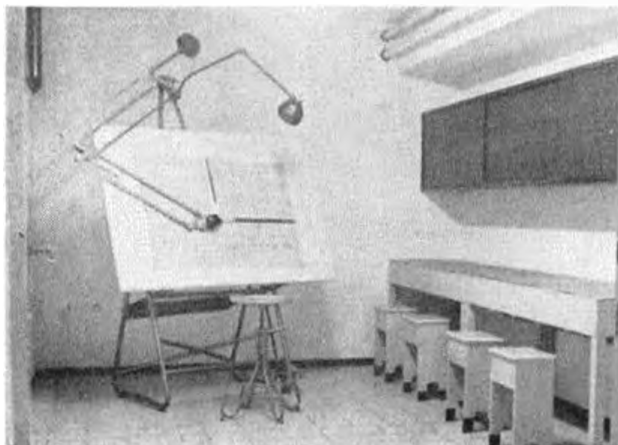
Diagram of the school layout illustrates the large floor area and well designed disposition of rooms. Photograph is an interior of room 3, the central assembly hall with models attractively displayed on wire mounts and the trophies won by the Bologna group mounted along one wall. The door in the corner gives access to room 10 and then to the lecture room No. 7 in the diagram

away, leaving the lecture room clear for another class. Hand and machine tools are supplied and room 10 is used as a general store.

The school forms the ground floor of a new school house with independent entrance. Each room has adequate light and power fittings and there is heating for the winter months. Furnishing has been chosen with good judgement to balance the attractive decor of the walls.

Those who have generously contributed to this school from various leading bodies in Bologna can justifiably be proud of their achievement under the direction of Ing. Ortelli. It is certain that through their efforts they will be contributing generously to the aeromodelling movement in Italy with a commendable influence on youth activity. Other Italian modelling groups who are currently operating without a permanently established headquarters will undoubtedly be envious of the school and will have to roll up their sleeves to achieve the same object—come to that, why not have the same here in Great Britain? It would make an ideal S.M.A.E. headquarters,—if only we could find people like Ing. Ortelli to inspire authorities in the provision of support for the most ideal course of action.

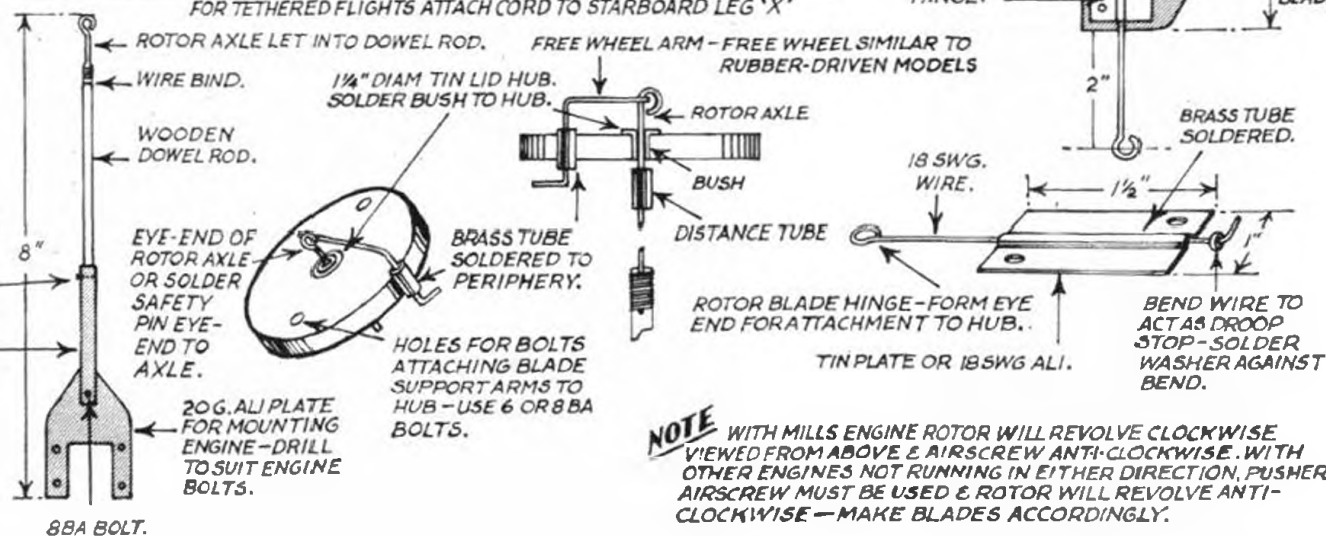
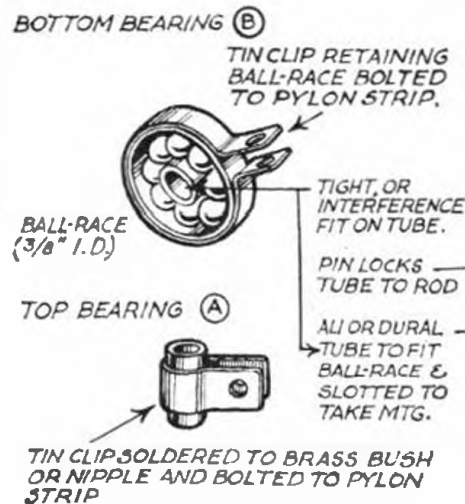
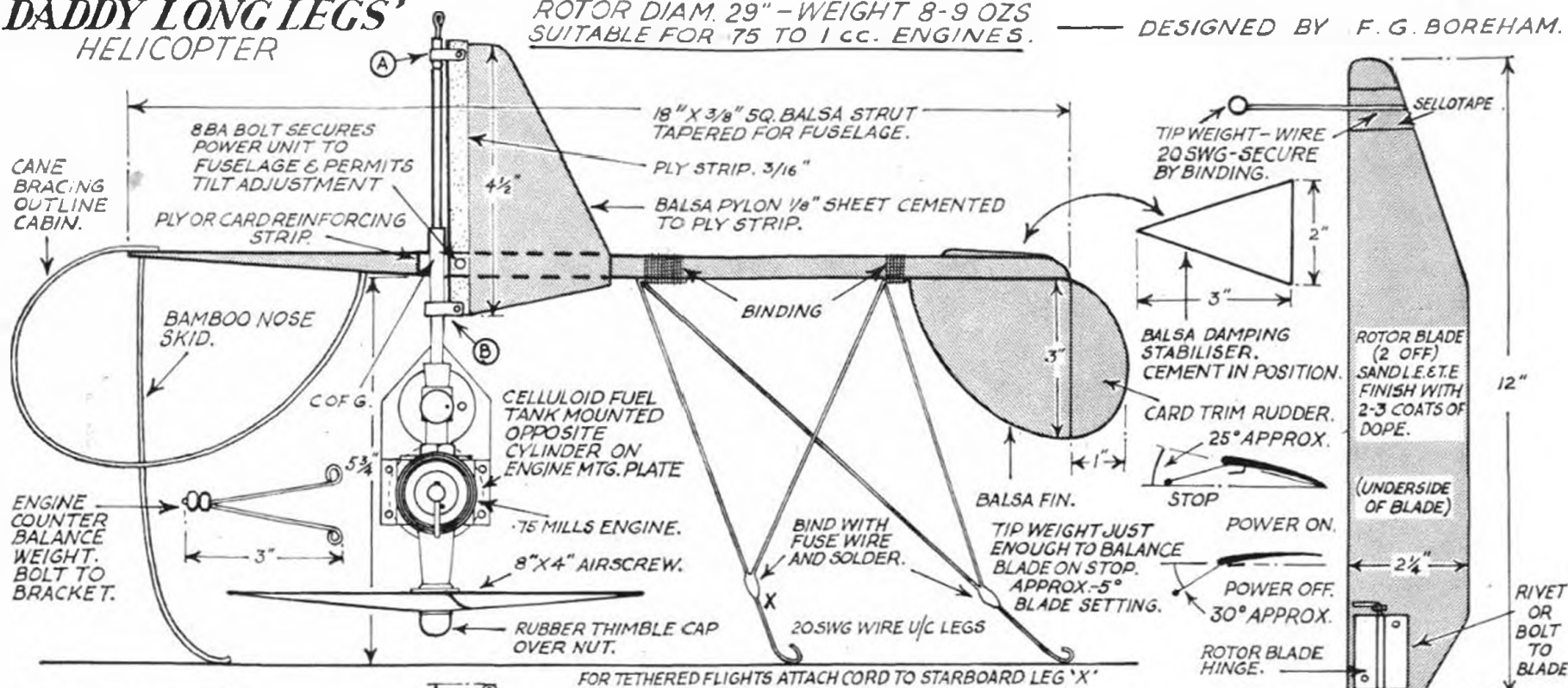
Below at left, the interior of room 6 which is used for design instruction and is equipped with all drawing instruments including a more than adequate drawing board, to the right is an interior of the lecture room No. 7, showing the blackboard and work tables which can accommodate eighteen pupils for instruction at any one time



'DADDY LONG LEGS' HELICOPTER

ROTOR DIAM. 29" - WEIGHT 8-9 OZS
SUITABLE FOR 75 TO 1 cc. ENGINES.

DESIGNED BY F. G. BOREHAM.



NOTE WITH MILLS ENGINE ROTOR WILL REVOLVE CLOCKWISE VIEWED FROM ABOVE & AIRSCREW ANTI-CLOCKWISE. WITH OTHER ENGINES NOT RUNNING IN EITHER DIRECTION, PUSHER AIRSCREW MUST BE USED & ROTOR WILL REVOLVE ANTI-CLOCKWISE - MAKE BLADES ACCORDINGLY.



Try a helicopter !

Daddy Long Legs

introduces the low-slung
'safe-fly' engine mount
for a torque-reaction type

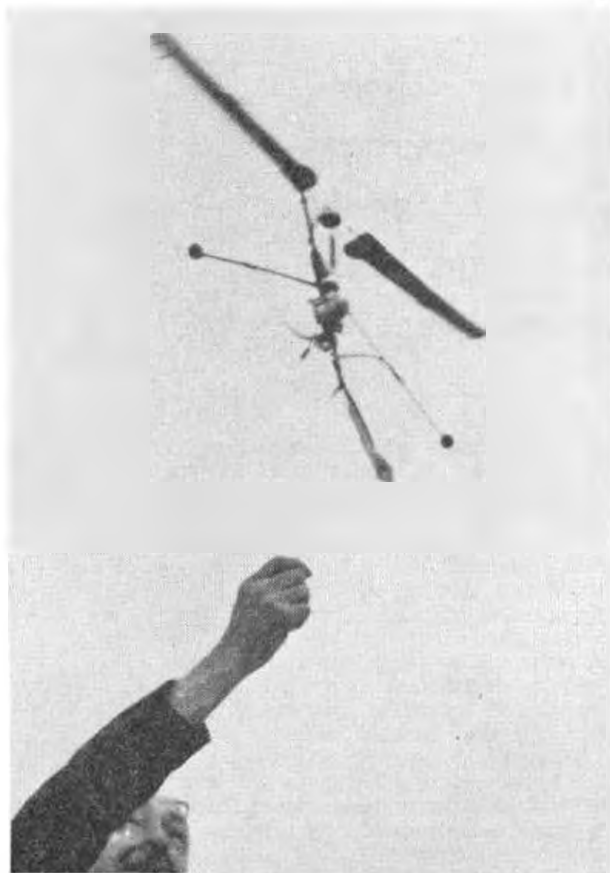
Photographs illustrate the Daddy Long Legs as drawn, above, and the earlier Spraycopter at right and below. Tethered flight is ably demonstrated by designer Francis G. Boreham at right. Low engine mount gives added stability. Scrap parts and wood come in handy for these novel easy to build whirlybirds



THIS DESIGN STARTED life in 1961 and equipped with a spray tube device, flew at Northern Heights Gala known as the Spraycopter. It has now been improved and christened "Daddy Long Legs" or "Crane Fly" as the long wire undercarriage legs suggest the names from appearance.

Engines from .75 to 1 c.c. are suitable. The Mills .75 was used, running equally well in either direction enabled propeller diameter experiments to be made without using special pusher screws. In this connection an 8 in. by 4 in. was found to be the best compromise.

It flies well tethered with a cord from the starboard undercarriage leg and accomplished steady circles in an anti-clockwise direction. Naturally it also free flights.

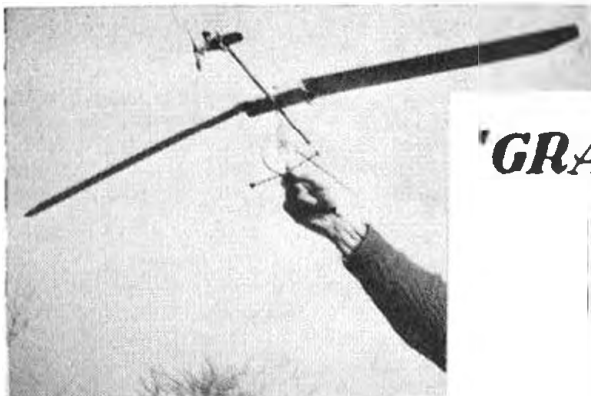


The free wheel works like a standard rubber job but of course requires engaging when engine is started before releasing for flight.

