NOV. 1947

AEROMODELLER 1/3

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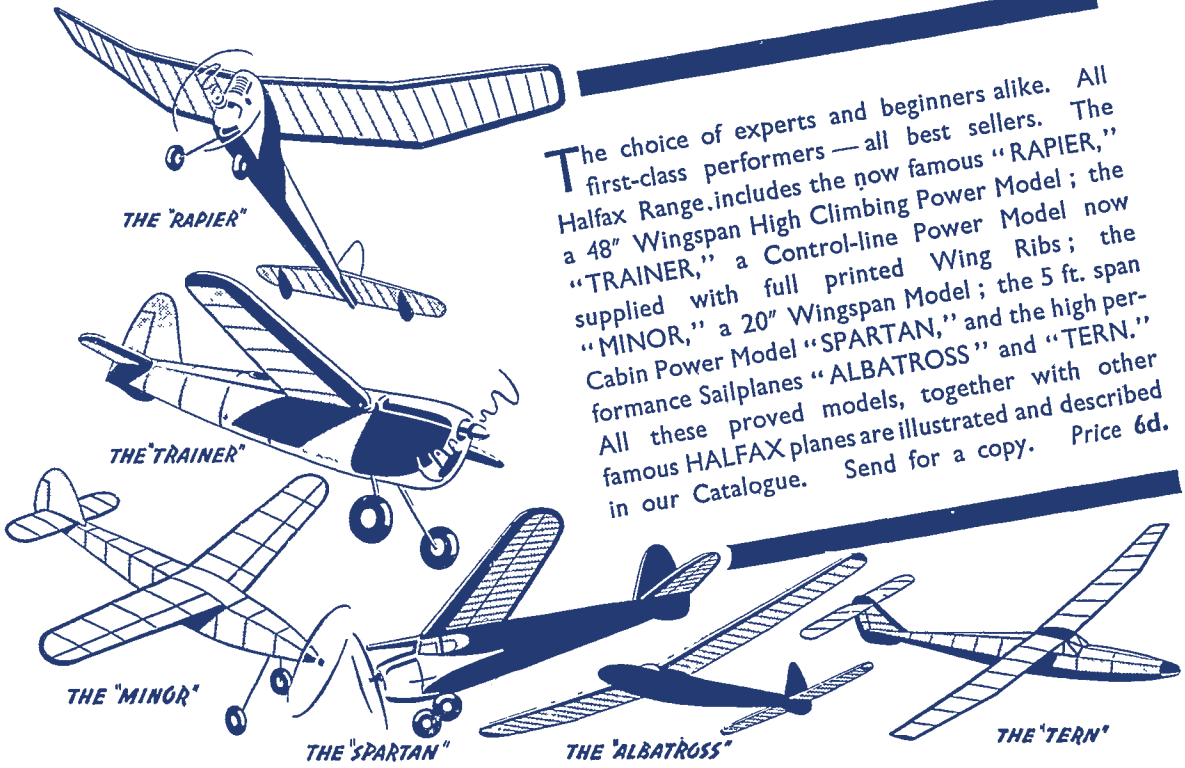

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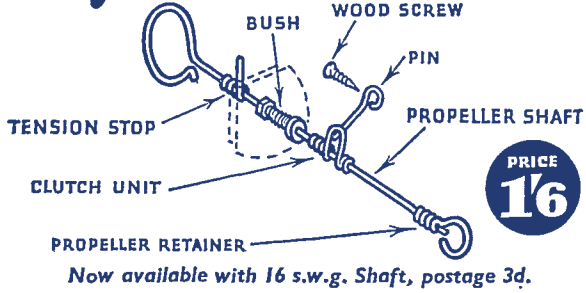

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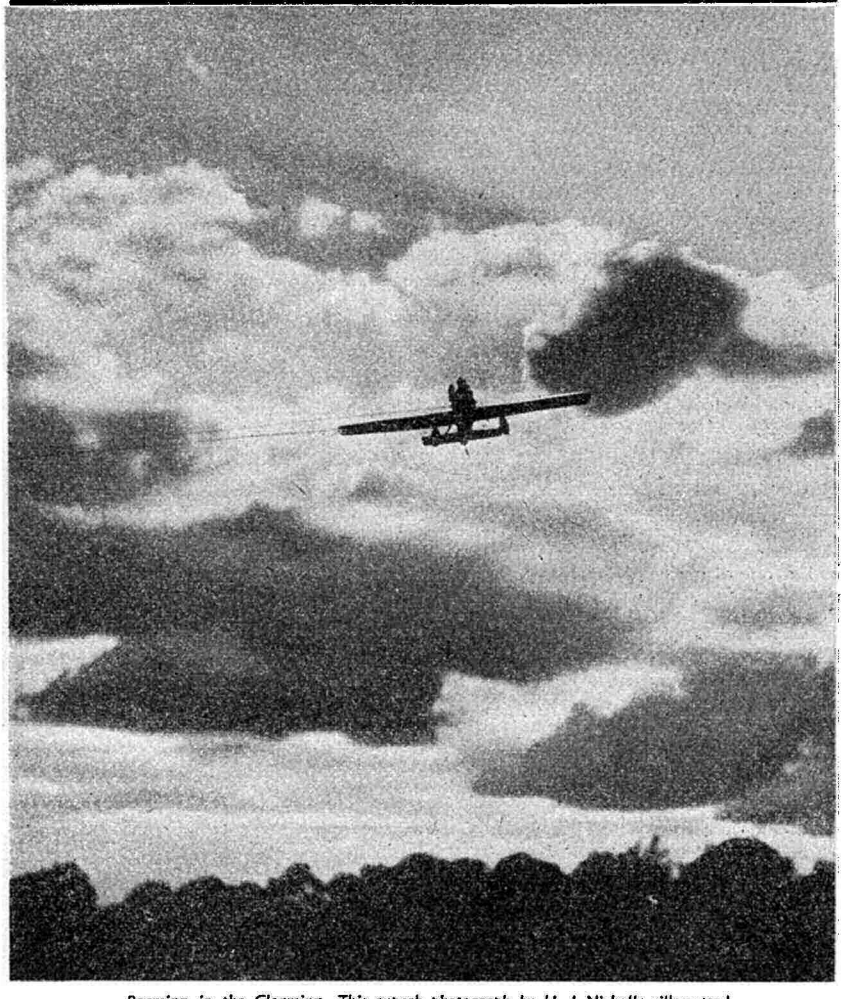

Roaming in the Gloaming—This superb photograph by H. J. Nicholls silhouetted Ron Moulton's well known control line trainer during a recent flying session at dusk.

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VOL. XII No. 142 NOVEMBER 1947

EDITORIAL

THE EDITOR REGRETS . . .

FOR the past three years aeromodellers have come to expect an announcement at about this time of their own National Model Aircraft Exhibition. This year we regret that we can make no such cheerful promise of Christmas pleasures to come. In common with every other member of the community we must accept a degree of sacrifice for the present to ensure that the future will be secure. The general financial position of the country warrants no considerable expenditure necessary for an exhibition on even the most modest lines; restrictions on power and lighting for displays of this sort will be severe, to say nothing of a possible fuel crisis if the expected hard winter returns. The limited time of opening that any restrictions would impose still less justifies a large expenditure of material and labour which can be more urgently employed, and we are sure our readers will approve of our action while regretting its necessity.

Dorland Hall, the scene of our past exhibitions, requires artificial lighting throughout the day and in the effort to provide some form of show, alternative halls where natural lighting could have been utilised for the major part of the day were sought in vain, for the only possible site is booked up indefinitely at this time of year. That our contribution thereby to the national effort is small cannot be denied, nevertheless, " many a mickle makes a muckle," and this will be but one of many regular Christmas shows notable for their absence this year we fear—casualties of King Coal and General Crisis.

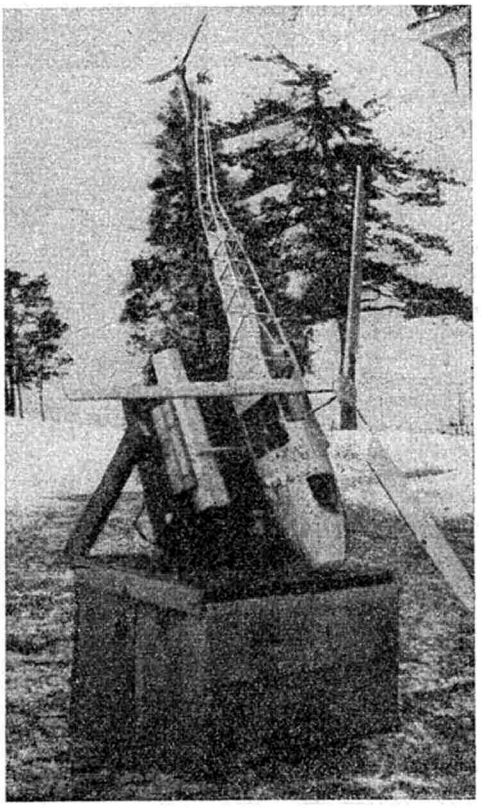
To maintain contact with the cream of aeromodelling endeavour, and to provide some outlet for the many models that have been already built specially for the expected exhibition, we shall be announcing a Photographic Competition in our Christmas Number which as usual will be a Special Double Size issue on sale at 2s. 6d. on or about 25th November.

Modellers will be invited to submit photographs of their models under a variety of categories with substantial cash prizes for the winners. While it is yet early to give details of the simple rules we would raise once more a point that we have stressed in vain for the past ten years. It is that the best model can be done less than justice by poor photography and a little attention paid to background and lighting will more than justify the trouble taken. Those with the simpler form of box camera may wish to make the most of present sunshine and take their pictures now. To them we would say, do *please* avoid brick walls, floral wallpaper and the like when posing your models! Finally, if you have a really outstanding model it is worth while securing the services of a professional photographer or skilled amateur from amongst your friends or fellow clubmen.