Construction is straightforward, but care should be taken to fit and drill the engine mounting plate concentric. The engine is balanced by a small bob weight on wire stays opposite the cylinder and attached by the mounting bolts. The blades feather on torsion hinges in the usual manner and have bob weights.

Experiments are continuing with an automatic free wheel and also a shroud to shield the prop.

The top of the rotor axle is formed into an eye-end, so as to engage the free-wheel arm, after the manner of the old free-wheeling rubber driven propellers. When the engine is started and before flight, holding the model by the pylon and rotor axle shaft, it is simple to engage the drive, as the free wheel arm enters the eye-end. The engine shaft cannot drop, due to interference fit of shaft and ball-race, and also the top bearing. The tin lid hub is provided with a brass tube or bush, soldered and is an easy running fit on the rotor axle, as shown on drawing.



A very simple power-boom type helicopter, easily made from these design details.

THIS IS AN easy to make model helicopter for the Pec Wee .02 engine and is a good introduction for the powered boom rotor system.

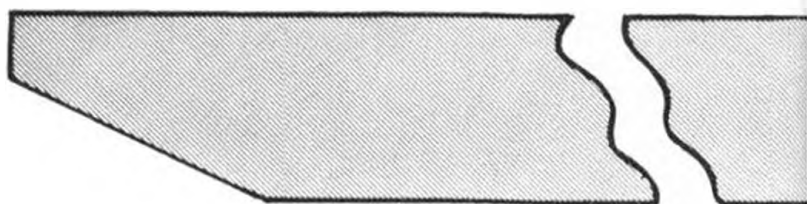
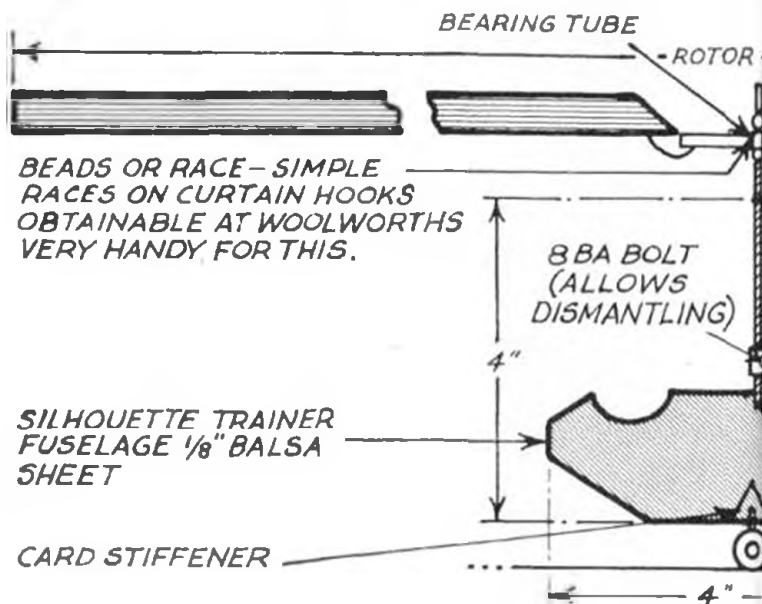
As the engine drives the beam, the rotor revolutions are lower than with previous "Jetticopter" designs, so the initial blade pitch setting is higher at 10 deg. to 20 deg., the wire can be adjusted with pliers. The wire rotor axle is made from a cycle spoke or similar gauge steel, and has a tin clip soldered and drilled to take the 8 B.A. bolt. One end of the axle fits into a slot on the fuselage body, the clip and bolt hold it secure to the vertical pylon shape silhouette, and facilitates dismantling. Alternatively, if soldering is not possible, the axle may be attached by Sellotape binding to the silhouette fuselage.

General construction is quite simple as seen from the plan, the blades are made from 1/16 in. hard balsa sheet sanded and fitted with flapping skew hinges.

Bend wire blade supports carefully to ensure equal pitch about 20 deg. in horizontal position, and see that hinges have been fitted in the correct way to throw off pitch as the blade rises. Small wire stops are fitted to the hub to prevent blades drooping below horizontal. If aluminium tube is not available for the boom, 1 in. x 1/2 in. balsa may be used, suitably tapered and sanded. In fact the model at the 1961 Northern Heights Gala was fitted with one. Balance as well as possible. The rotor system is quite stable and higher and longer flights may be obtained without the fuselage. See that the plastic fuel tube pick up is to the left side of the tank as the rotor revolves in a clockwise direction. Slightly washed out tips improve autorotation.

'GRASSHOPPER'

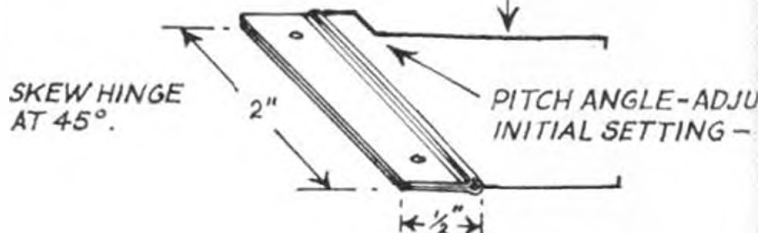
SIMPLE POWER



ROTOR BLADES 1/16" BALSA
(2 OFF)



20 SWG PIANO WIRE SUPPORT - BIND TO HUB WITH THREAD

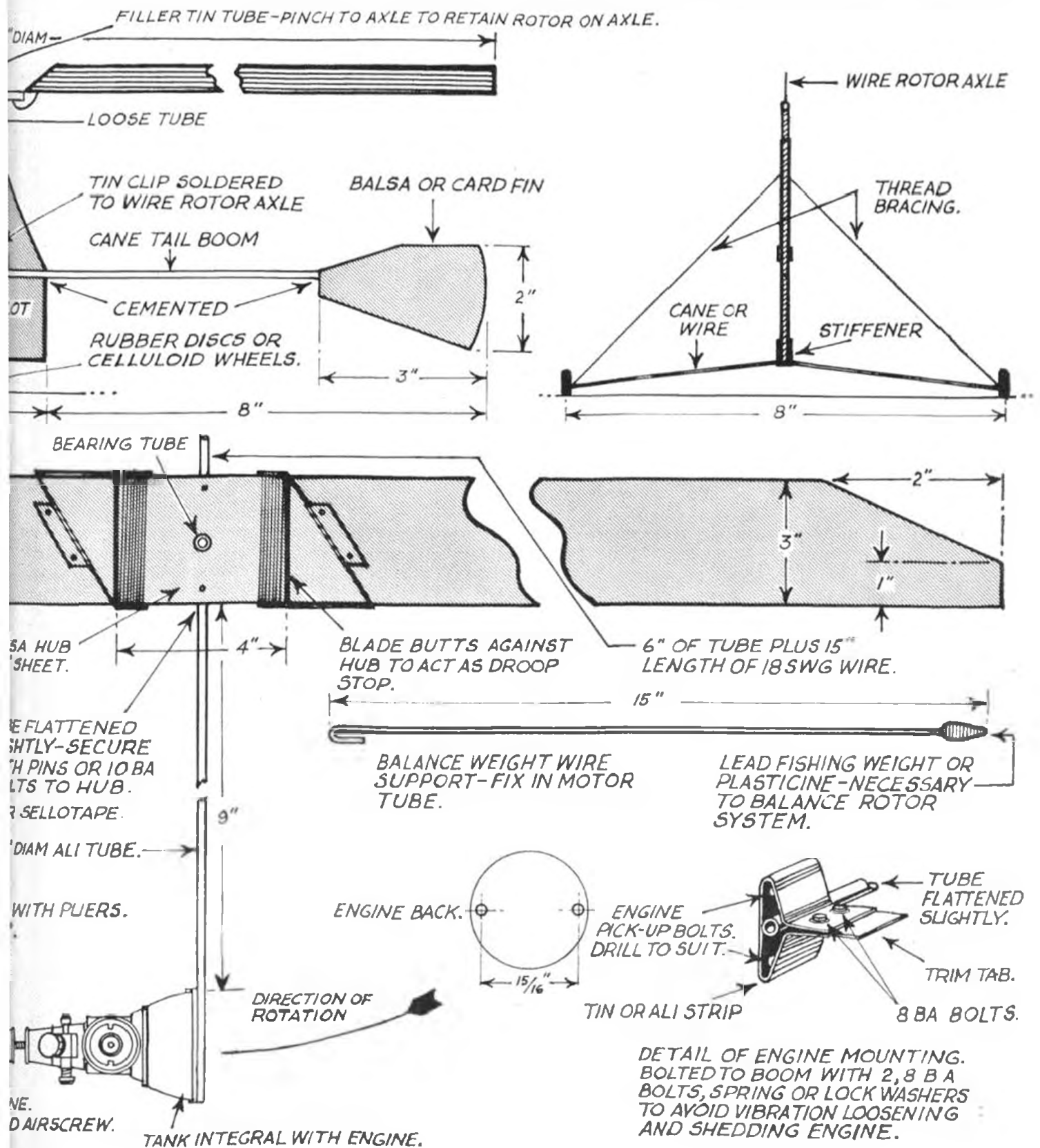


RIVET, BOLT OR BIND TO BLADES

MAKE HINGE OF SHEET TIN OR ALI.

COX .02 EN
FIT WITH 3-BLA
(4 1/2 x 2

ROOM ROTOR SYSTEM (PBR5) HELICOPTER ——— DESIGNED BY F.G. BOREHAM.

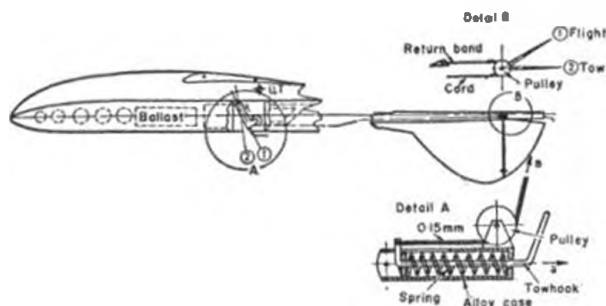


CONTEST DESIGNS

Design features
from overseas

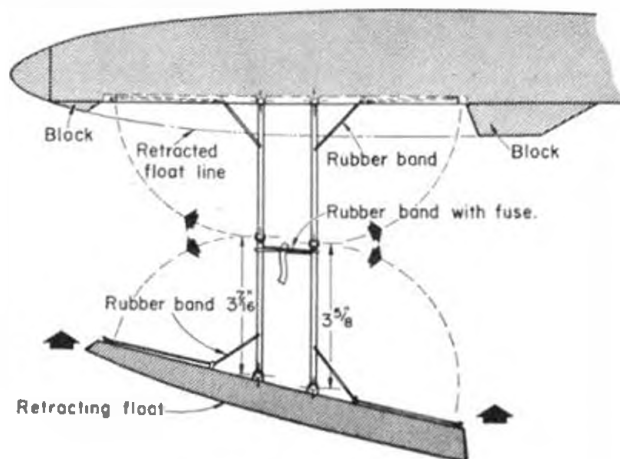
to aid you with
your modelling

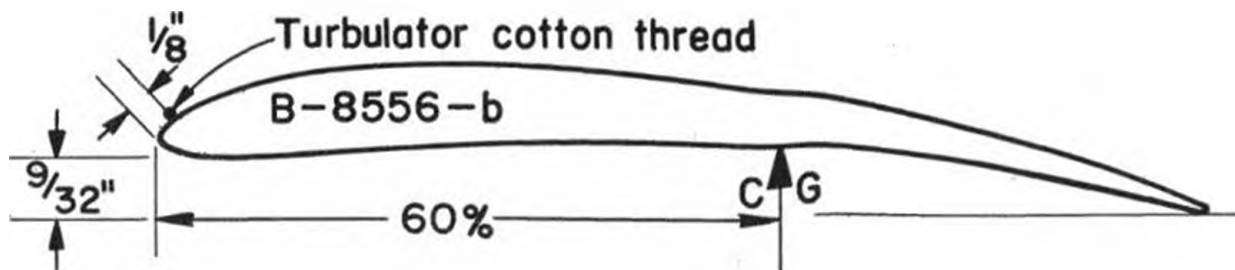
THIS LITTLE SKETCH intrigued us when we first spotted in the U.S.S.R. publication "Wings of the Fatherland". On investigation, we find that it is a means of auto-rudder application through a towhook that is both spring loaded and pivoting. Object is to improve control when the model is at the apex of the tow and for tactical reasons it becomes necessary to tow fast. Study of the diagrams will illustrate the possibilities. The pivoted towhook will, as is normal in such cases, pull the auto rudder to a stage where it does not affect the tow. Then, if additional stresses is applied through a faster tow, the spring is compressed and the auto-rudder is permitted further movement *back* towards the flight setting. Juri Sokolov who described this idea by A. Semekyj says that this is an ideal method of gaining 5 to 8 metres by rushing the glider into a high speed natural turn just before release.



In March issue this year we were able to reproduce a three view drawing of Juri Sirotkin's "Moscow 1961—21" stunt design which established so good a performance at the Criterium of Aces, Genk, Belgium last September. As we remarked at the time, this is an impressive model and now that a few constructional details have been revealed in "Wings of the Fatherland" we can see more of the unusual features. The most interesting is the "two way" bellcrank which is in the form of a cross and is doubly braced above and below the pivot. Separate rods then actuate the elevator and flaps. Next most intriguing in our view is the undercarriage and means of attaching the streamlined wheel spats. The undercarriage legs are formed from 1/16 in. dural shaped to give adequate springing and shock absorption, and to make a rigid fixing with the fuselage, it faces onto a hardwood block let into the underside with blind nuts to hold three retaining bolts.

We have always admired the ingenuity of Italian aeromodellers, especially the rubber enthusiasts. Sketch at right is a typical example of clever thought and although the hydromodel has but a miserable following in Britain due to lack of events, the application of the idea to other purposes is obvious. It is Silvio Taberna's Wakefield *Idro-2* retracting nose float. All hydro flyers will know that the drag of a low slung float is one of the finest glide spoilers one can create. To remove the drag all manner of retracting systems is employed. This one is simplicity itself. A fuse loaded rubber band pulls the pair of knuckled undercarriage legs together at their joints. When the fuse has burned through the band, the lighter grade bands at each of the leg ends, four in all will pull the legs toward the fuselage and the floats.

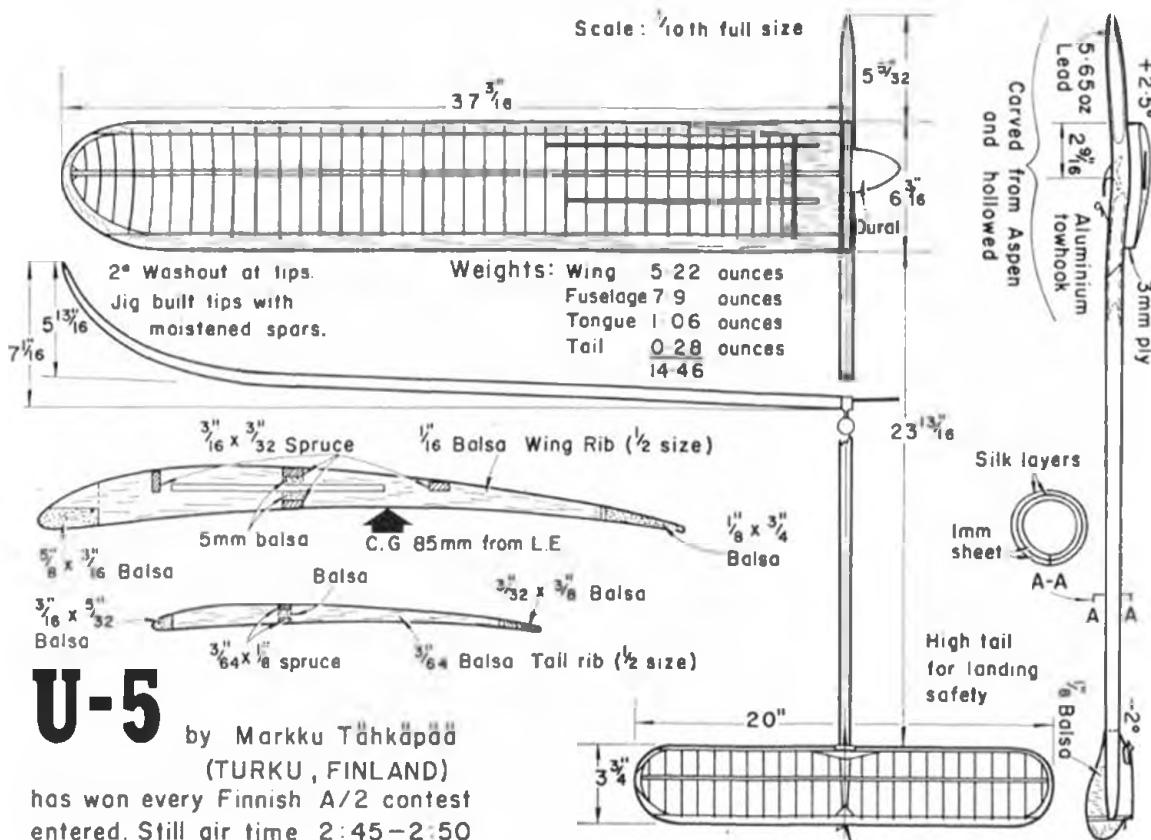
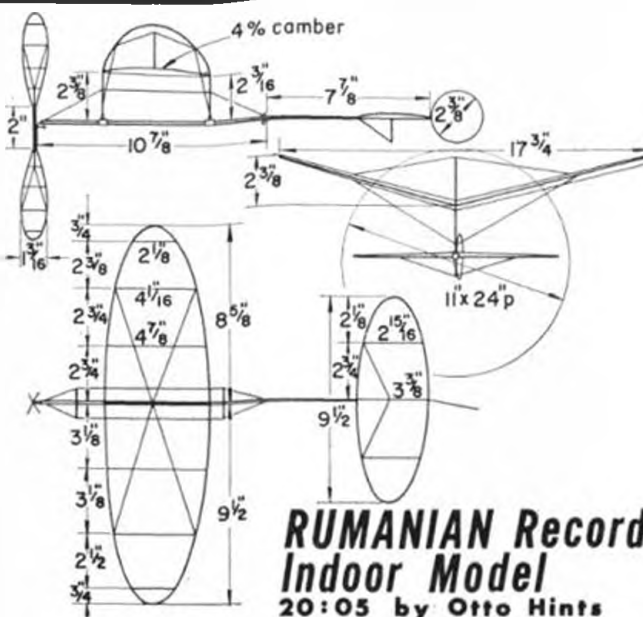




ABOVE: World Champion rubber class flyer George Reich gave us this correction on his *Max-Maker* (3-view, November '61 issue). Airfoil is Benedek 8556b and not 8358b as previously quoted. Along with the correction, George kindly gave the C.G. position with angle of attack and turbulator detail. The lot is reproduced *actual size* for Wakefield flyers.

Nothing will give us greater pleasure than to see a few new names among the list of competitors at the World Indoor Championships, September 22/23rd at R.A.F. Cardington. This three-view drawing of a Rumanian model which has broken into the twenty minute stage adds interest, especially as it is in the 45 centimetre category—exactly half the permitted size for World Championship indoor models. Clubroom size design was flown for the record in a Salt Mine with 230 ft. ceiling. Incidentally, there were 45 entries in the contest.

Finnish A/2 glider designs have an international appeal, even those which have specialised construction involving a need for expert work. The elegance of Markku Tahkapa's curled tip model is undeniable and we have no doubt that its equally impressive contest record will inspire many influence designs from the details given below.



AIRCRAFT DESCRIBED No. 116

by G. R. DUVAL

Fascinating story and most accurate
scale details of the first production
rotary wing aircraft

IN 1923, Senor don Juan de la Cierva, the Spanish pioneer of rotary winged aircraft, brought his first successful machine to Britain at the invitation of Mr. H. E. Wimpey (Director of Research, Air Ministry), and gave a demonstration at R.A.E. Farnborough. This machine (basically an Avro 504 fuselage, engine, and tail unit) had a fixed rotor head with free-running rotor blades, and was controlled in flight by rudder, ailerons, and elevators. As a result of this visit, and the encouragement he received, Cierva continued his work in this country, assisted by WESTLANDS and A. V. Roe. His aircraft, called "AUTOGYROS" steadily improved in efficiency until 1933, when a peak of achievement was reached—autogyro G-ABXP flew without the use of any conventional controls. Thrust was provided, as before by a normal propeller, but the rotor hub was universally jointed, and its plane of blade rotation made variable by moving a control column which hung down into the cockpit. By this means, full control of the aircraft in flight was maintained. For the first time, a heavier than air machine had stability and control at zero speed.

In April 1933, Cierva demonstrated the first C.30 autogyro, G-ACFI, at HANWORTH. In this aircraft, engine torque was transmitted to the rotor blades by means of a clutch. With the wheel brakes on, the clutch was engaged, the throttle opened, and the rotor spun up to 130 to 180 R.P.M. (depending upon the wind strength). A "quick release" lever then de-clutched the rotor and released the brakes. A gentle backwards pressure on the rotor control column and the C.30 was airborne in a few yards. Landing was as simple—with the engine throttled back, speed was reduced to below 30 M.P.H. where a gentle sink occurred. "Flaring out" just before touchdown, with the rotor blades auto-rotating, provided an almost zero landing run. Taxying was simplified by a steerable tailwheel connected to a "rudder bar" in the cockpit.

One hundred C30As were built under licence by A. V. Roe, and were sold to civil operators in Europe, India, Australia, China, and South America, and a batch purchased by the Air Ministry were issued to R.A.F. Communications Squadrons, and to the School of Army Co-operation. The C30A was flown on skis in Sweden (aircraft SE-AEA), and on floats by the R.A.F. (K4296). A considerable number of machines were also built in France. Much useful data on blade flexing was obtained by R.A.E. Farnborough, who mounted a cine-camera on the rotor hub of a C30A. Aircraft G-ACUT was used to film the 1936 Cup Final at Wembley, using telephoto lenses, as the Air Ministry decreed a minimum height of 500 feet.

In 1936, a modified C30A (G-ACWF) made the first vertical take-off on HOUNSLOW HEATH, using transmission from the engine to the rotor continually throughout the takeoff sequence. This was the prototype of the C.40 or Rota II, used by the R.A.F. In this year, Cierva tragically lost his life in an airliner crash at Croydon. Although some development continued until 1938, the



The creator and his craft. Functional design features of the C30A are apparent in this view. One example remains registered G-ACUU, ex HM 580, at Elmdon and G-ACWP as drawn opposite (AP.507) has been restored to military colours by R.A.F. Halton for the Science Museum. 100 were made at Manchester

driving force had been lost, and no more autogyros were built in this country.

With the outbreak of war in 1939, every available autogyro was mustered for service. The five C.40s (Rota II) went to France with the B.E.F., while the C30As, both R.A.F. and impressed civilian machines, were used for calibration duties with the vital chain of radar stations, employing their unique slow flying capabilities to great advantage.

The first calibration flight, No. 1448, was based at DUXFORD, under the command of Sqdn.-Ldr. Brie, an experienced autogyro test pilot. The Rotas acted as independent units, each machine working with a designated radar station, the detachment staff consisting of pilot, fitter, and rigger. In June 1943, No. 1448 Flight was reformed as 529 Squadron, and not disbanded until October 1945.

By this time, the ultimate development of Cierva's work was embodied in the helicopter, and no further autogyro design took place. The family of single-rotor Sikorsky helicopters can be said to be descended directly from the autogyro.

C30A Leading Particulars

Rotor Diameter:— 37 ft. Length 19 ft. 8½ in.
Engine:— 140 H.P. Armstrong Siddeley "Genet Major".
Loaded Weight:— 1900 lbs. (two crew).
Max Speed:— 100 m.p.h. Cruise 75 m.p.h. Initial climb 700 ft. min.
Min. speed for level flight:— 30 m.p.h.
Range:— 250 miles. Fuel 23 gals. Oil 3.3 gals.
Service Ceiling:— 8,000 ft. Takeoff Run:— 30 yards. Landing Run:— 3 yards.

Construction Details

Rotor Blades:— Hollow high tensile steel spar, wooden ribs threaded on and fixed, covered by plywood and fabric. One master blade, the other two arranged to fold to join master aft of rotor hub.
Fuselage:— Welded steel tube faired to oval section by eight wooden formers and stringers, fabric covered.
Tailplane:— Spruce spars, and ribs, fabric covered.
Engine Cowling:— Light alloy sheet, turnbuckle fasteners.
Propeller:— Metal, fixed pitch.

Acknowledgements:—
Mr. Charles Sims ("The Aeroplane").
Bruce Robertson Esq.
The Royal Aeronautical Society.
Royal Air Force, Halton.

Continued on p. 448

AIRCRAFT DESCRIBED (Cont.)

September 1935 scene in Hampshire during the Army/Royal Air Force Manoeuvres where the C.30A early type was on trial — Aeroplane Photograph.



The Avro Rota (C30A) Serial Numbers and Information

(1) Ten aircraft ordered under Requisition 99/33. Contact placed 14th February 1934. A.I.D. allotted serials K4230—4239.

- K4230. First aircraft delivered. Received at Martlesham Heath for type tests 5th Feb. 1935. Loaned to Admiralty for 1935 Summer Cruise. Deck landing trials in H.M.S. *Courageous*.
- K4231. To School of Army Co-operation. No. 16 Squadron in 1936.
- K4232. To School of Army Co-operation.
- K4233. To School of Army Co-operation. 1448 Flt. 1942. 529 Squadron 1944.
- K4234. To School of Army Co-operation.
- K4235. To School of Army Co-operation. In use 1940.
- K4236. To School of Army Co-operation. Sold 1936.
- K4237. To School of Army Co-operation. Became 1142 M (Instructional use).
- K4238. To School of Army Co-operation.

K4239. To Martlesham Heath. 1448 Flt. 1942.

K4296. Additional aircraft ordered as seaplane, tested by M.A.E.E. Felixstowe.

Requisitioned Aircraft used by Duxford Calibration Flight (Later 1448 Flight, and later 529 Squadron)

- V1186. Ex—G-ACWO.
- V1187. Previous identity not known.
- AP506. Ex—G-ACWM.
- AP507. Ex—G-ACWP. Was coded KX-H.
- AP508. Ex—Dutch registration, possibly PH-HHH. Written off 1942.
- AP509. Ex—G-ACWS.
- AP510. Ex—G-ACYE.
- BV999. 1448 Flt. 1942.
- DR622. Became G-AHRP.
- DR623. Force landed near Bishops Cleeve, crashed on take-off. Was repaired, and became G-AHLB.
- DR624. KX-L of 529 Sqdn. Became G-AHMI.