The 300 gns. Arnhem Trophy is here being presented to Brig. Spafford O.B.E. of the Airborne Forces Security Fund by Mr. Castleton Knight, General Manager of Gaumont British. Also present are Mr. and Mrs. D. A. Russell and Brig. Pritchard D.S.O., Commander of the Parachute Brigade.

"Aeromodeller" Photograph

HELICOPTERS



An American correspondent Ted Alexander sends this photo of his helicopter mounted on its special launching stand.

PART FOUR

BY R. H. WARRING

UNFORTUNATELY pressure of other business has not left time for the writer to complete the diesel-powered development of the original rubber series in time for inclusion in this series, but the layout is illustrated in Fig. 1, and may be commented on briefly. The system is exactly the same as that of the original patent applying to the contra-rotating, different-diameter rotor assembly.

The principle of this patent is that equal torque is applied to each pair of a system of different-diameter, contra-rotating rotors. Intermediate linkage is avoided. Thus one rotor is attached to the crankshaft of the prime mover (*i.e.* the motor) and the other rotor to the " other end " of the motor, *i.e.* the crankcase. Thus as the shaft rotates in one direction with the one rotor the whole motor rotates in the opposite direction with the other rotor attached to it. The main engineering problem left is simply one of attaching a suitable freely-pivoted fuselage to the powered rotor unit.

The hold up has been due principally to the fact that it was thought advisable to fit gears to ensure that both rotors auto-rotated for descent, rather than rely on freewheeling descent. The rotor system operates quite successfully, despite fears that the normal fuel feed might be affected by the fact that the tank was also rotating! The fuel feed pipe is arranged to draw from that part of the tank towards which the fuel is thrown by centrifugal force. No cut-out system is contemplated to stop the motor, but this could be arranged very simply, by attaching an airdraulic timer to one of the

lower rotor blades, linked to the motor cut-out.

The writer all along has expressed his favouring of the contra-rotating system to eliminate torque, but Ted Alexander, of America, has also produced a power driven type, based closely on the original Sikorsky design, weighing 19 ozs. Its development has been largely a matter of solving the very intricate engineering problems involved. As far as is known, it has not actually made any flights to date.

To correct the torque of the three-blade main rotor (each blade 20 ins. in length) a wide-blade tail rotor was found necessary, rotating at three times the main rotor speed. The tail rotor is belt driven.

The motor is fitted with a clutch for ease of starting, and to allow the rotor to freewheel once the power cuts. This is a very ingenious effort which automatically cuts in or out as required.

Ted Alexander also speaks of the " danger of launching " a model of this type, where a " spanking " from the rotor blades can easily occur. To obviate this a special launching stand has been constructed, the motor being started by means of a string wound round the flywheel.

A further project on interest is shown in Fig. 2 which employs a single rotor unit, jet driven. Two variations are shown, one with one, and the other with two jet units. This is closely allied to full-scale development where the search for a true jet-helicopter is receiving earnest consideration.

Whilst end-mounted jets will function satisfactorily—and is indeed the logical position for them to be, corresponding to maximum speed of the system—blades are severely stressed on account of this tip weight and present a pretty stress problem. The single jet unit eliminates this, but both systems develop marked gyroscopic effects.

It will be appreciated that torque is eliminated by mounting the prime mover(s) on the rotor system itself, which is one great point in its favour. It is also thought that the tip jets can be simple ram jets, which have very little weight, and are just about the simplest type of power unit available. But an extremely high velocity is required for efficient operation of a ram jet unit. A working efficiency demands that the tip speed of the rotors should approach the speed of sound, giving almost impossible stress conditions on the blades themselves.

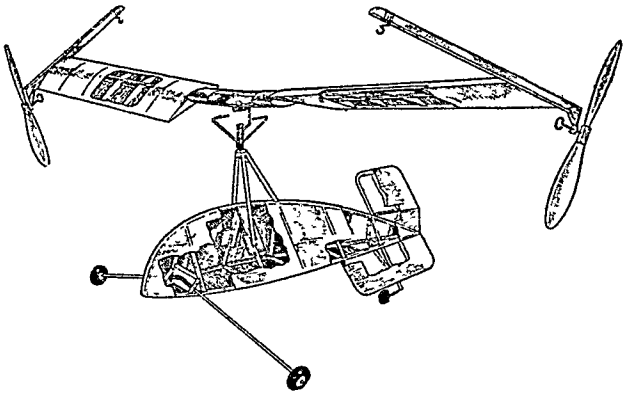
A rubber driven model of this type has been built and flown by P. E. Clark (see perspective sketch above) for which is claimed a good performance. But this again, is vulnerable and must inevitably result in a high centre of gravity position with consequent difficulty in balancing side areas.

Conclusion.

Of the many and varied systems tried to date the different-diameter, contra-rotating system has proved the best for model work. Whatever source of power is used—rubber or petrol/diesel—it is possible to make this system stable on its own under power. Further development should lead to *positively* stable descent.

Thus with a stable rotor system it simply becomes a matter of attaching a fuselage system, carrying undercarriage and/or flotation gear, so arranged that it will not upset stability. This means that any forces likely to be generated by this fuselage must be carefully balanced about the rotor axis.

Single rotor systems would appear admirably suited for jet-power experiments, where the jet unit is attached to the rotating system.

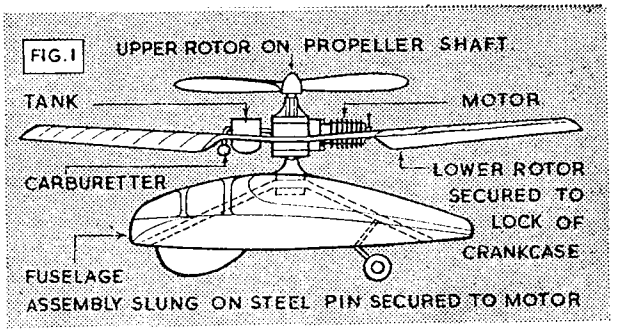


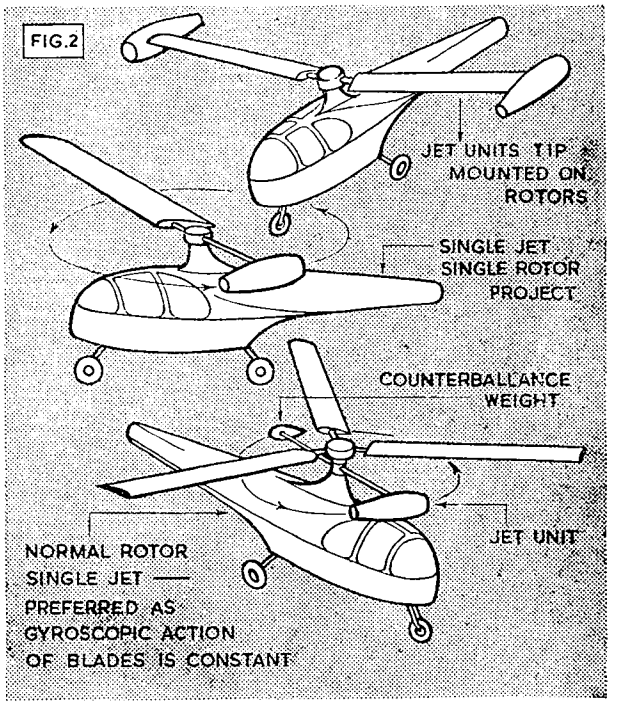
The chief problems of design would appear to be :—

(i) Elimination of torque
(ii) Stability of system in vertical flight
(iii) Stability in descent
(iv) Translational flight

(i), (iii) and (iv) all introduce engineering problems, which should be kept as simple as possible.

Plans are given overleaf for 3 rubber-driven helicopters whilst the building instructions can be found on page 694.





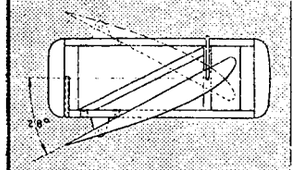
LE VEGA.

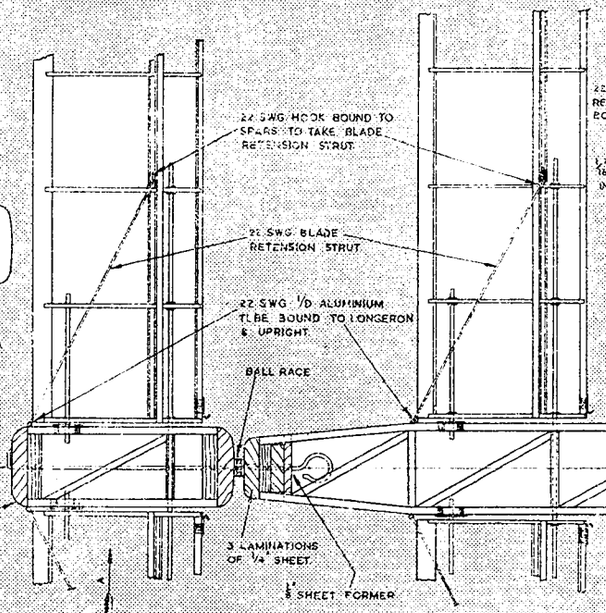
DESIGNED BY A. WATTEYNE.

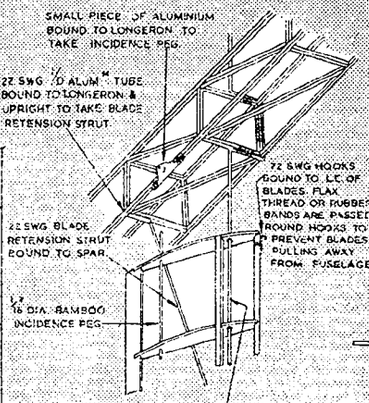
PLAN Nº 1.

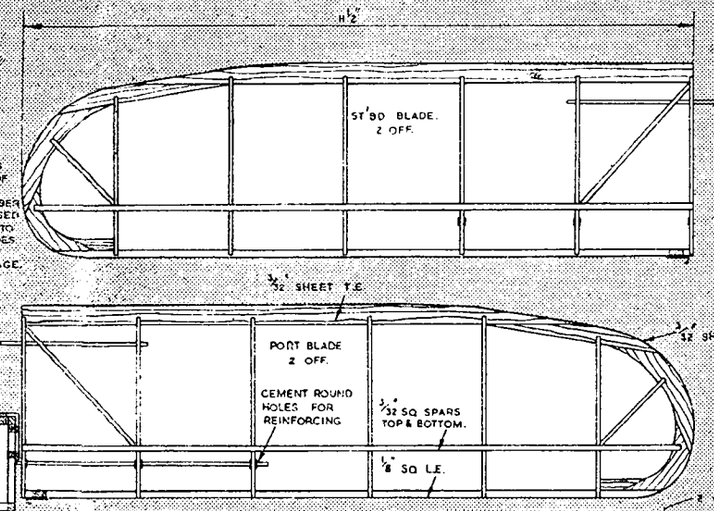
SCALE ½ FULL SIZE EXCEPT WHERE OTHERWISE STATED.

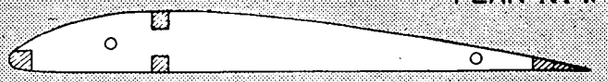
DATA.
SPAN 24-6"
LENGTH 34-6"
WEIGHT 4-4 OZS

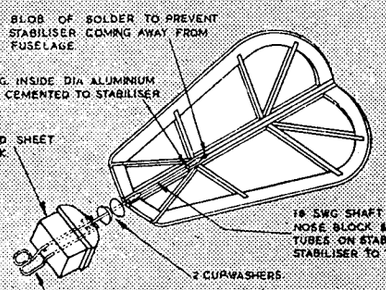


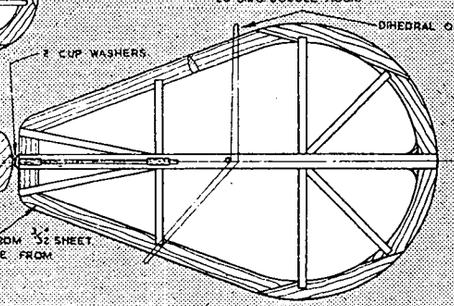












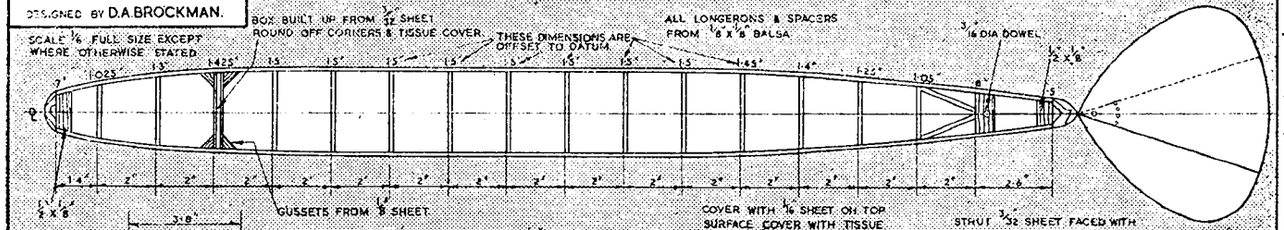
FUSELAGE 18 SQ SECTION BUILT UP FROM ⅛" SQ. STRIP.
POWER 16 STRANDS OF 5/16 X 30 / ⅛ X 1/30"
OR 24 " " " "

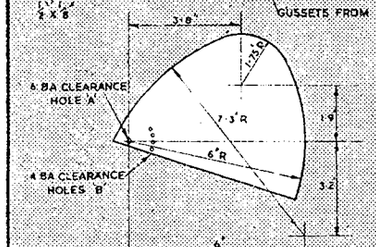
STICK HELICOPTER Mk XI

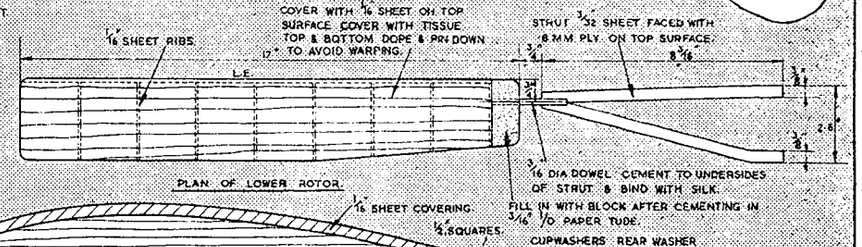
DESIGNED BY D.A. BROCKMAN.

PLAN Nº 2.

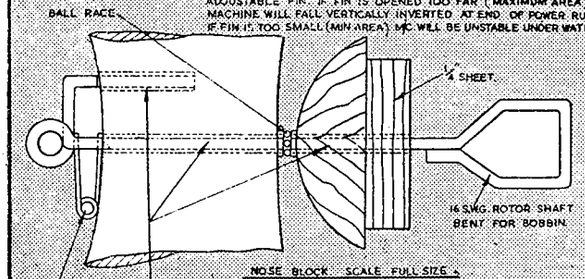
SCALE ½ FULL SIZE EXCEPT WHERE OTHERWISE STATED.





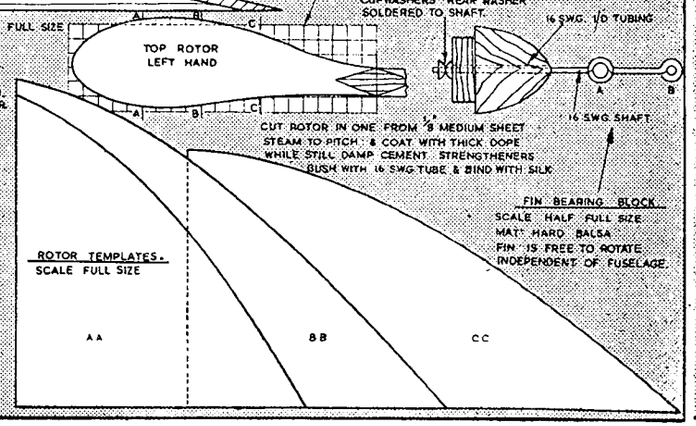


LOWER ROTOR PITCH ADJUSTABLE, SHOULD BE LESS THAN TOP ROTOR. LOWER ROTOR STRUTS PLUG INTO FUSELAGE BOXES. ADJUSTABLE FIN. IF FIN IS OPENED TOO FAR (MAXIMUM AREA) MACHINE WILL FALL VERTICALLY INVERTED AT END OF POWER RUN. IF FIN IS TOO SMALL (MIN AREA) M/C WILL BE UNSTABLE UNDER WATER.



NOSE BLOCK SCALE FULL SIZE.
MAT'L HARD BALSA.

TOP ROTOR FREE WHEELS WHEN MOTOR STOPS.



FIN BEARING BLOCK.
SCALE HALF FULL SIZE
MAT'L HARD BALSA
FIN IS FREE TO ROTATE INDEPENDENT OF FUSELAGE.

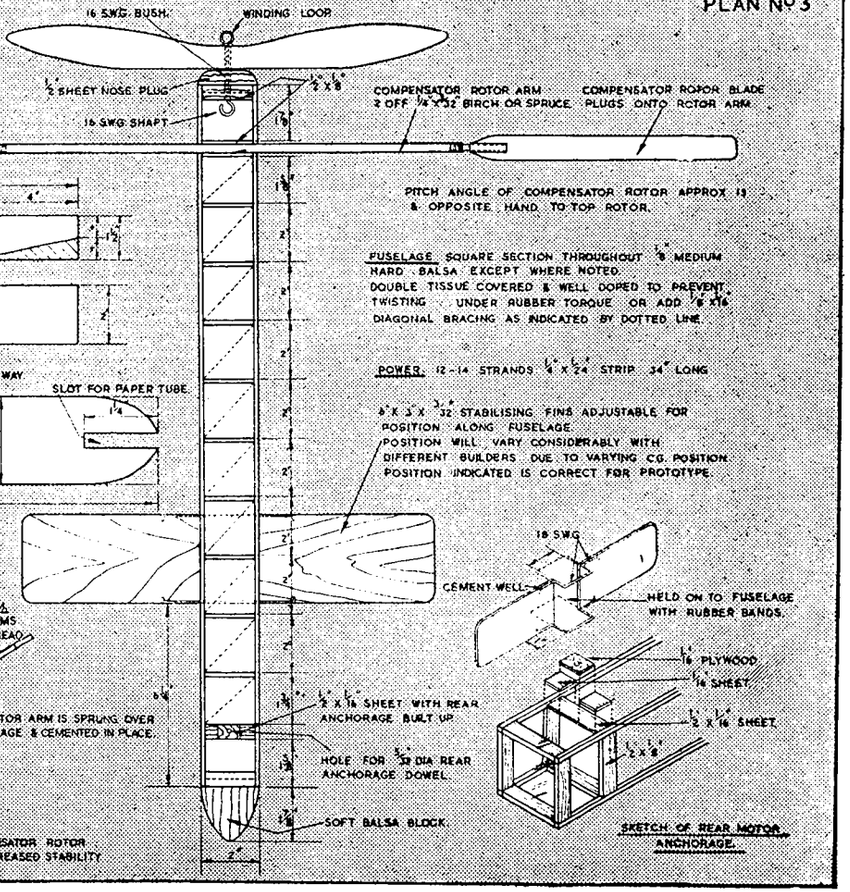
ROTOR TEMPLATES.
SCALE FULL SIZE

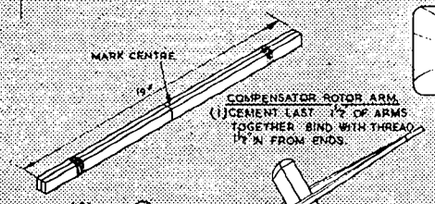
FREE-LANCE DURATION HELICOPTER.