Two Control-line Autogyros BY C. WHELDON

FIRST REPRODUCED IN the AEROMODELLER Annual 1957/8, this pair of amusing little control-line whirly-birds created so much amusement that we make no apology for reintroducing them for newcomers to the hobby.

Contrary to popular opinion, the Autogyro layout is quite stable, and is no more difficult to fly control-line than any other type of model. The rotors, revolving anti-clockwise, counteract any tendency for the models to "come in" on the lines.

The ultimate example of the Autogyro's capabilities lies in its ability to hover. Both models will do this. The manoeuvre is carried out in the small version by juggling with the forward speed of the model—by applying up elevator (gently) just as it is coming into wind—and balancing this against the wind speed. The larger model, with motor control, will perform in this manner but can also be made to hover in almost any wind by using the motor control and elevators together. This does require a little practise. When hovering, the models will assume an angle of about 45 degrees to the horizontal.

When flying either of the models normal control techniques can be used. Take-off's are quite normal except in gusty conditions when, if a gust catches the rotors as she comes into wind for the take-off, the model will leap off the ground nearly vertically and one must be ready to control this. The landing requires a slightly different technique as there is practically no glide. When the motor cuts the model should be at shoulder height and left to "glide" to about 3 feet when full "up" should be applied. The model will rear up, rotors revving fast, and settle down quite gently—VERTICALLY.

The drawings can easily be enlarged to full-size by multiplying dimensions 3 times in the case of the 1.5 c.c. model, 4 times in the case of the larger model for 2.5 c.c.

Both models have identical basic constructional features and are really rugged. The "heart" of the model

is the engine bearer assembly. The motor to be used is bolted to the bearers after facing the outer edges of the bearer with 1/16 in. sheet back to position of rear cockpit former. The main 1/4 in. ply front former is cut out and the front leg of the mast and undercarriage assembly bound to it with rigging cord. This is then cemented to bearers and the space in between bearers filled in with 3/16 in. sheet to the control plate mounting, which is a piece of engine bearer. Control plate mounting is then cemented in place, followed by the fitting of centre former. Rear legs of mast are then bent to shape—one left hand and one right hand—and bound to bearers, the top ends being bound to front leg of mast with fuse wire and soldered. Rear former is cemented in place and then cockpit floor.

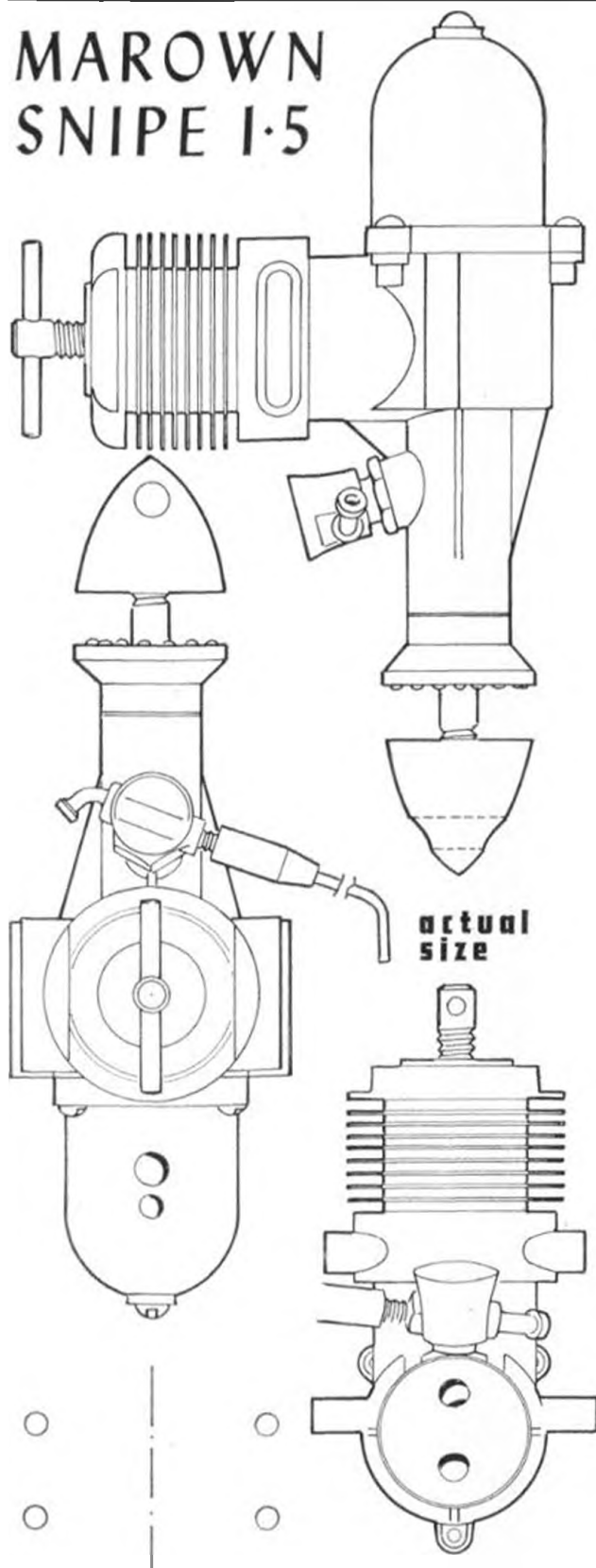
The fuselage sides are cemented to the bearer assembly. When dry the tail end is pulled together and other formers cemented in place. The 1/4 in. soft top sheeting is added, carved and sanded to shape.

The tail unit is of conventional construction and requires no description. With control plate fitted and locked in neutral, and push rod in position, tailplane is cemented in place, followed by fin.

Wings are carved to shape and sanded, and, after control-line lead outs have been fitted to control plate, may be cemented in position. Crack wing tips for dihedral and fill in cracks with scrap wood and plenty of cement. Reinforce these joints with tape patches well cemented. Add ply reinforcement to port-tip and bore holes for lead outs. Sheet in bottom of fuselage and fill in fuselage nose—between basic sides—with laminated sheet.

Remember, the rotors are the *wings* of this model, so make a good job of them. When rotor assembly is finished, balance by pushing lead shot—if required—into lightest blade tip, covering shot with a skin of cement. Balance assembly well to avoid vibration.

ENGINE ANALYSIS Number 99 by R. H. Warring

MAROWN
SNIPE 1.5

FOLLOWING THE SUCCESS of the 1 c.c. Heron—one of the best "value for money" productions on the British market and quite the nicest diesel—of this size for ease of handling and starting—it was only to be expected that Marown Engineering would extend their range to other sizes. The 1.5 c.c. "Snipe" is the first move in this direction—virtually a scaled up "Heron", although there are some notable detail difference—and again we predict a real winner in its class.

The "Snipe" is essentially a sports engine, but with a very creditable performance. On test we found it peaked at 14,000 r.p.m., giving just a shade under .14 B.H.P. at this speed, but running could be extended to 18,000 r.p.m. plus on smaller propeller, still with good running characteristics. The torque curve showed maximum torque developed at 10,500 r.p.m., with a steady fall off on either side.

Handling characteristics are extremely good. It is not such an instant starter as the smaller "Heron", but still in the beginner's category in this respect. Power is



way up on the "Heron"—nearly twice as much for only a 50 per cent. increased in displacement, so obviously the basic design layout has undergone some considerable development.

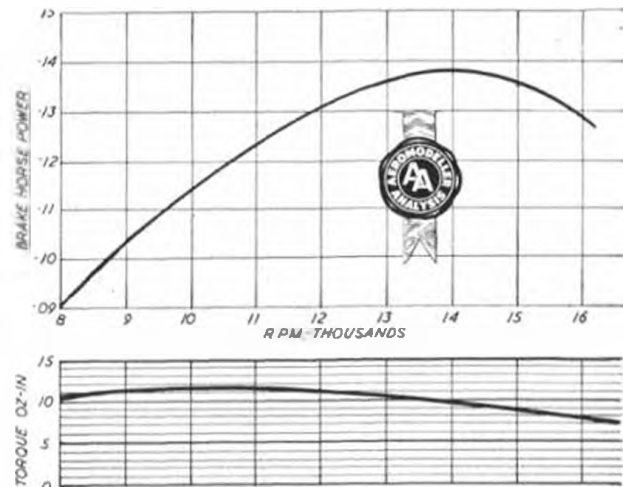
A lot of care has gone into producing the Snipe, both as regards increasing specific performance without undue sacrifice of good starting and handling qualities, and as regards producing a good looking engine. The engine is quite compact, all the shapes are nice and the good clean exterior finish is particularly pleasing. When the engine was disassembled after testing it was equally apparent that the same careful attention had been given to the interior design and workmanship.

The "Snipe" is of conventional diesel layout with extended crankcase casting terminating in an exhaust collector ring formed with two stub exhausts. The cylinder liner is of substantial section, machined from steel, case hardened and ground inside and out, i.e. with internally ground bore. Unlike the "Heron" the liner seats on the bottom edge. There is no flange at the exhaust position, instead the o/d of the liner is increased and the three transfer ports are scalloped out of the inside. The tops of these transfers are rounded and overlap almost the full depth of the exhaust ports. The three exhaust port are machined through the large o/d section. Upper liner o/d is .625 in. and lower o/d .691 in.

The piston is of cast iron (Meehanite) and substantially solid. Very little metal is removed from the inside, in fact, other than that necessary to give clearance for the connecting rod. The gudgeon pin is of silver steel $\frac{1}{8}$ in. diameter and a most ingenious and simple method of retaining this pin is used. The piston is grooved at the gudgeon pin position and a thin steel wire circlip fitted into this groove, centering the gudgeon pin and holding it in place. As only the upper part of a piston is effective as a gas seal in any case the presence of the groove does not in any way result in loss of compression. In fact, pistons are commonly relieved in diameter from this point anyway.

The connecting rod itself is machined from solid high tensile light alloy and is again of substantial section and well finished. Big end diameter is .187 in. There was virtually no wobble or slackness on either big end or little end bearing.

The crankshaft is machined from steel, case hardened and ground to finish over the journal, taper, back face of the crank web and crankpin. Crankshaft diameter is measured was .438 in. (11/32 in. nominal), tapering in front of the bearing and then stepping down to a 2BA propeller shaft threaded length. Intake port in the crankshaft is approximately 3/16 in. diameter drilled at an angle facing the web with a 7/32 in. hole down the centre of the shaft. Two small segments are machined out of the crank web to produce counterbalance, although



version following later as the new standard for production. As a matter of interest we checked with the original large-bore venturi and found that although it made little or no difference to running the "Snipe" was quite difficult to start with it; also it was reluctant to suck fuel with any appreciable suction head on the tank. Anyone who has a very early production model and finds it

Specification

Displacement: 1.50 c.c. (-0915 cu. in.)
Bore: .5065 in.
Stroke: .454 in.
Bore/Stroke ratio: 1.12
Weight: 3½ ounces
Max. power: .138 B.H.P. at 14,000 r.p.m.
Max. torque: 11.5 ounce-inches at 10,500 r.p.m.
Power rating: .092 B.H.P. per c.c.
Power/weight ratio: .0356 B.H.P. per ounce
Material specification
Cylinder: case-hardened steel BSS EN 351, internally ground to finish
Crankshaft: case-hardened steel BSS EN 33, ground to finish
Piston: Meehanite

Contra piston: cast iron
Crankcase unit: pressure die-cast light alloy
Cylinder jacket: dural (anodised red)
Main bearing: Meehanite bush
Connecting rod: high tensile light alloy L 64
Intake: dural
Spraybar: brass
Crankcase back cover, propeller driver: light alloy die castings
Spinner: turned dural, anodised red.
Manufacturers
Marown Engineering Ltd. Glen Vine, Isle of Man.
Price: 62s. including Purchase Tax.

Propeller — R.P.M. Figures

Propeller	R.P.M.
7 x 4 KK nylon	13,100
6 x 4 KK nylon	16,000
5½ x 4 KK nylon	18,500
7 x 6 KK nylon	9,800
8 x 4 KK nylon	10,000
7 x 4 Frog nylon	12,200
7 x 6 Frog nylon	10,800
7 x 6 Topflite nylon	10,800
6 x 4 Topflite nylon	17,000
8 x 4 Topflite nylon	10,600
8 x 4 Trucut	10,800
7 x 4 Trucut	12,800
9 x 4 Trucut	7,800
8 x 4 Stant	9,600

the degree of balance achieved is purely nominal. Despite the relatively heavy piston, vibration did not appear excessive and could generally be reduced at any speed by adjusting the position of the propeller on the shaft.

The main bearing is a Meehanite bush fitted into the crankcase casting and then reamed and honed to finished size. The fit and finish on shaft and bearing is of the highest standard, and this comment, indeed, applied to every machined component.