DESIGNED BY R.H. WARRING.

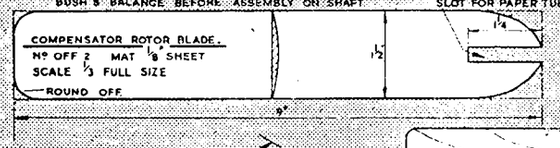
PLAN Nº 3

MAXIMUM (ESTIMATED) STILL AIR DURATION 118 SECS.
SCALE ½ FULL SIZE EXCEPT WHERE NOTED.





LAYOUT FOR TOP ROTOR BLANK.
CARVE AS SWEPT FORWARD PROPELLER IN USUAL WAY
BUSH & BALANCE BEFORE ASSEMBLY ON SHAFT



NOTE - FOUR BLADED COMPENSATOR ROTOR MAY BE USED FOR INCREASED STABILITY.

SKETCH OF REAR MOTOR ANCHORAGE.

VEGA

BY ANDREW WATTEYNE

THIS machine consists of a fuselage of balsa 3 mm. square (roughly $\frac{1}{8}$" square), to which is fixed an upper rotor of approximately 65 cm. diameter.

The motor spindle, to which is attached one end of the rubber skein, goes through the lower noseblock of the fuselage and carries a little secondary fuselage to which the lower rotors are permanently attached.

The hook in the upper noseblock is locked to this noseblock. The stabilizing vanes are freely pivoted on an extension of this shaft. In flight, this stabilizer adjusts itself automatically with its dihedralled face towards the pressure of air which is strongest.

The rotor blades are built up, like small wings, and tissue covered. The fuselage rotors are braced for additional strength. The upper rotors are given a lower incidence than the bottom rotors, to equalise rate of rotation.

The finished model, covered and given two coats of dope, should weigh between 115 and 125 grammes.

Power consists of 18 strands 4 × 1 mm. rubber strip, or equivalent (*e.g.* roughly 18 strands $\frac{3}{16} \times \frac{1}{50}$). Motor length is adjusted so that there is no slack between hooks when unwound. The motor should not be stretch-wound.

To wind by hand, the base of the fuselage is held between the thumb and fingers of left hand and inclining the machine to the right. The first finger of the right hand is used to wind against the leading edge of one of the lower rotor blades.

The model is launched as follows. Hold upright by the two noseblocks; the left hand holds the lower noseblock of the main fuselage and the right hand the noseblock of the little fuselage. Release the left hand and allow the upper rotor to rotate before releasing completely.

A long and stable climb should result to a good height. Duration is approximately 20 seconds for every 100 turns wound on the motor.

In a wind, the model should be launched inclined towards the wind direction. If launched horizontally it will automatically right itself and curve upwards into vertical flight.

DURATION TYPE HELICOPTERS

PLAN 2 BY R · H · WARRING — PLAN 3 BY D · A · BROCKMAN

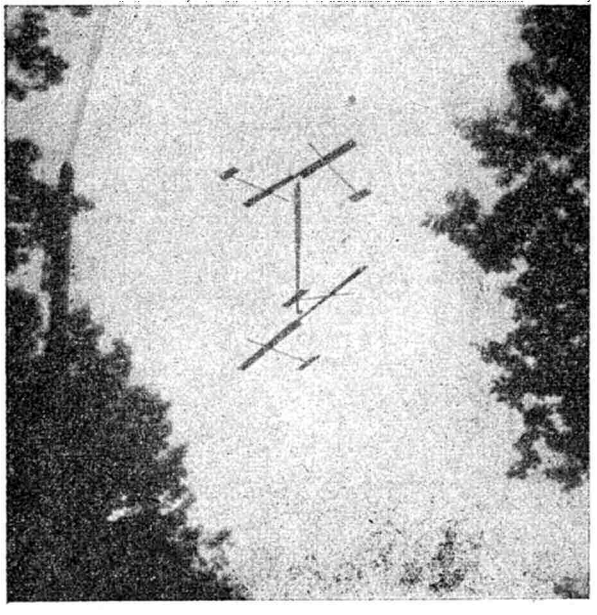
BOTH these models employ Warring-type contra-rotating rotors and adjustable stabilizing fins.

Construction is quite straightforward and should be clear from the plans.

The fuselage in each case is tissue covered and should be given one or two coats of dope.

Power required will depend to a certain extent upon the total weight of the model. Enough power should be used to give a steady climb to about 20 feet on 100 hand turns, with the motor just running out in the air. Greater power than this will result in a very fast climb, but reduced total duration.

The co-axial helicopter shown below was built by an American reader, W. Foshag of Washington D.C. It incorporates a stabilising rotor hub and the blades, mounted on a universal joint, vary from 20 degrees at the hub to 5 degrees at the tip. An interesting experiment, it did not come up to the expectations of the designer.



Adjustment for stability is given primarily by correct C.L.A. positioning by means of the adjustable fins, and then correct pitch setting of the compensator rotor to get maximum climb.

In still air a climb to about 400 feet is possible. Provided the trim is correct, no trouble should be experienced in flying in even high winds.

All models of this type fall free in descent once the power has run out. If a "throw-out" type of freewheel is used on the upper rotor a form of "helicopter descent" is possible with the rotors windmilling in opposite directions. This will considerably prolong duration. But no damage is likely to result even if the model falls free to the ground. The chief danger is flying the model into the ground under power, due to incorrect trim or balance, when the compensator rotor will almost certainly be broken.

It should be noted that for the rotors to windmill in descent the direction of rotation must change. That is to say, the rotors must first of all stop and then windmill in the opposite direction hence a certain amount of height will inevitably be lost on this account. Also, a normal pin-and-loop freewheel on the upper rotor is quite useless, as this will never disengage.

It is an advantage to use an overlength motor which is not tensioned in any way. This then falls to the bottom of the fuselage when unwound and lowers the centre of gravity of the model, assisting a "parachute" descent. If the C.G. is high the model will probably fall over on its back when the rotors stop and it may never reach the correct attitude for windmilling descent.

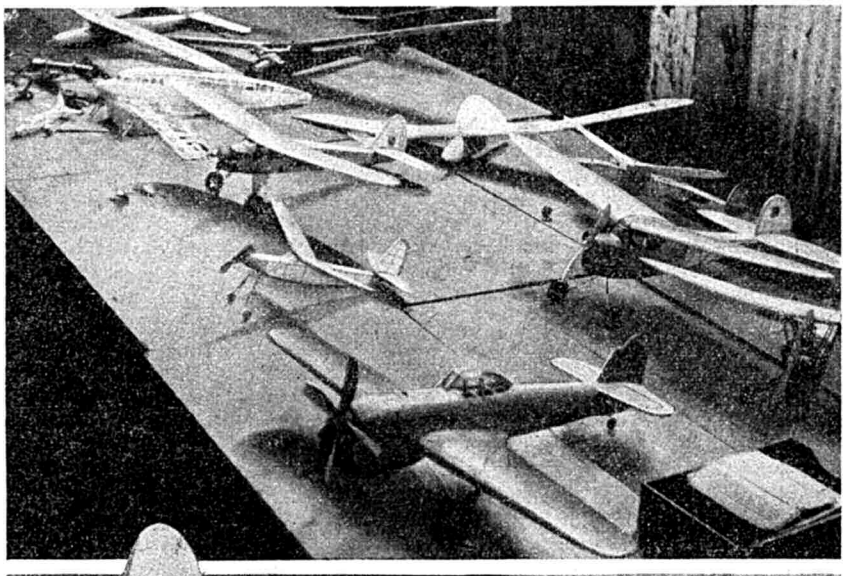
BY H. G. HUNDLEBY

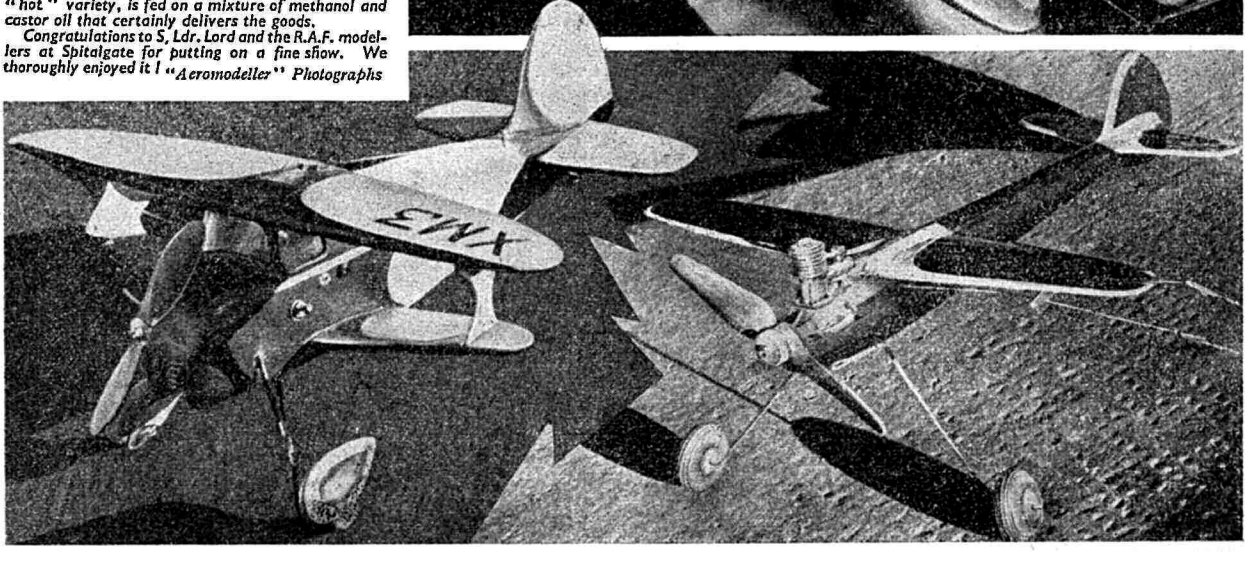
In common with many other R.A.F. Stations throughout the country, No. 1 F.T.S. Spitalgate put on a show for the public on Saturday, 20th September, this being part of the Battle of Britain celebrations. Spitalgate is in 23 Group, renowned for its aeromodelling activities, in fact readers may remember the successful flying meetings held at Little Rissingdon, Feltwell and other stations in this enthusiastic Command. It was therefore hardly surprising that a first class model show was organised in addition to the full size flying display, this by S/Ldr. R. B. Lord, A.F.C., himself a keen enthusiast.

Control line flying was the main theme and in this S/Ldr. Lord was assisted by two well known enthusiasts Ron Moulton and Denris Allen. The flying took place in a large hangar and apparently went down well with the public who numbered some 3,000 ! Our heading photograph shows S/Ldr. Lord with his "Sharpie" built from an American kit and powered with an E.D. diesel, a very nifty little model that has been timed up to 65 m.p.h. Bottom right is a close-up of this model; note the blade area of the airscrew at the root.

Photo on the right gives a good idea of the standard of R.A.F. modelling these days, the trend from solids to flying types being particularly noticeable. Our last illustration is from the Moulton stable and is again a control-liner of American origin. It is a De Bolt biplane powered with a De Long motor and is most spectacular in performance. The motor, one of the "hot" variety, is fed on a mixture of methanol and castor oil that certainly delivers the goods.

Congratulations to S, Ldr. Lord and the R.A.F. modellers at Spitalgate for putting on a fine show. We thoroughly enjoyed it ! "Aeromodeller" Photographs





A SIMPLE YET ROBUST LOW WING DESIGN FOR THE BEGINNER

By H. J. PRIDMORE

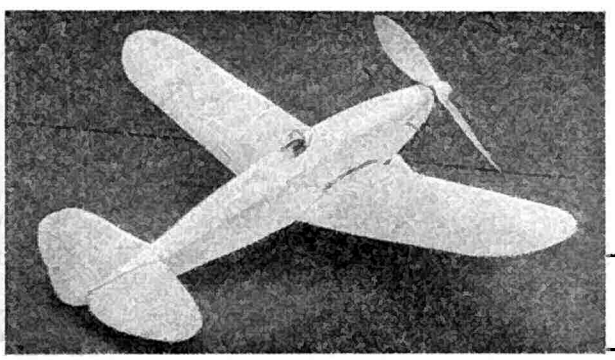
The Skylark II

FOR those readers who are comparatively new to the game the Skylark is ideal especially for winter flying. Built to the tradition of M. R. Knight it will stand a fair amount of rough usage, is simple to trim, and turns in consistent flights of between 30 to 60 secs. (longer if you can find the thermals)

Fuselage. First build up two flat sides on the drawing using 3/32 square balsa. Hard balsa should be used for the longerons. Join the sides by the 3/32 sq. cross-pieces preferably using a jig. The wing tongue box should now be built and installed in the fuselage. After runners are cemented in place, test to see if it slides properly. Cut out fuselage formers and cement in position taking care to see that they are upright. Fit and cement the stringers, and cover from F1 to F7 with $\frac{1}{32}$" sheet. Bind undercart tube in place and also the wire stop. Finally cement nose former in position, fill nose in with sheet balsa, and fit windscreen and tailwheel.

Undercarriage. Cut and bend the wire parts required for the undercarriage and solder where shown. Bind the parts to the bamboo legs, and give thread a coat of cement. Add balsa fairing and sand to streamline section. Fit wheels and plug undercarriage into fuselage.

Wings. Build wing in the usual way using hard balsa for main spars and leading edges. Take great care to cut the slots in the root ribs accurately for the tongues so that the correct incidence and dihedral are assured on both wings. The tongues must be fitted into the ribs before they are cemented to the mainspars, otherwise it will be impossible to get them in position. Do not forget to face the root ribs with ply as they take a great deal of strain.



After wings are built, finally cement the small pegs on bottom of mainspars in place.

Tail Unit. Cut tailplane outline from $\frac{3}{32}$" sheet balsa, sand down to section, and cement all joints, and add spar ribs. Cement the $\frac{3}{32}$" sheet balsa in centre of tailplane where shown. Build fin in a similar manner but raise outline slightly when fitting ribs. Now cement former 12 in position on tailplane, add the short $\frac{3}{32}$" sq. stringer, and cement fin in place taking care to see it is vertical.

Propeller, etc. Purchase a 10" diameter Paulownia wood propeller of medium pitch, and bush with a short length of brass tubing. Cut and finish noseblock and insert a brass bush. Use 16 s.w.g. piano wire for propeller shaft and fit a freewheel. Add a spinner if desired.

Covering. Cover entire model with tissue and use paste or thick dope as an adhesive. Spray with water, leave to dry, and give fuselage and wings two coats of dope. Give tail unit one coat of thin dope and weight down to a flat board while drying. Finally touch model up with coloured dope to taste, and add decoration if desired.

Assembly and Flying. To assemble model insert wing tongues into box, push wing panels up to fuselage and secure with a rubber band hooked over pegs underneath. Retain tail unit in place by another band. Now make up an 8 strand motor, 22" long of $\frac{3}{16}$" flat rubber, lubricate well, tension by the "White" method, and instal in the fuselage. Now hold model by the wingtips and move wings until it balances horizontally. The model should be tested on a calm day. Launch gently into wind and notice its behaviour. If it glides a bit steeply either push the wings forward a little or pack the trailing edge of the tailplane up slightly. Should it stall, push the wings back. When the glide is correct, wind about 150-200 turns on the motor and launch into wind. Give up or down thrust if required, and adjust to circle to the right. When correct flying trim is found, the power may be increased to 10 strands, which will result in a better climb.

A 1/3rd scale reproduction of the plans given opposite, but for those who would prefer the full-size drawings they are obtainable at 1/6d. post free from the Aeromodeller Plans Service, Allen House, Newarke Street, Leicester.

The clean lines of the Skylark are emphasised by the photo on the left, whilst in the heading picture it emulates its feathered namesake (without the singing of course).

A 30" WINGSPAN SEMI-SCALE LOW WING DURATION MODEL

SKYLARK II.

DESIGNED BY

H.J. PRIDMORE.

1/6

ALLEN HOUSE, NEWARKE STREET, LEICESTER

STRIP		MISCELLANEOUS
4 STRIPS OF	1/16"X1/8" X 36" BALSA	5" X 2" OF 1/32" PLY
6 " "	3/32" X 1/2" X 36" "	3 1/2" X 3 1/2" OF 1/16" PLY
1 " "	3/32" X 1/8" X 12" "	12" OF 3/16" X 3/32" BAMBOO
1 " "	1/8" X 1/8" X 36" "	1 1/2" OF 1/8" BIRCH DOWLING
1 " "	1/8" X 1/4" X 36" "	3" OF 16 SWG PIANO WIRE
SHEET		12" " 18 " " "
1 SHEET OF	1/32" X 3" X 9" "	6" " 20 " " "
1 " "	1/16" X 3" X 36" "	4" " 22 " " "
1 " "	3/32" X 3" X 18" "	16 SWG I/D BRASS BUSH
1 " "	1/8" X 3" X 18" "	1 OF 16 SWG I/D BRASS TUBING
2 CUP WASHERS		1 SMALL WOODSCREW

POWER 8-10 STRANDS OF 3/16" FLAT RUBBER 22" LONG TENSIONED BY THE WHITE METHOD

COVER TOP OF FUSELAGE FROM F1-F7 WITH 1/32" SHEET.

ALL WOODS UNLESS OTHERWISE STATED ARE BALSA.

10" DIA PAULOWNIA WOOD PROPELLER MEDIUM PITCH. FIT A SPINNER IF DESIRED.

SOLDER THIS CUP WASHER TO PROP SHAFT.

FREE WHEEL.

SMALL WOOD SCREW.

TOP STRINGER 3/32" SQ

WINDSCREEN.

POSITION OF 3/16" X 1/16" STRINGERS. ALL TAILPLANE RIBS FROM 1/16" SHEET.

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12

FILL IN THESE 3 BAYS WITH 1/16" SHEET BALSA INCLUDING BOTTOM. BRASS TUBE STOP.

16 SWG PROP SHAFT.

BRASS TUBE.

BRASS BUSH.

CUP WASHERS.

3/32" SQ LONGERONS 3/32" SQ HARD BALSA.

WING TONGUE BOX SLIDES INTO THIS SPACE.

HOLE FOR DOWEL.