The intake tube is not cast integral with the crankcase but is a separate machined part, in dural, which screws into a boss in the casting. It is locked with a thin brass nut of the thread. The intake bore is of substantial venturi shape with a relatively thick spraybar at the throat. This spraybar is fitted at an angle to carry the needle valve back from the propeller arc, and the other end taking the fuel tube is also bent back, which is a most useful practical feature. The actual position of the spraybar "angling" can be adjusted, if necessary.

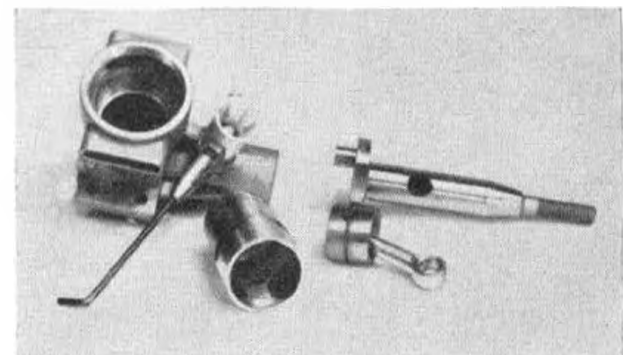
The cylinder jacket is machined from dural with pleasantly thin fins. The jacket screws into the crankcase unit, holding the cylinder liner in place. Compression screw threads are well cut and the contra piston an excellent fit so that compression adjustment is positive and easy. The spinner is also turned from dural and anodised and is of solid section.

The "Snipe" as originally supplied had a venturi intake of considerably larger throat diameter, a modified

difficult to start may well have an early venturi, for which a later standard replacement is available.

Summarising, we think that the "Snipe" is about the best made sports diesel available in its size, with a snappy performance and excellent handling qualities. It is obviously produced in fairly small quantities at a time with a limited range of machine tools, but the tools and techniques used are first class and each engine appears to receive a lot of individual attention. It is wonderful value for money.

Salient features of the Snipe which are new Marown techniques; adjustable intake throat, triple transfer passages with overlap timing, angle intake and circlip gudgeon pin retainer



Northern Heights Gala results

"Flight" Cup—Open Glider

1. B. Lavender	Brentwood	6.00 + 3.01
2. A. Wisher	Croydon	6.00 + 2.36
3. W. Pateman	Northampton	6.00 + 1.13

"Faurey" Cup—Open Rubber

1. J. O'Donnell	Whitefield	6.00 + 7.44
2. G. L. Roberts	Lincoln	6.00 + 5.48
3. R. Monks	Birmingham	6.00 + 4.46

The Queen Elizabeth Cup—Wakefields

1. N. Elliott	Croydon	9.00
2. G. L. Roberts	Lincoln	8.57
3. A. R. Wells	Hornchurch	8.17

The "Thurston" Helicopter Trophy

1. R. Monks	Birmingham	440 pts.
2. R. Lowe	St. Albans	196 pts.
3. R. Dudley	Weston	184 pts.

"JA" Competition

1. J. O'Donnell	Whitefield	6.00 + 4.22
2. D. Harper	Glevum	6.00 + 1.22
3. G. French	Essex	5.51

The "De Havilland" Trophy—Open Power

1. J. West	Brighton	6.00 + 4.50
2. B. Eggleston	Baldon	6.00 + 3.53
3. M. Brown	Reading	6.00 + 3.25

"R.A.F. Flying Review" Cup—R/C Spot Landing of Nominated Time

1. E. Faulkner	W. Mddx.	12.0 Pen. Pts.
2. T. M. Airey	W. Mddx.	32.8 Pen. Pts.
3. D. W. McQue	Buccaneers	34.5 Pen. Pts.

Keil Combat Cup

1. P. Heeley	Weston
2. B. Bumstead	Kombo

Concours D'Elegance

Section 1. (General Flying Models)

G. L. Roberts (Lincoln) (lightweight rubber)

Section 2. (Power Driven Models)

A. C. Day (W. Brom)

Section 3. (Scale Models)

C. B. Hall (Cambridge)

Special Prize—R. M. Dudley

"Aeromodeller Challenge Cup"

Gala Champion

J. O'Donnell ... Whitefield ... 73 pts.

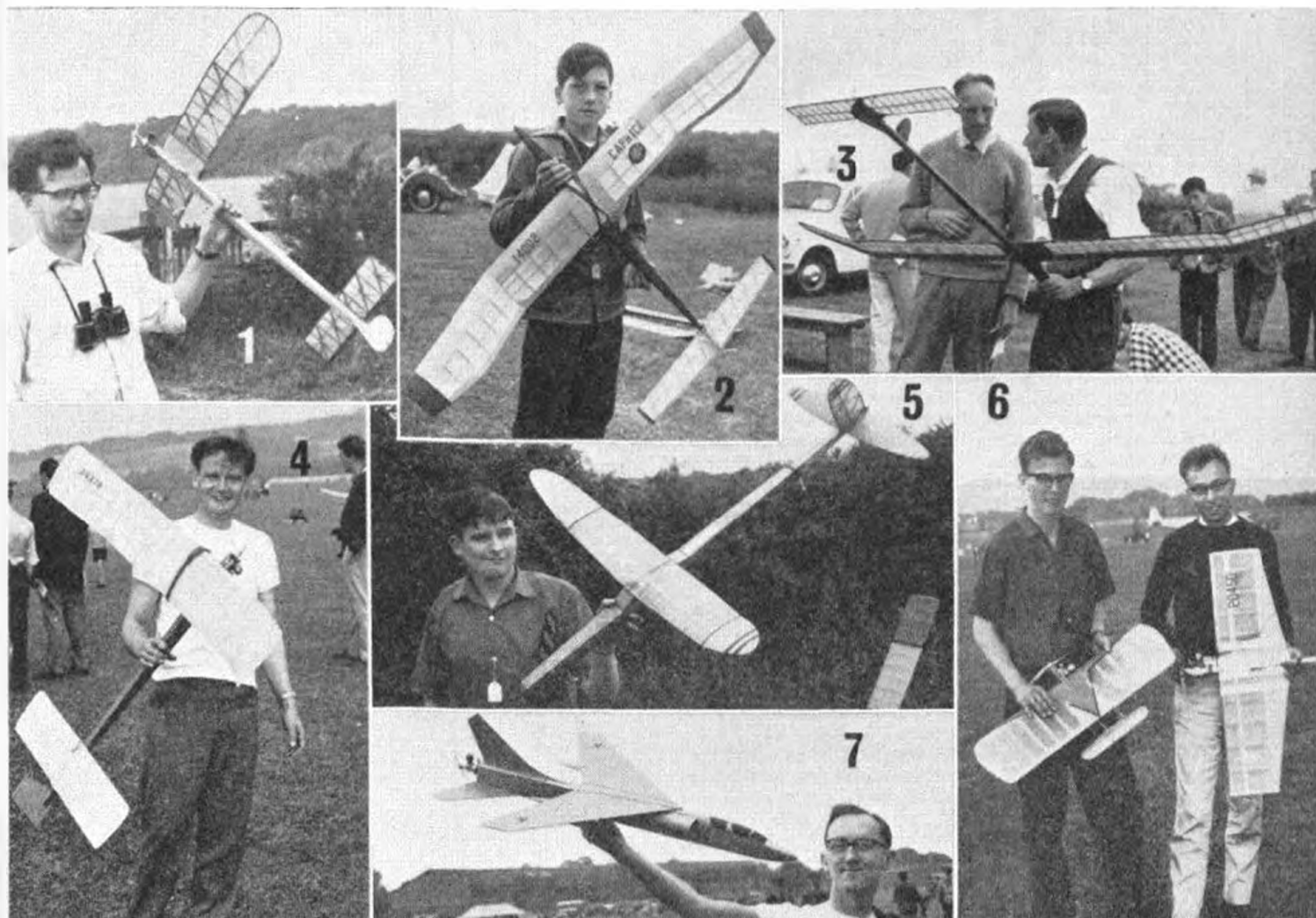
Round the Rallies

... at R.A.F. Halton

WEATHER CONDITIONS FOR this year's Northern Heights Gala, at R.A.F. Halton on July 1st were, as ever, ideal. Throughout the day wind was almost non-existent and although for a great deal of the time the sky was overcast, the conditions were certainly warm. Attendance seemed down on previous years, but the meeting was its usual self, attracting so many of the sport fliers with so many "different" models.

Most coveted award, at any Northern Heights Gala, the *Queen Elizabeth Cup*, was awarded this year for Wakefields and won by 1961 team member Norman Elliott flying for Croydon with the only perfect score. Combat has a favour all of its own and one must be an enthusiast for this branch of our hobby to find enjoyment in round after round of streamer chasing. Certainly one could forgive onlookers for growing weary of this, but surely not of the final, fought out between B. Bumstead of Kombo and Pete Heeley of Weston Controliners, which was the most thrilling for some time. Heeley emerged winner with a model, not a battered wreck as one sees so often.

An added feature of Radio Control Spot Landing this year was the requirement for the competitors to nominate their air time, any error in seconds being added to distance error in feet to provide a composite numerical total. This new requirements seemed to hold little difficulty for some however and Dave McQue landed his R/C *Caprice A/1* glider within half a second of the flight time he nominated before take off.



It is unfortunate that Eric Faulkner's winning flight was at first disqualified on the grounds that he had already returned an attempt with a different model, both the machines he used being equipped with his new RCS proportional radio systems, the former a powered glider, and the latter a fast, low wing *Swallow* which he is kitting. After due consideration of Mr. Faulkner's protest, the organisers have ruled that his entry was quite in order with the rules and he has been duly reinstated as winner.

The following Sunday, July 8th, will probably go down as the most ideal flying day for many many years and also one of the busiest in our recollection, with three large and important meetings taking place simultaneously.

At R.A.F. Barkston Heath

Of greatest importance were the S.M.A.E. Area Championships held at R.A.F. Station Barkston Heath. It was a pity that some areas were poorly supported by their members, especially those which are normally expected to give a good performance and have strong competitive clubs among their numbers. However, that does not detract from the achievement of the North Western Area who clearly showed that they could use the ideal conditions and returned three perfect nine minute scores by their glider team, whilst their aggregate time was over 106 minutes out of a possible 120. The Northern Area scored slightly more than 99 minutes.

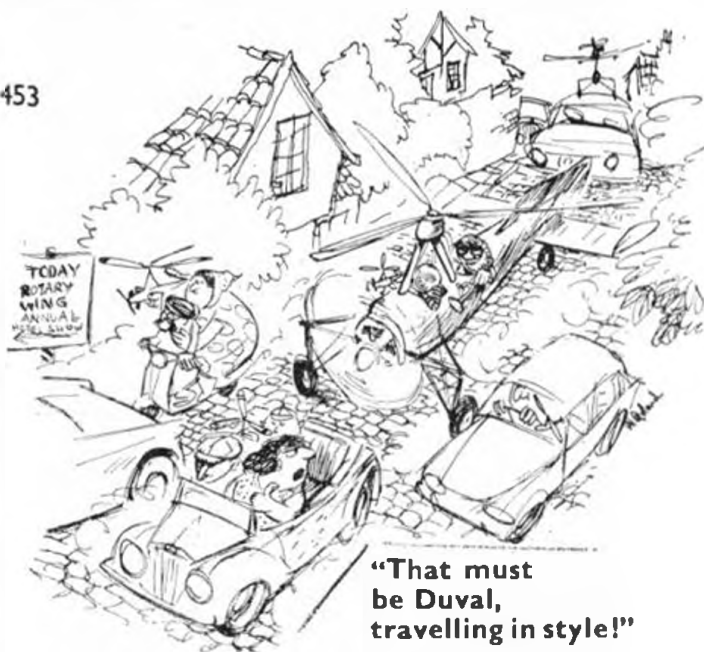
Team racing has been taken into these championships and a points system instituted so that the lowest scoring competitor in each event was awarded 1 point, second lowest 2 points etc., whilst all those scoring full maximums were awarded the same number of points. This gives a bias to those leading in the events with greatest support and does not seem entirely fair. Surely it is better to retain the established Whitney-Straight rules, using duration as a decider and adjusting the team race on a par with duration, but this is a matter for S.M.A.E. committees. Such was the weather that by mid-afternoon all flights were concluded and competitors took to their second hobby of photography, finding it difficult to locate models still in action to act as subjects!