3/32" SHEET

1/8" X 1/4" SPAR

3/32" SQ SPAR

1/8" SHEET

R1 R2 R3 R2.8 R3 OF 1/16" SHEET. R1 OF 1/8" SHEET.

R2 R7 R1

T1 T2 T3 T4

CUT FIN OUTLINE FROM 3/32" SHEET SAND DOWN TO SECTIONS

F1 F2 F3 F4-F6 F7 F8 F9

ALL FUSELAGE FORMERS FROM 1/16" SHEET.

F10 F11 F12

TAILWHEEL STRUT 22 SWG WIRE TO STERN POST.

LEAVE THIS PANEL UNDERNEATH UNCOVERED FOR ACCESS TO RUBBER.

SMALL RUBBER BAND HOOKED OVER PEGS

20 SWG HOOK

RUBBER BAND FOR UNDERCART SPRINGING.

1/32" SHEET BALSA FAIRING.

SPREADER BAR 18 SWG PIANO WIRE.

PLUG INTO BRASS TUBE IN FUSELAGE.

3/32" SHEET GUSSETS

APPROX POSITION OF C.G.

THIS SPACE MAY BE FILLED WITH SCRAP BALSA WHEN CORRECT POSITION OF BOX IS FOUND.

20 SWG AXLE BIND TO BAMBOO LEG

WING TONGUE BOX. N° OFF 2 MAT 1/16" SHEET.

3/16" X 1/16"

3/32" SQ RUNNERS TOP & BOTTOM OF BOX CEMENTED IN PLACE AFTER BOX IS INSTALLED IN FUSELAGE.

BAMBOO LEGS 3/16" X 3/32" X 4 3/4" LONG.

1/2 DIA CELLULOID WHEELS

2 1/4" TRACK

F17

1/8" X 3/32" SPAR.

T1 T2 T3 T4

3/32 SH SOFT BALSA FLUSH WITH BOTTOM RIBS.

TAIL WHEEL LAMINATE 2 PIECES 1/16" SHEET BALSA CROSS GRAINED.

SKETCH SHOWING METHOD OF KEEPING WINGS IN PLACE FOR FLYING.

W1. CUT 2 OFF 1/8" SHEET HARD BALSA & 2 OFF THIN 3 PLY.

WHEN CUTTING PLY RIBS OMIT SLOT FOR MAINSPAR.

W1 W2 W3 W4 W5 W6 W7 W8

18 SWG WIRE 2 OFF

SOLDER TOGETHER.

BIND TO INSIDE OF BAMBOO LEG.

NOTE AMOUNT OF SIDETHRUST.

1/16" PLYWOOD WING TONGUE N° OFF 2.

CUT TAILPLANE OUTLINE FROM 3/32" SHEET SAND DOWN TO SECTIONS.

TUBE BIND TO BOTTOM CROSS PIECE

HOOK

3/32 SQ. CROSS PIECES.

1/8" BIRCH DOWEL.

SIDE VIEW OF SPREADER BAR

CEMENT TO SHEET IN CENTRE OF TAILPLANE

CUT 2 PIECES OF 1/8" SHEET TO THIS OUTLINE & CEMENT TO BACK OF NOSE BLOCK TO FORM NOSEPLUG.

18 SWG WIRE STOP BIND TO BOTTOM LONGERONS.

IMPORTANT. FIT TONGUES INTO RIBS BEFORE CEMENTING RIBS INTO PLACE.

FILL IN SLOT WITH BALSA WHEN TONGUES ARE FITTED.

MAINSPAR. CUT 2 OFF 1/8" SHEET HARD BALSA.

1/8" X 1/16"

PEGS 1/8 SQ

NOSE FORMER 1 OFF 1/32" SHEET BALSA FACE WITH THIN 3 PLY.

L.E. 1/8" SQ. HARD BALSA.

1/16" - 3 PLY TONGUES

W1 W2 W3 W4 W5 W6 W7 W8

MAIN SPAR.

1/32 PLY RIBS.

3/32" SHEET GUSSETS.

NOTCH T.E. FOR RIBS.

CUT WING TIPS FROM 1/32 SHEET BALSA.

T.E. 1/4" X 1/8"

3° DIHEDRAL AT WING TIPS OBTAINED WHEN TONGUES ARE FITTED.

RSS. 273

Southern Counties Rally

REPORTED BY P · T · GUILMANT

THE Rally was held at the Gosport Naval Aerodrome on September 21st, thanks to the co-operation of the Naval Commander, but co-operation was not forthcoming from the Clerk of the Weather who saw fit to make a change in wind direction the night before the event. Undismayed the organising committee, composed of representatives from the five main southern clubs, set to and altered the whole layout in record time. This praiseworthy effort enabled Admiral Sir Thomas Troubridge, K.C.B., D.S.O., to open the Rally at 11.30 as arranged.

The Concours d'Elegance immediately followed the opening speech, with a varied assortment of nearly 40 models providing the judges with a difficult task. Mr. C. L. Houghton of Luton took first place with a superbly finished "Phantom" in red and yellow; Mr. J. M. Coxall's scale Leopard Moth was second, showing the usual Coxall attention to detail. Third prize went to Mr. L. R. Willard, Southern Cross M.A.C.

At 12.30 p.m., with the windsocks stretched horizontal in a howling gale, the Open Glider Contest began. Mr. P. J. Morell of Worthing was an easy winner with a two flight aggregate of 253 secs., followed by Mr. D. E. Palmer of Basingstoke with 159·2 secs. and close on his heels Mike Richards of the Southampton M.A.C., whose Sunnanvind earned him 154 secs.

A crowd of 400 people watched the Southern Area's most expert modellers battle with the gale in the precision flying power contest for the Southern Counties Trophy. Whilst the majority of them managed to get away, few landed intact, owing to the force of the wind, and it was in fact only four that reached the final list.

Mr. B. C. Savage put up an excellent show in spite of the bad flying conditions scoring 47 points out of the possible 50 and an old-timer, Mr. D. R. J. Grant, ran a near second with 46 points.

Immediately following came the Open Power Contest heralded by the inevitable scream of motors, not forgetting the usual disastrous loops and other expensive antics we all know so well. There were many excellent flights made of course, particularly that of Mr. I. C. Lucas of the Brighton M.A.C., whose model was "blown" for 105 secs. on a 13·8 motor run. He took first place, with Mr. Houghton of the Luton M.A.C., second *and* third with 76·2 and 75 secs., having entered two models. Worthy of note was a flight by Mr. G. A. Caddick whose pylon job drifted out of the aerodrome with a faulty timer looking rather like a dizzy gnat as it spiralled upwards in one of the few thermals present.

The Open Rubber Event was won by Mr. R. J. Boxall of Brighton with a two-flight aggregate of 195·5 secs., with Mr. Rendall second with 187 secs. and Mr. A. J. Arnold third with 174·8 secs. Mr. Lynch's "Polydi" caused much amusement by shedding both of its undercarriage legs in flight.

Entries for the Wakefield Contest were few and far between although they were favoured with a drop in the wind and put up excellent performances. In fact the best flight of the day other than that in the sailplane event was a splendid effort by the winner of the Wakefield, Mr. J. Churchill of the Southampton M.A.C., whose original design put up an aggregate of 236·6 secs. This competitor returned after the prizegiving "fruitless" in spite of climbing an apple tree to retrieve his model! Mr. S. J. Higgs came second with 99·6 secs. and third, Mr. Boxall, with 38 secs.

The sun was almost setting as Admiral Sir Thomas Troubridge presented the prizes and after completing this happy task the Admiral stated that his favourable impressions of the meeting prompted him to place the aerodrome at the disposal of the various clubs.

So ended a most successful Rally and due praise must be given to those officials from the Southern Clubs who contributed so much to its success, not forgetting the competitors, who were not deterred by the appalling weather conditions.

The heading photograph left, shows a cheery group of Southampton lads at the rally with a diversity of models.

(Photo 1) Mr. Savage receiving the Southern Counties Trophy from Admiral Sir Thomas Troubridge, K.C.B., D.S.O.

(Photo 2) Mr. G. A. Caddick's F.A.I. glider ; this soarer with a span of 7 ft. 6 ins. and a modified Eiffel 400 section is finished in pale blue and orange and is a real credit to its designer.

(Photo 3) Mr. Marshall with his diesel duration model designed by P. Cock. This model, Mills powered, has a unique pylon arrangement and a very flat glide.

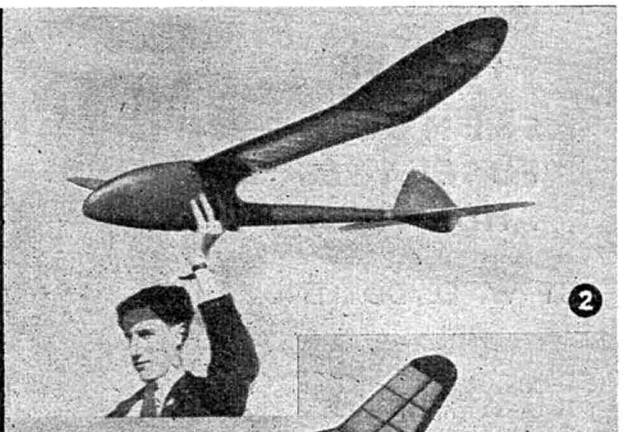
(Photo 4) Wakefield winner Mr. Churchill with his successful design.

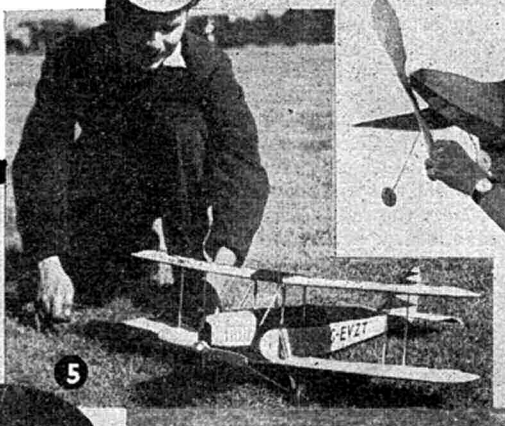
(Photo 5) The gentleman with the unusual headgear and the control line Avro Avian is Mr. Roberts of the Southampton M.A.C.

(Photo 6) Shows on the right the Bowden Contest that won the Precision Contest and a scale Proctor by the same builder namely Mr. Savage. (Oh! that fin Mr. Savage!) The Proctor by the way is finished in blue and yellow.

(Photo 7) Depicts "Jason" a 7 ft. 6 ins. span model entered in the Precision Contest by Mr. Coxall, who is also the owner of the large Leopard Moth shown in photo 8. Powered with a 30 c.c. engine, of 12 ft. span and weighing 28 lb. this model attracted a great deal of interest and is apparently intended for radio control when flight tests have been completed.

(Photo 9) Is a rather windswept Mr. C. L. Houghton of Luton with his "Phantom," winner of the Concours De Elegance. This was a hat trick for Mr. Houghton who won a similar event at the Midland Rally the previous week.





PART VII

ASSEMBLING FUSELAGES AND WINGS

BY W. O. DOYLEND

A beautifully finished and well posed D.H. Moth Minor built by the author.

THE type of joint used in fitting a wing to a fuselage will, of course, depend largely upon the peculiarities of the individual model. The position of the wing in relation to the fuselage will vary in different aircraft, and low-wing, mid-wing and high-wing types will each need different treatment. Biplanes will also present their own particular problems.

The different types of joints discussed in this article are designed to cover most, if not all contingencies that might arise in this stage of assembling a model. Some of the methods described are in the nature of alternatives and the modeller is left to decide for himself which he considers to be the best. Others are special methods which will be found necessary owing to the characteristics of the specific type of aircraft. Where alternative methods of fitting are possible, the overriding factor in deciding which to use should be the degree of strength likely to be obtained in the finished job. Whilst models of aircraft should give the effect of a somewhat delicate piece of work and thus reflect the lightness in character of the prototype, they should also be sufficiently strong to withstand without damage any mishandling which they are almost bound to receive from "ham-fisted" though well-meaning admirers. The combination of strength with delicacy is always apparent in full size aircraft and this characteristic is equally desirable in scale models.

Low wing fittings.

The normal method of fitting the wing of a low wing monoplane by jointing it into the fuselage has already been fully described and the modeller is advised to use this method wherever possible. If the joint is well made it results in a very strong and neat job.

As an alternative, the wing may be fitted by using wire pegs or dowels, the advantage being that it obviates the necessity for cutting the fuselage.

The complete wing is constructed in one piece in the normal way, the various control surfaces scored and the dihedral obtained by steam bending. The centre portion of the wing is then cut out to the exact width of the fuselage at the point of fitting. The wing should be cut so that it will fit flush against the fuselage side, so that if the fuselage is curved in plan form, the roots of the wings must also be curved. To obtain a good fit the wing roots may be finished off with a file.

The positions of the leading and trailing edges of the wing are then marked on the sides of the fuselage and also an indication of the wing root section, which can be obtained by holding the wing in position and marking round the edge with a pencil.

Two holes are then drilled in each side of the fuselage at approximately one quarter and three quarters of the wing chord from the leading edge position. These correspond roughly to the front and rear spar positions of the wing. Into each of these holes is plugged and glued a short length of wire dowel, steel piano wire is most suitable. The ends should project a distance of between half an inch and one inch depending upon the size of the model. Corresponding holes are drilled in the root of each half of the wing. These must be an exact alignment with the holes in the fuselage. A thin layer of glue is applied to each wing root and the ends of the wire dowels and the wings are then pressed on to the projecting dowels and a flush joint with the fuselage obtained. See Fig. 1. A careful check on the dihedral of the wings must be made by laying the model on a level surface and measuring the height of each wing tip above the horizontal. This type of joint must be allowed to set firmly before any further work is carried out.

Sometimes it will not be possible to use either of the above methods of fitting mainplanes in the low wing position. Such cases are where the fuselage section is prominently curved underneath as on the Blackburn "Skua" and "Roc" and North American "Harvard".

Here we have to use a method in which only the fuselage is cut to form a seating and the wing is fitted complete.

The wing seating is cut, as in normal practice, in Stage 6 of the fuselage construction. The complete section of the wing root is marked on both sides of the fuselage as shown in Fig. 2, and this section is then cut out. A chisel may be used to remove the greater part of the wood, and the seating finished off with a half round file, the wing being trial fitted during the latter stage so that a good fit may be obtained. The seating must also be made square with the centre line of the fuselage.

The underside of the fuselage can now be rounded off and when complete the wing is placed up in its seating and fixed with glue and small panel pins.

Mid wing fittings.

The most satisfactory way of dealing with mid-wing types of aircraft such as the Bristol "Blenheim", Vickers "Wellington" and Avro "Lancaster" is to use wire dowels and the procedure already described for low-wing types is followed. On the larger models it will be advis-

able to use more than two dowels in order to obtain a stronger joint for the increased weight of wing, and in cases where the wing section at the root is deep, the dowels may be fitted in pairs one above the other as shown in Fig. 3.

With the Vickers " Wellington ", " Wellesley " and other types where the wing dihedral starts at the fuselage there being no horizontal centre section, the root of each mainplane will have to be filed to the angle that will set it at the correct dihedral. The wings should be trial fitted during this process and the filing adjusted until the desired angle has been obtained.

High wing fittings.

The choice between the several different jointing methods for high-wing types will depend mostly on the characteristics of the aircraft being modelled.

The most simple, and the one least often met, is the case where the wing lies entirely on the top of the fuselage. The Desoutter monoplane of the middle 1920's is a good example of this. The fuselage top is flat and no cutting of either wing or fuselage is needed, the wing being fixed with glue and panel pins.

Other types will involve the cutting of both wings and fuselage in a similar manner to that employed on the joint for low-wing types. The arrangement of such a joint on a high-wing type will, however, have to be carried out with more forethought. For, whereas in the low-wing type, the undersurface of the mainplane will normally follow the line of the underside of the fuselage, in most high-wing types, the camber of the upper surface of the wing will rise above the top fuselage line as shown in the Fairey Long Range Monoplane illustrated in Fig. 4. The wing and fuselage cut-outs will have to be accurately made if ugly " steps " are to be avoided in the continuity of the fuselage top and the upper surface of the wing.

A modification of this type of joint is found necessary where the mainplanes are set at a pronounced angle of incidence in relation to the top of the fuselage, such as in the Handley Page " Harrow " and Bristol " Bombay ".

In such cases the position of the wing root is marked on each side of the fuselage and the point at which the upper surface of the wing cuts the top line of the fuselage will give the measurement of the depth of the cut-out in the trailing edge of the wing. See Fig. 5. At the point where these two lines meet a saw cut is made in the fuselage top to the depth of the wing section at that point. This cut must be exactly at right angles to the centre line. The fuselage seating is then shaped out, most of the work being done by chisel working towards the saw cut. The seating is finished off with a half round file. The wing is then set on the fuselage as shown in Fig. 5, and fixed with glue and panel pins.

A third type of high wing fitting is required where the top line of the fuselage or hull runs above the top surface of the wing, forming, as it were, a high mid-wing position, or as it is more commonly referred to, a " shoulder-wing ".

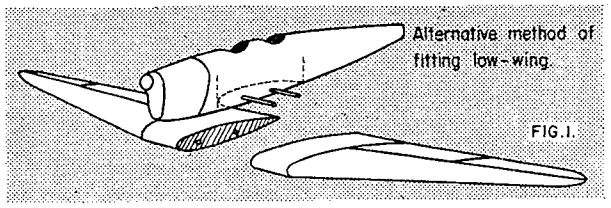
In such cases the dowelling method used on its own may not be possible especially where the top surface of the fuselage or hull is rounded. It will then be necessary to set a portion of the complete wing root into the side of the fuselage or hull.

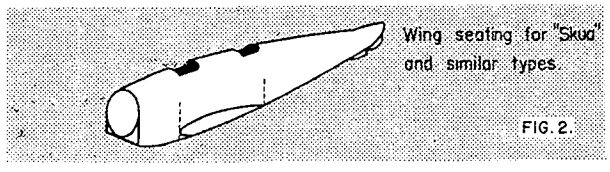
Examples on which this method can be used are the Short " Empire " and " Sunderland " flying boats and the two components of the Short Mayo Composite aircraft, " Maia " and " Mercury ".

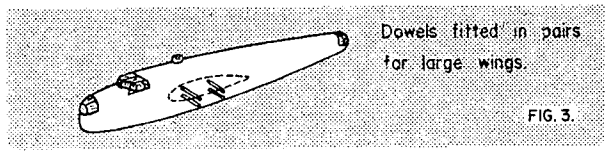
The fuselage or hull is completely finished before the wing is fitted, and the wing is made in one piece including any fluting at the trailing edge of the wing root, that is, the curving of the trailing edge of the wing into the fuselage.