1. North Western Area	...	...	...	194 pts.
2. Northern Area	...	...	...	172 pts.
3. East Anglia Area	...	...	...	144 pts.
East Midland Area	...	...	...
4. Western Area	...	...	...	125 pts.
5. Midland Area	...	...	...	104 pts.
6. North Eastern Area	...	...	...	43 pts.
7. South Midland Area	...	...	...	28 pts.
Team Racing				
1. Long/Davy...	...	Northern	...	4:40
2. Yates/Hampson	...	N. Western	...	5:37
3. Northage/Humphreys	...	Northern	...	—
4. Turner/Foster	...	E. Anglian	...	6:05
5. Drury/Boid	...	Northern	...	6:16

At R.A.F. Booker

At High Wycombe the restriction of no spectators at R.A.F. Station Booker also seemed to limit the number of entries for what was otherwise a most successful meeting. Undoubtedly the climax was the F.A.I. team race final, which will be the main talking point for many months to come. The newly established 200 lap final

AT NORTHERN HEIGHTS GALA opposite: 1. Binoculars at the ready for John O'Donnell with his JA power winner, Cox Thermal Hopper powered and Wake type wings; 2. Third in Open Glider was W. Pateman of Northampton and his "Caprice". Actual winner was B. Lavender of Brentwood seen in picture 3 with his "Sans Egal" from AEROMODELLER Plans Service, one of many on the field, a very popular and successful design; 4. Cox engines again predominant, M. Brown placed third in Open Power with his Tee Dee 15 in a "Dixielander"; 5. Lou Roberts was second in both the Rubber events, using his beautiful lightweight (which we erroneously called a Wakefield in some issues last month) for the Open Contest. 40 in. span, 180 sq. in. area, 47 in. fuselage, 2½ oz. airframe and 10 strand 2½ oz. motor; 6. Combat finalists, B. Bumstead at left (Rivers 2.5) and P. Healey at right (Rivers 3.5) finished with models in one piece!; 7. P. Angus had some enterprising pushers including this Cox Babe Bee all sheet free flyer.



was used for the F.A.I. class (the double length final appears to be very well received and is most popular) and this gave an absolute dead heat between Wallace and Atkinson. A 100 lap fly-off was arranged between these two; three time-keepers allotted to each team with the usual system of elevated hands five laps before the finish, dropping hands at the moment the model completed the course. All six hands from each of the time-keepers dropped simultaneously! Another dead heat, at which stage the teams decided to leave it at that having flown 15 kilometres with less than a second between them at any time.

Combat

1. Burguess	...	...	Weston	
2. P. Tribe	...	...	Kombo	
JA Team Race				
1. P. Place	...	...	R.A.F. Hemswell	9:16
2. A. Dell	...	...	Feltham	10:28
3. B. Greenaway	...	...	Hayes	12:39
4. J. Bradley	...	...	Feltham	retired

F.A.I. Team Race				200 Lps.	100 Lps.
Equal 1st G. Atkinson	...	Derby	...	10:33	4:44
Equal 1st R. Wallace	...	Novacastria	...	10:33	4:44
3rd Cooper/Allen	...	West Essex	...	11:17	

Stunt

1. F. Warburton	...	...	Bolton	...	617 points
2. J. Newman	...	...	Kombo	...	605 points
3. D. Day	...	...	Wolves	...	573 points

At R.A.F. Wellesbourne

In the same perfect weather, the second annual Sutton Coldfield R.C. M.A.C. Rally was held at R.A.F. Wellsbourne on July 8th by kind permission of Group Captain E. Earnshaw, O.B.E. A very good standard of performance was enjoyed by 3,000 spectators who were particularly thrilled by members of the Bristol Club who had 5 multi-channel models airborne at the same time. During the flight, smoke cannisters were used and proved to be most effective and realistic. The Rudder only Single Channel Trophy was won by W. Bellinger of Bath, and Multi was won by P. Rogers of High Wycombe, who outflew his usual adversaries. Scale Model Trophy went to G. Franklin of Leicester, flying his Spitfire XIV with Super Tigre 56.

The public interest in model flying is obviously very keen as shown by the attendance figure which are more than double those of last year, if this figure can be doubled for the next rally it will be very encouraging to the club. Thanks are due to all who played so large a part in helping to make it a most enjoyable day for competitors, officials and spectators alike, especially the judges who stepped in at last moment to replace defaulters.



Luftwaffe

50 JAHRE DEUTSCHE LUFTWAFFE.
By H. J. Nowarra Vol 1 W. E. Hersant
Ltd., 228 Archway Road, London, N.6.
45s. 6d. German and English text.

This is the first of a series of six volumes to be published at approximately four month intervals. Spanning the period 1910-1935 it is, in fact, a picture book and an extremely fascinating one. Photographs are in approximate chronological order, mainly two or three to a page, and captioned in both German and English. There is no narrative apart from the captions and various tables quoting military strengths, "organisation of personnel at different periods etc.", one such giving the complete disposition of the Flying Units on mobilisation in August 1914.

Of the total 467 photographs some 114 depict personalities or groups of personnel, the remainder, with the exception of sundry lighter-than-air, artillery and air-to-ground shots, feature aircraft in considerable variety. There is the occasional *rara avis* to delight the connoisseur, one such being the Albatross C.II from the firm's Schneider mahl (DAW) factory. On pp 120 the L.F.G. GI is unfortunately again incorrectly described as a twin-engined bomber, when in fact it had a single engine within the fuselage driving twin airscrews.

Navy

U.S. NAVY AIRCRAFT 1921-1941. By William T. Larkins, Aviation History Publications Concord, Calif., U.S.A. 392 pages 5½ x 8½ ins. Many photographs. \$10.

This book is a description of the aeroplanes used by the U.S. Navy during the first twenty years of air operations, and includes those used by the U.S. Coast Guard. The arrangement is in strict chronological order, and is, from the historical point of view, very satisfactory, although to trace the development of designs some reference to the index is necessary. Hundreds of types are illustrated and the photographs, well-chosen, reproduce very well on art paper. They show not only service machines in their military markings, but also many experimental prototypes rejected after testing. Interspersed through the book there are analyses of naval air strength year-by-year, giving the disposition and equipment of all squadrons and units. The author also describes the fleet re-organisation of 1937 which has caused such confusion among the uninformed ever since. Here, clearly tabulated, are all the fighter, bomber,

scout and torpedo squadrons, their emblems, their original unit number and carrier, and the new designations and ships to which they were assigned. It is interesting to follow the squadrons through these pages, observing their changes in equipment. Interesting too, to observe the growing numerical strength of the naval air arm through the years to its dramatic expansion in 1941 when America entered the war.

To the aviation enthusiast whose concern is historical fact, this book is invaluable. In addition to the year-by-year account of service equipment, there are in the seven appendices characteristics and performance details of the aircraft, complete serial number lists for both the Navy and the Coast Guard and the fullest possible description of squadron badges.

To the modeller, the book is a "must", giving as it does a clear exposition of the complicated system of markings used in this most colourful chapter of aviation history.

Army

UNITED STATES ARMY AND AIR FORCE FIGHTERS 1916-1961. Compilation by Bruce Robertson, Harleyford Publications Ltd. 256 pages. 8½ x 11 in. 300 photographs, 70 scale drawings, other illustrations. 50s.

A mammoth effort which deals with an enormous subject, in fact one is tempted to remark that it was a pity the work was not divided into two volumes, to provide even greater coverage. This is a perfect stablemate to all the other Harleyford Publications which are produced in the same style with copious tone illustration, including the 1/72nd scale drawings. It is a pity from the model makers point of view that these are not accompanied by cross-sections, a point which we hope will be eventually recognised in future volumes. This is a book for constant reference, having an absorbing narrative and material that never dates and is always fascinating. Well known for their Squadron badges the United States Air Forces have co-operated by provision of 333 such decorations, alas in black and white and not in original vivid colour. Nevertheless a book to have on the shelf for scale model reference.

Fighter

THE HAWKER HURRICANE by Francis J. Mason. MacDonald & Co., London. 176 pages. 7½ x 9½ in. Many photographs, scale drawings including one colour tone 3-view. 35s.

An immediate modellers' reaction to this most excellent work from one who has had enviable access to Hawker records, is that it is spoiled from the model makers' point of view by having the scale drawings, excellent though they may be, reproduced to a most awkward proportion. It would have been so easy to have readjusted the views for 1/72nd scale within the space of a page. Here is the story of a remarkable aeroplane from its conception to the odd experiments and the uncompleted projects. All types are covered and the selection of photographs is admirable, both for the unique aspect and also the most complete caption information which in every case names the Squadron

involved. There are many fascinating anecdotes which render this book essential for all who have an interest in aviation history.

Fighters

1000 DESTROYED by Grover C. Hall, Putnam & Co. 286 pages. 5½ x 8½ in. Tone illustrations, including 3-views of World War II American aircraft. 50s.

Written by the one time Public Relations Officer of the top scoring fighter group in the 8th Air Forces, this is an exciting story, written as one would expect with the dash and glamour concerning the Eagle Squadron which operated from R.A.F. Debden in Essex from the Battle of Britain onwards. Those aeromodelers who know Debden will relish the stories of war-time days and will recognise much of the photo detail. Heroics and indiscretion, renegades, and disciplined leaders are all covered by Grover Hall in a slick style. Once started, this is book that cannot be put down until completely consumed and we can think of no better recommendation than that. From a modeller's aspect the details of Mustang and Thunderbolt markings are invaluable.

Pilot

THE MAD MAJOR. Autobiography C. Draper, Air Review Ltd. 232 pages 5½ x 8½ ins. 84 photographs. 25s.

A positively fascinating life story and one that inspires, giving an account of the career of one of our most colourful flying characters. Chris Draper has so many reminiscences to offer and has been associated with so many famous people in his time, that any account from his pen automatically becomes absorbing reading. A book to recommend, which is not confined to "bridge-shooting" and London-Paris race episodes, and which will provide quite a few surprises for the younger aviation enthusiast.

RC titles

SINGLE CHANNEL RADIO CONTROL by R. H. Warring, Percival Marshall and Co. Ltd., 68 pages 4½ x 7 ins. 50 line drawings. 42 photographs, tables. 3s. 6d.

An inexpensive "how to do" book covering the application of ready-made single channel radio control outfits to models. Special emphasis is made of aircraft systems and the use of varying types of escapement and servo. A summary of commercial gear, British and American, plus trouble shooting charts, will be of particular use to the novice, about to launch himself into radio control. Receivers and transmitters are briefly described without attempt to complicate the issue with tuning instruction and the book confines itself to application of commercial equipment. For its low price, the book conveys a lot of "mystery" to the beginner.

RADIO CONTROLLED MODELS by R. H. Warring, Museum Press Ltd. 136 pages. 5½ x 8½ ins., many line sketches. 16s.

Handsome binding and presentation for this overall guide to the subject, make it a most useful shelf reference for the non-technical radio controller. Sketches are specially aimed at explaining matters at a glance, for example, proportional control, signal strength, frequency, modulation, cascaded escapements, multi-channel systems, etc. Up-to-date with latest gear and offering most useful practical information, this is a book we recommend to those who want to understand more of radio control.





WHO LOST A LARGE, blue radio-controlled model with Frog 500 engine, which has been recovered in Whitechurch and reported to the local police? There has been no contact from the owner, whose address, unfortunately, is not attached to the model, which can be collected at veteran modeller, Z. Wojda's shop, 11 High Street, Whitechurch, Shropshire.

The **NORTHERN AREA** have issued a printed announcement of the three major events in forthcoming months, which they will be running. First will be the **S.M.A.E. Northern Gala**, covering most categories, including the multi-channel radio controlled event transferred from the National Championships. This is to be at R.A.F. Station, Church Fenton, Nr. Tadcaster, Yorks., on Sunday, August 26th, 10.30 a.m.-6 p.m. Church Fenton is two miles off the A.162, Brotherton to Tadcaster road. The Air League Model Flying Rally, which is an almost all classes event with solid scale and plastic scale thrown in for good measure, takes place on September 23rd and the 2nd Northern Area F.A.I. meeting (for all F.A.I. classes except Speed) on October 21st, each takes place 10.30 a.m.-6 p.m. at R.A.F. Station, Elvington, Nr. York. Entry forms for the Elvington events should be sent to D. Smith, 54 Sharrow Lane, Sheffield 11. A rally which did *not* take place was the Wharfedale control-line rally. It was literally and physically blown out by a 70 m.p.h. gale, flying simply was not possible. However, the lads in the club voted that all the proceeds from the prizes, which were raffled on the spot should go to the International team travel fund and amounted to £14.

What will Comp. Secs. do next? Sheffield S.A.'s recently ran his *own* contest for R.C. gliders, and won as he was the *only* entrant. What's more, he is the only radio control flyer in the club! This has provoked another member to empty his cash box to get a button pushing set so the Comp. Sec. won't have it all his own way in future. On May 6th, Lancashire Area Radio Controlled Aircraft Society's R.C. Soaring competition was let down by the weather—no wind! But a spot landing competition was substituted, flying the gliders off the hill to a "spot" below. Bob Askew and Ron Donahue came close, the latter flying an *A.P.S. Hoverking*.

From the **NORTH EASTERN AREA**, the Gateshead branch of Tynemouth M.A.C. has excellent facilities for control line flying on the Team Valley Trading Estate, Gateshead. Anyone interested in joining the club is advised to visit the flying field on Saturdays, opposite the Dunlop Factory. Now that Usworth Aerodrome has been taken over by the Council, and runways being resurfaced, Model flying has become dicey for Sunderland M.A.C. The Seaburn Flying Meet this year has been allocated to September 2nd, but no planes are to be in the air until 11 a.m.—local residents will be fully awake by then! All North East enthusiasts are invited for a congenial day's flying. Thanks are tendered to Mr. Hepple, the chairman, from way back in 1954, who appeared at their last meeting with a dusty old box, resurrected about half a dozen Silver Cups plus ten pounds in cash from way back, when Club membership was as

high as 160 . . . Who says that some Clubs have no skeletons in their cupboards?

Leicester M.A.C. in the **MIDLANDS**, are justly proud of Gerry Mudgett's Nats. performance, placing equal first in Combat, finishing with a patched and battered model. Dave Rose claimed fourth place in Open glider, but lost his Open Power model six minutes O.O.S. on a test flight.

In the **SOUTH MIDLAND AREA**, Luton and D.M.A.C. membership has swelled to the fifty mark over the past few months. D. Bateman enjoyed success at the Nationals, placing third in Free Flight Scale with an *A.P.S. Jungmeister*. This achievement has strengthened interest in the class and he intends to enter *all* Scale sections next year. There is also a strong rumour that another member is building an *S.E.5* for Galloping Ghost R.C. (let's hope it materialises). The club Brown Trophy for F.F. Rubber was held in very windy weather conditions and was won by one of the Junior members (our scale plan man, Peter Gray's son), T. Gray with a very fine last flight of 2:20.

South Midland Area's rally at Cranfield, promises to be even better than ever this year and a highlight will undoubtedly be the inauguration of the *MacGregor Trophy*. This area and the trophy donor's, who will be backing the Cup with cash prizes, recognise the need for an elementary contest for the genuine single channel operator, the button pusher with an escapement and little else. Precision course flying is out and the contest will run on a time and spot landing basis. Multi is also included on the same day and the change to a September date avoids a clash with the Northern Gala and other S.M.A.E. events. The airfield at Cranfield should be simply covered with models on September 16th.

More Nats. news from the **SOUTH WESTERN AREA** and Exmouth and D.M.A.C., for whom this year's function proved the most successful they have enjoyed. Alan Parker reached the Power Fly-Off using his *O.D. 1A Cox Tee Dee .049* powered machine and Chris Strachen flew off in Rubber. The Combat boys were pleased to reach the third round this year and all express the greatest appreciation of the Camp Site organisers. Several organisations in and around Exmouth have booked the club for Control Line Combat Displays.

SOUTH now to Woking and D.M.A.C., where they fly Control Line Stunt and Combat on alternate Friday evenings in Woking Park. Turn out has been good and a wide selection of models have been flown, punctuated by the inevitable prangs. The Reigate and Salfords Clubs have now amalgamated to form Reigate and Salfords M.A.C. Subs. were due on the first Friday in July to catch all members at the height of the season. (Real method there.) A Control Line display at a local fete was much appreciated, with *no* complaints about noise (*not* enough they said!). Frank Knowles was forced to fly his veteran glider at the Northern Heights Gala, having written off his multi-channel low wing *Cannonball* at the Bristol Club Rally on the previous weekend. Unattached modellers are welcome at the Reigate Grammar School playing fields on Friday evenings. Eighteen members of

Minckley and District M.A.C. joined in the local carnival with a float to show their wares with over 30 different models including Mrs. Joan Chesterton and Miss Margaret Nicholls, associates of the club members.

Southampton M.A.C. went to the Nationals, about their usual turn-out on club nights. Whilst practicing, the prop. of W. Bessants ETA 15 F.A.I. racer touched the ground on take-off, the shaft brake, but it kept on running. No damage to the wooden prop, though! Slight case of disconnection! Experiments with pulse and turbo-jet propulsion are being conducted by M. Boyer. After slight modifications, to remove a three-foot long flame from where it did not belong, the turbo jet seems to be running well. The three-foot pulse-jet is promising, but so far several snags remain unsolved.

Another Rally is announced by a **LONDON AREA** Club, Esher D.M.F.C. are holding an F.A.I. Team Race event on September 30th at their tarmac flying site on Fairmile Common, between Esher and Chobham (A.3 Road). Entries are restricted to 50 and the fee is 2s. 6d. for which pre-entry is essential, to I. W. Creighton, 27 Harvey Road, Walton-on-Thames, Surrey. Racing begins at 11.30 a.m., but 1½ hours practice will be permitted beforehand. Hornchurch M.A.C. made their annual safari to Lincolnshire in

Contest Calendar

August 19th

Irish Control Line Nationals. English modellers welcome. Details from P. Brennan, c/o Royal Bank of Ireland Ltd., Dundalk, Co. Louth, Eire.

August 26th

I.R.C.M.S. R/C Rally R.A.F. Wellesbourne, Mountford.

September 2nd

Neath M.A.C. Open Rally. Open Power, Rubber, Glider, and Combat, 11 a.m.-7 p.m. Llangynidr Moor, Ebbw Vale. Enquiries to: J. Bailey, Secretary, Neath M.A.C., "Garthmor", c/o Neath General Hospital, Neath, Glamorgan.

September 2nd

Hornchurch M.A.C. Rally. Open Glider, Rubber, Power, Chuck Glider. Details 207 High Street, Hornchurch—Venue, Chobham.

September 16th

South Midland Area Rally. All Classes. Cranfield. Pre-entry 2/6d. per event to: 10, Angle Ways, Stevenage, Herts.

September 19th

Irish Free Flight Nationals. English modellers welcome. Details from P. Brennan, c/o Royal Bank of Ireland Ltd., Dundalk, Co. Louth, Eire.

September 23rd

Northern Area "Air League Rally". Open Rubber, Glider, Power, ¼ A. Power, Single, Multi R.C., ¼ A. A. BT R. Combat, Scale, Solid and Plastic Scale., R.A.F. Elvington, Nr. York.

September 23rd

Crawley M.A.C. Rally. Open Glider, Rubber, Power, ¼ A. Power, Chuck Glider, Combat, Pre-entry Combat 2s. 6d., P. Cameron, 31 Slafford Road, Crawley, Sussex. Venue, Great Buckswood Farm on A264, turning off A23.

September 30th

Esher D.M.A.C. F.A.I. Team Race event, at Esher flying site, Fairmile Common, on A3. Pre-entry 2s. 6d. to I. W. Creighton, 27 Harvey Road, Walton-on-Thames, Surrey.

October 7th

South Coast Gala. All Classes F.F. C.L. R.C. Venue to be announced.

October 14th

Luton D.M.A.C. Slope Soaring Contest. Ivinghoe Beacon, Nr. Dunstable, Chiltern Hills. R.C. Multi and Single, Free Flight and Chuck Glider. Entry fee 2s. 6d. R.C. 1s. 6d. F.F. Pre-entry to D. W. Bateman, 14 Ridgeway Drive, Dunstable, Beds.

CLUB NEWS *cont.*

two mini-buses, groaning at the axles with overloads of bobs, tents, victuals and even models, all bound for the revered airfield at Barkston. In the general excitement of the expedition the pot lifting objective of the trip seemed to have been overlooked, only R. Pavey keeping his eye on the target with a deserving third place in the M.A. Trophy. Another third place was that of Alan Wells in the *Queen Elizabeth Cup* at Northern Heights Gala. Meanwhile at the same gala, J. Sparham jostled his way into the semi-finals of the Combat event. Other recent successes include a win by P. Binks in the Woking Winter Cup event and a fifth place in the Gutteridge Trophy by R. Pavey. Their rally is due to be held at Chobham Common on September 2nd. Events are Open Glider, Rubber, Power and they hope for a good turnout.

Cosmo A.C. had a good day at the Northern Heights Gala. Unfortunately there were several crashes and members were busy repairing models for a few days after the visit. The Cosmo Demonstration Team performed twice recently. Once for Stone Parish Fete and again for Wilmington School Gala day. The flight demonstrations included control line Stunt, Balloon Bursting and Combat flying. A $\frac{1}{2}$ A Combat meeting will shortly be held against Gravesend M.F.C. some good scraps are expected.

Two mini-coaches were Nationals transport for fifteen Sidecup A.S. members, who had a grand time. D. Sizmur won 1.5 c.c. Speed, and Junior T. Crout started off well at least in $\frac{1}{2}$ A Team Race! Both at their first Nationals! J. Duerr's team travel raffle ticket was first out of the box, for which he collected an ETA 15, which helped to make up for the loss of his Rubber model the previous day. All were surprised at the popularity of their Chuck Glider event on June 20th. Only difficulty was in finding a timekeeper to time a flight with six models in the air at once. Junior E. Jarrett was the final winner with a fine flight of 56.7 seconds. P. Gillow was second and P. Noble third.

Northwood's running of the Combat event at the Nats. gave them a lot of satisfaction, although the final proved very unsatisfactory, with Pete Freebrey smashing his model in the opening few seconds, and continuing by having the wreckage launched every twelve seconds. It was therefore decided to call the event a draw. At High Wycombe Pete Tribe came second in Combat to Roy Burgess of Weston in what again proved to be a disappointing final.

Croydon and D.M.A.C. had a fairly successful day at Northern Heights, after having been defeated by them the previous week in the first round of the L.D.I.C.C. held in conjunction with the Gamage and Pilcher at Chobham, in what are known as "moderate to fresh winds". The main triumph was provided by Norm. Elliott, who won a two-second hold of the *Queen's Cup*, plus some rather more tangible remuneration, for his very creditable trio of maximums; Al Wisher managed 2:36 in the fly-off for a second place in Open Glider. New member Norman Young, enlisted the aid of the Boxalls when his seven-year-old A/2 came to roost seventy feet up an unclimbable tree after a D-T failure. From the horrified gibboning we deduce that one Boxall shinned up a nearby tree, while the other one lassoed branches near enough for tree-borne brother to transfer to and shake the model loose!

Hayes and District Model Aero Club's usual large contingent attended the Nationals and returned a lot of near misses. Mrs. Barr surprised all with her first attempt at the Woman's Cup. Her *Inchworm* clocked up two max.'s and raised our hopes, but she failed to run fast enough to keep the towline taut while navigating through parked cars on her last flight and let it off low. Husband Laurie's *Trip-Stick* showed its paces at the Northern Heights Gala rubber fly-off, his rapid rate of climb took him above all others, but was followed by rapid rate of sink! The $\frac{1}{2}$ A Team Race enthusiasts had a benefit

day at the High Wycombe Rally, taking 2nd, 3rd and 4th places. At the same rally, Colin Campbell was just beaten in the Combat semi-finals—nothing remarkable except that he was using a stunt model. Great things are expected from the Speed men now they have a circle of their own on which to practice a tarmac circle has been completed by the Hayes Urban District Council and the official opening will take place shortly (Saturday, July 28th).

St. Albans Club night is being well attended at their local flying field every Thursday night. Quite a few of the chaps have turned their hands to flying helicopters, no less than six took the air one Thursday night.

The Laindon M.A.C. have gained one first and two semi-final placings at recent control-line rallies, these placings all being taken by R.A.F. member "Toz" Taylor, who has been going it alone, while the majority of the club members have been studying for recent exams. This EAST ANGLIAN AREA Club was also lucky enough to make a profit of £13 at a local fete recently.

On Saturday, June 16th WESTERN AREA members of Bristol R.C.M.A.C. took part in the R.A.F. 50th Anniversary Display at Upavon, Wiltshire. Two 15-minute shows were put on during the day, each including a flying scale model and then a display of aerobatics and Formation flying, with four aircraft up at once (Orbit Superhets). All went smoothly, with perfect timing, and the crowd of 75,000 people seemed suitably impressed. Those flying were Ed. Johnson, John Mardon, Mike Barrett, Jack Morton and John Singleton. The club's first rally was held on June 24th at R.A.F. Hullavington and was quite a success. Largest entry was in multi, but it was scale which attracted most spectator interest. Unfortunately, very gusty conditions did not improve flying and the single channel scale entries were grounded.

RESULTS:

MULTI: 13 Entries.

1. P. T. Waters	...	...	1957 pts.
2. M. Barnett	...	...	1844 pts.
3. E. Johnson	...	...	1772 pts.

SCALE: Six Entries

1. G. Franklin (<i>Splitfire</i>)	...	122.00 pts.
2. J. Morton (<i>Mustang</i>)	...	90.33 pts.
3. R. Norris (<i>Mustang</i>)	...	89.00 pts.

MONO SCRAMBLE: Two Entries

1. J. Dumble	...	...	134 pts.
2. J. Singleton	...	...	46 pts.

The Combat craze in the Neath M.A.C. (WALES) ceased abruptly when the club sec. collected a Silver Arrow powered *Firebird* on the back of the head. Repairs totalling five stitches were needed before the official could be pronounced airworthy again. Members are now busy trimming free flight models for the club's first open rally to be held on September 2nd. It is hoped that some enthusiasts from across the border will give more competition.

Down from SCOTLAND, Glasgow Hornets were at the Nats., but more successful was their trip to the South of Scotland Area Gala, where G. McCree and K. Johnston placed third in $\frac{1}{2}$ A and B Team Race respectively. Chuck Glider and Combat Competitions have been held to encourage juniors and a local fete enjoyed the benefit of their control line display. A local newspaper heard of their Grantham trip and devoted half a page to their doings.

In NORTHERN IRELAND, Belfast M.F.A. has been greatly cheered by Maurice Doyle's 6th place in Power at the Nationals. Had he not been forced to replace the engine timer before the fly-off he might have placed higher. The Butlin Gala was held at Monsey on July 1st under the direction of the Drogheda M.F.C. Graham Dickson cleaned up Class B team race with his Rivers model, which won the same event on its first outing two years ago. He was doing well in Combat until the pit man began to have trouble with the motor. Graham was half way out to investigate the trouble when

the motor started and the model was released! He made a wild grab as the handle hurtled past, but the lot spiralled up into the blue.

Most impressive were Tommy Shortt's *Fokker Friendship* in Aer Lingus colours and *Ryan Trainer* with multi-speed O.S.35 and Roberts Flight Control system. The Friendship's beautiful finish and performance have turned a few Belfast minds in the direction of A.P.S. multi plans and there are rumours of a *Short Belfast* with four Oliver's.

It's not often that we receive news from the armed Services, particularly overseas, but Pte. P. R. Knowles of the ARMY, stationed in Germany, took time off to tell us of his impressions of modelling out there. He has an A.P.S. *Patches* and a *Seraph*, which he intends to enter in local competitions.

German modellers around Wuppertal, where he is stationed, are very keen indeed and standards of workmanship are commendably high. Main interest is A/2 Gliders, though some fly control line stunt, using Fox 35 motors, a power plant Pte. Knowles intends to use in a *Coy Lady*. Good for the Army! Their goodwill through the hobby of aeromodelling should help dispel a lot of wrong thought as to what the lads do to avoid boredom in German bases.

THE CLUBMAN

S.M.A.E. Contests

August 19th

S.M.A.E. Cup (A/2 Glider) } Area

*Keil Trophy (Team Power) }
NORTHERN GALA

August 26th

Hamley Trophy (U/R Power) } R.A.F.

Caton Trophy (U/R Rubber) } Church

(U/R Glider) } Fenton

S.M.A.E. Trophy } Nr.

(R/C Multi control) } Tad-

P.A.A. Load (Class A) } caster

Team Racing } Yanks.

(Classes $\frac{1}{2}$ A, A and B)

C.L. Stunt

Speed

U.K. CHALLENGE MATCH

September 16th

Halifax Trophy (F.A.I. Power) } Area

*Farrow Shield (Team Rubber) }
September 23rd

Control Line Speed and Stunt } Central-

AFROMODELLER Trophy } Ised

(R.C. Multi control)

September 30th

*Model Engineer Cup } Area

(Team Glider)

Weston Cup (F.A.I. Rubber)

Power ($\frac{1}{2}$ A)

October 14th

White Cup (U/R Power) } Decen-

Frog Junior } tralised

(U/R Rubber/Glider)

S.M.A.E. Results

May 13th, 1962 (Area Centralised)

LONDON WEATHER, Overcast, max.

temp. 50 deg. F., wind gusting to 30 m.p.h.

C.M.A. Cup (Unrestricted Glider)

97 entries

1. M. Burrows (St. Albans) 9:00

+4:17

2. A. Wisher (Croydon) 9:00

-0:39

3. J. Hanson (Wallasey) 8:56

4. J. West (Brighton) 8:47

5. D. Latter (Brighton) 8:29

6. J. Chadwick (Ashton) 8:25

Gutteridge Trophy (Unrestricted Rubber)

57 entries

1. U. A. Wannop (C.M.) 12:00

+4:58

2. J. O'Donnell (Whitefield) 11:45

3. A. J. Payne (Stevenage) 11:40

4. R. C. Pollard (Tynemouth) 11:11

5. R. Paveley (Hornchurch) 11:00

6. T. Stadden (Canterbury) 10:58

F.A.I. Power 19 entries

1. A. H. Percival (Grantham) 13:17

2. M. Green (Foresters) 12:09

3. S. Savini (Liverpool) 11:38

4. D. Illsley (C.M.) 11:13

5. J. Pencheon (Baildon) 8:27

6. L. Mathew (C.M.) 7:07

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A.M. 25 2 1/2 c.c. ... £2/19/8 + 12/3
A.M. 35 3 1/2 c.c. ... £3/1/1 + 12/10
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Heron 1 c.c. ... £3/9/8 + 13/10
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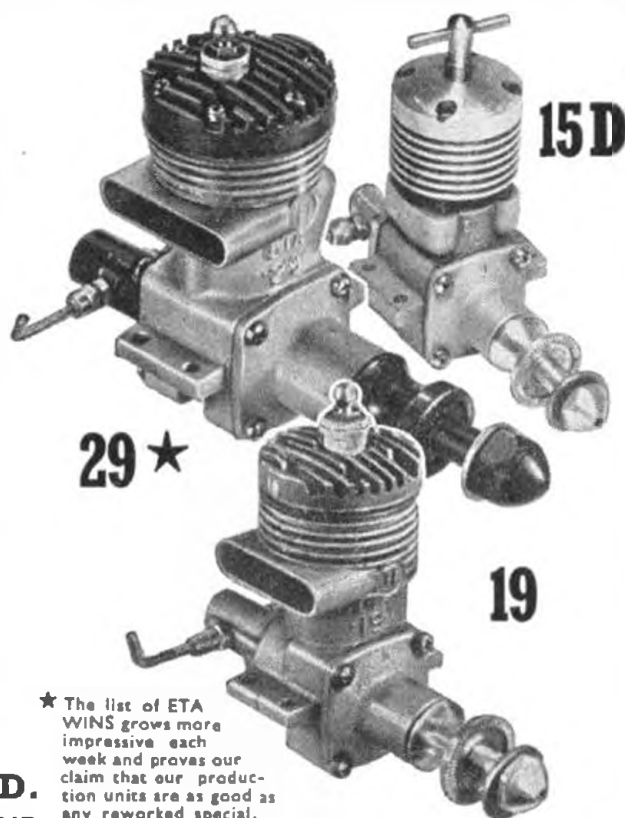
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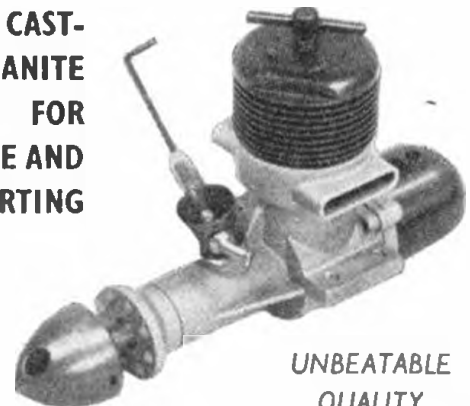
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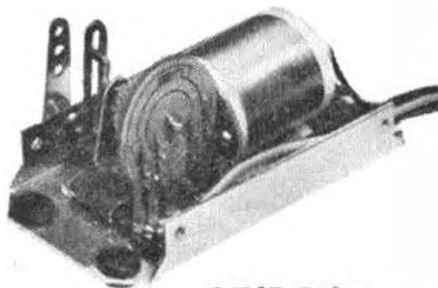
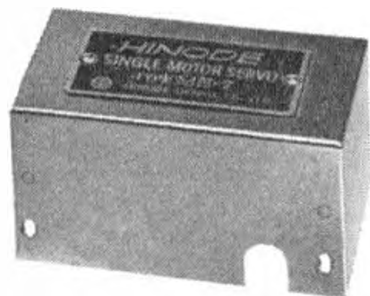
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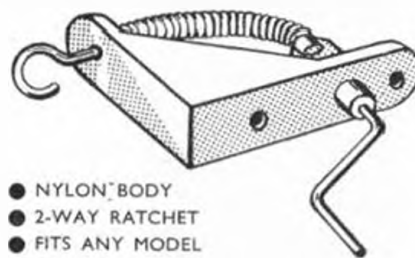
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The Yeoman "Dixielander" is easy to build—easy to fly—with rugged, straightforward construction and built-in trim. What better than to link up this top British kit model with a world-famous Cox engine! "Dixielander" will take other engines, of course—1.5 c.c. for sport flying, 2.5-3.5 c.c. for contests.

**COX ENGINES
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SIX Cox engines in the FIRST TEN PLACES!

COX SPECIAL SECOND!
Tee Dee '15's' FIFTH & SIXTH!
Tee Dee '049's' NINTH & TENTH!

If you want to get to the top — choose a
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YEOMAN

"DIXIELANDER"

**THE MODEL THAT HAS MORE CONTEST SUCCESSES
THAN ANY OTHER BRITISH DESIGN** — a consistent winner through the past five seasons. Rugged pylon-mounted wing is easy to assemble from shaped parts. No cutting or trimming to worry about—just assemble right over the plan. Simple box fuselage saves building time and gives a light, strong structure.

KIT INCLUDES

- ★ PRECISION DIE-CUT WING AND TAILPLANE RIBS
- ★ SHAPED WING AND TAILPLANE LEADING AND TRAILING EDGES
- ★ SHAPED WING AND TAIL TIPS, CUT OUT RUDDER PARTS
- ★ DIE-CUT PLY PARTS, SPARS, TISSUE, MOTOR BEARERS, ETC. ETC.
- ★ SUPER PLAN AND SEPARATE BUILDING AND FLYING MANUAL

PRICE **27/6** (inc. P.T.)

**THE COMPLETE
RANGE OF
COX ENGINES**



	cu. in.	
PEE WEE	.020	38.6
BABE BEE	.049	38.6
GOLDEN BEE	.049	47.3
COX SPECIAL	.15	146

**COX TEE-DEE
CONTEST LINE**



	c.c.	
T-D .010	.16	77.6
T-D .020	.33	67.10
T-D .049	.82	77.6
T-D .09	1.6	97
T-D .15	2.45	122

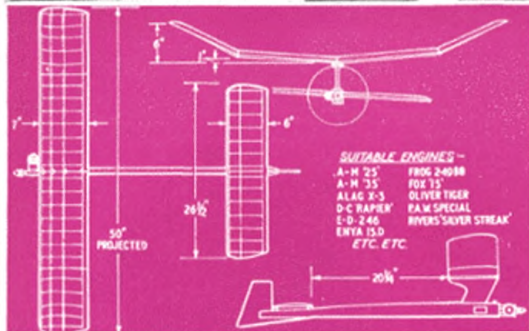
**MEDALLION
SERIES**



cu. in.	c.c.	
.049	.82	67.10
.09	1.6	87
.15	2.5	107

**COX GLOW
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The finest fuel available for all glow motors. Contains 15 per cent. nitromethane.
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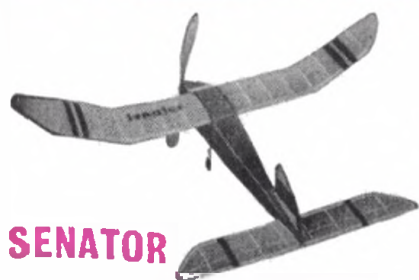
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The brand name that means the best in model kits, design-engineered to the highest possible standards. Take your choice of control line, free flight, power, glider, rubber flying scale, every one designed right—designed for flight.

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and accessories
COX ENGINES AND READY-TO-FLY MODELS

A.A. HALES LTD.
26 STATION CLOSE, POTTERS BAR, MX.

KEILKRAFT RUBBER DRIVEN MODELS



SENATOR

Novel contest model which is capable of a fine performance. Features a single leg undercarriage. Wingspan 32 in.

8/5



ACE

Sleek cabin model. Construction is very simple, and the number of cut out sheet parts have been kept to a minimum. Wingspan 30 in.

7/4



AJAX

A well established K-K favourite. Kit contains clearly printed sheet, propeller, plastic wheels, tissue, celluloid, wire, etc. Wingspan 30 in.

8/11



COMPETITOR

The pleasing lines of this model have made it one of the most popular in the K-K range. Performance is outstanding. Wingspan 32 in.

10/6

FOR INEXPENSIVE MODEL FLYING

In the years prior to the war, when model engines were the exception rather than the rule—and the model diesel was as yet unknown—rubber power was the order of the day.

Many were the outstanding flights made by these models, and still today rubber power can give the modeller hours of exciting and inexpensive flying.

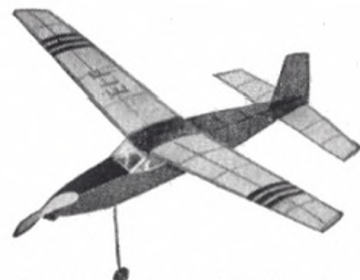
These Keilcraft models have been designed by experts for easy construction and top performance—with all of them you can have lots of fun.



PIXIE

An attractive semi-scale design with realistic cabin, knock-off wings, and plastic propeller. A very interesting model to build. Wingspan 23 in.

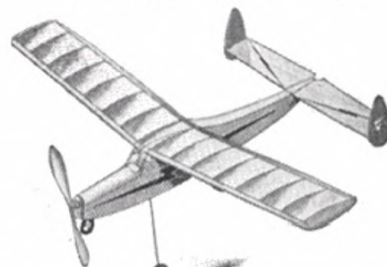
6/5



ELF

The smallest and lowest priced rubber model in the Keilcraft range. A neat little model that is a pleasure to build and fly. Wingspan 16 in.

4/6



GEMINI

A beginners duration model with fuselage parts, tailplane, and fins in pre-cut, pre-decorated sheet balsa. Wingspan 22 in.

8/11

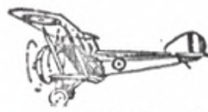
KEILKRAFT

JUNIOR FLYING SCALE SERIES

RUBBER POWERED. AVERAGE SPAN 20"



Lysander



Sopwith Camel



Fairey Gannet



S.E.5

Auster Arrow
Beechcraft Bonanza
Cessna 140
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Messerschmitt M.E. 109
Focke-Wulf 190
Spitfire
Hawker Hurricane
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Piper Super Cruiser
Stinson Flying Station
Wagon



Spitfire



Piper Family Cruiser



Percival Provost

ALL 4/6 EACH
(Except Stuka 4/10)



Chipmunk



Stuka

OVER 100 MODELS IN THE KEILKRAFT RANGE

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The Greatest Name in model kits