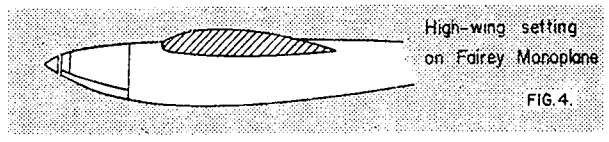
The amount by which the wing will be set into the hull or fuselage is then decided. This will depend upon the width of the hull or fuselage and generally a set-in of half an inch for each half wing will be sufficient to give a good strong joint. After allowance has been made for this set-in, the unwanted portion of the centre of the wing is cut out. The position and section of the wing root is then marked out both sides of the hull or fuselage and this section is then hollowed out to the depth required. The work can be done by drilling holes to remove most of the wood, finishing off with chisels and gouges, trying the wing in the joint at frequent intervals as the cut-out approaches the desired shape. Dowels are now fitted inside the cut-out projecting about one inch from the surface. Corresponding holes are drilled in each wing root, the joint and dowels are well glued and each half wing fitted into place. See Fig. 6. Check the wing span to ensure that neither too much nor too little of the wing has been set into the joint. An accurate check must also be made of the dihedral angle and it is advisable to support the wings on blocks whilst the glue is setting. No further work should be carried out on the model until the joint is perfectly firm.

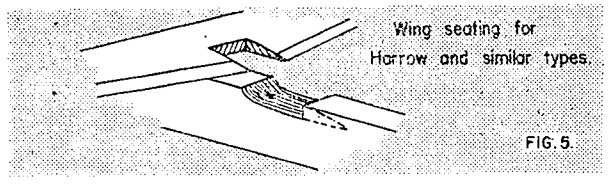
(*To be continued*)

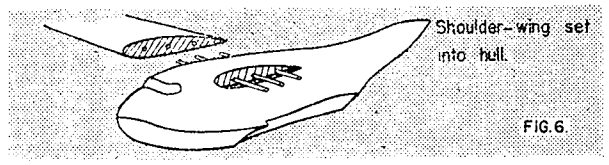

Alternative method of fitting low-wing.
FIG. 1.


Wing seating for "Skua" and similar types.
FIG. 2.


Dowels fitted in pairs for large wings.
FIG. 3.


High-wing setting on Fairey Monoplane
FIG. 4.


Wing seating for Harrow and similar types.
FIG. 5.


Shoulder-wing set into hull.
FIG. 6.

A 1930 1/2" FLYING SCALE MODEL

S.E.5.

DRAWN BY
S. L. SPITTLE.

3/-

MATERIALS REQD.		MISCELLANEOUS		10 AMP FUSE WIRE.
STRIP		1 STRIP OF 1/16 DIA REED		CELLULOID
3 STRIPS OF	1/16 X 1/16 X 36" BALSA	1 PIECE OF 1/16 BALSA		4 TUBES OF CEMENT
8 " "	1/8 X 1/8 X 36" "	BALSA BLOCKS		1 OZ OF 1/4" X 1/20" RUBBER
2 " "	1/4 X 1/8 X 36" "	24 G BRASS		12 CUP WASHERS
2 " "	3/16 X 1/8 X 36" " T.E.	22 G BRASS		1 SCALE PROPELLER CARVE FROM BALSA
1 " "	1/8 X 1/8 X 36" OBEECHI	16 G SPRING WIRE		1 FLYING PROPELLER 9" DIA 11" PITCH
SHEET		16 G 1/D BRASS TUBE		3 SHEETS OF TISSUE
2 SHEET OF	1/16 HARD BALSA	3 - 16 G SCREWED BRASS BUSHES		BANANA OIL
1 " "	1/32	2 BRASS CURTAIN RINGS 2 1/4" DIA		CLEAR & COLOURED DOPE
1 " "	2 M/M PLYWOOD	1/32" OBEECHI SHEET		TRANSFERS

WING AREA - 470 SQ INS
STRUCTURAL WEIGHT - 6·23 OZS
WING LOADING - 4·1 OZS SQ FT.
FLYING SPEED - 12 MPH APPROX.
STALLING SPEED - 9 M.P.H.
POWER 2 SKEINS OF 1/4" X 1/20" RUBBER
6 STRANDS EACH

LEWIS GUN

VICKERS GUN

CENTRE SECTION STRUTS MADE FROM 2 LAMINATIONS OF 1/32" SHEET WITH 1/16 DIA BAMBOO RUNNING THROUGH HOLES ARE DRILLED IN FRAMES 3 & 4 TO ACCOMMODATE BAMBOO & STRUTS SECURELY GLUED TO FRAMES.

2 M/M PLY BETWEEN 1/16 BALSA

COVER WITH 1/32" SHEET TO FRAME 4

1/16 SHEET BALSA WING RIBS. 36 OFF.

WIND SCREEN

BALSA HEADREST

3/16 DIA REED

STRINGERS 1/16 SQ

1/16 X 1/4 BALSA

F1
F2
F3
F4

BLUE, WHITE, RED

1/8 SQ

FIT BALANCE TABS TO FIN & TAILPLANE

DIHEDRAL TEMPLATE

ELASTIC BAND 22 G. BRASS

INTERPLANE STRUT ANCHORAGE

10 AMP FUSE WIRE FORMING FLYING & LANDING WIRES

ALL LONGERONS & CROSS PIECES 1/8 SQ BALSA

1/16 SHEET BALSA.

BALSA TAIL SKID

1/16 OBEECHI WITH BAMBOO EDGE

TAILPLANE RIBS. 8 OFF 1/16 BALSA

DIHEDRAL BRACERS MAKE 2 FOR MAIN SPARS OF EACH WING FROM 2 M/M PLY.

PAPER TUBE

16 G WIRE SANDWICHED OBEECHI

2 OFF MADE IN CARDBOARD

EXHAUST MANIFOLDS 1 OFF

AIRSCREW BLANK YELLOW PINE FULL SIZE.

BRASS STRIP SOLDER TO RING

PAPER CONE

OBEECHI DISC

16 G TUBE

WHEELS MADE FROM 2 1/4" DIA CURTAIN RINGS.

1/16 SHEET BALSA

DIHEDRAL TEMPLATE

FRAME 1
1 OFF IN 1/8 BALSA ALSO

FRAME 2

FRAME 3

FRAME 4

FRAME 5

FRAME 6

FRAME 7

FRAME 8

FRAME 9

ALL FUSELAGE FRAMES ARE 2 M/M PLYWOOD

1/8 SQ BALSA

U/C WIRE BOUND TO OBEECHI CROSSPIECES

1/16 SHEET GUSSETS

1/16 SHEET AT BOTTOM

1/8 SQ OBEECHI

4 X 1/16 BALSA

2 GEARS 16 TEETH
1 GEAR 8 TEETH

2 M/M PLY

BALSA

FILL WITH VASELINE

16 G WIRE

THRUST WASHERS

SCREWED BUSHES

OIL FILLED GEARBOX FABRICATED FROM 24G BRASS

ALTERNATIVE GEARBOX

FOR FLYING PURPOSES USE 9" DIA X 11" PITCH PROPELLER.

BALSA BLOCK CEMENT TO FRAMES 8 & 9

16 G WIRE

1/16 DOWEL

PIN

RUBBER BANDS

USE TWO RUN TRUE BOBBINS WITH PAPER DISTANCE TUBES

CUP WASHER SOLDERED TO SHAFT.

RUBBER PEG

1/16 SQ BALSA.

1/16 BALSA.

1/32 OBEECHI.

FRONT

ENLARGED SECTION.

REAR

INTERPLANE STRUTS

1" X 3/16 OBEECHI

DETAIL OF ALTERNATIVE SPRING U/C

1/32 SHEET BALSA

1/8 SQ HARD BALSA

1/8 BALSA

4 X 1/8 BALSA

DIHEDRAL BRACING 4 OFF 2 M/M PLY

WHITE BLUE WHITE RED

POSITION OF INTERPLANE STRUTS

1/8 X 1/8 BALSA.

BALSA BLOCK SANDED TO SHAPE

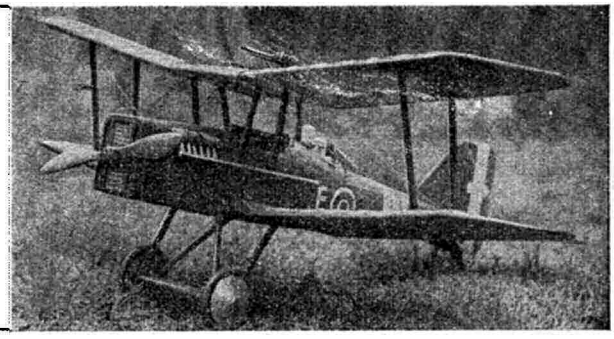
LOWER WING CENTRE SECTION

RSD 274

A 1 inch to 1 foot Flying Scale

S E - 5

BY L. S. SPITTLE



TAIL areas have been increased slightly but otherwise the model is an exact miniature of the actual machine except of course the propeller. I wish to point out that although the structure has been kept fairly simple it is by no means a beginner's model; but anyone that has constructed two or three duration planes should find no difficulty.

CONSTRUCTIONAL DETAILS.

Fuselage.

First build two flat sides as per elevation, remove from building board and add frames 1, 5, 6 and 9 also adjacent cross pieces, true up and allow to set. Fit remaining frames and cross pieces, also the top centre stringer from nose to cockpit and 1/16" square stringers from frames 6 to 9. Fix all diagonals and gussets also head rest, tail block and tail skid, cover with 1/32" sheet where stated and sand down well with 00 sandpaper. Please note that where parts of great stress are encountered obechi is substituted for Balsa.

Tail Unit.

This is quite straightforward, but care should be taken to ensure that it is absolutely free from any warps, to prevent accidental damage it is advisable to fix fuselage after assembly of other parts.

Main Planes.

These are of orthodox construction and need no comments.

Undercarriage.

Construction is clearly shown on plan, basic wire structure being bound to obechi cross pieces in fuselage with wire. (To be fixed after assembly of wings.)

Gearbox.

This unit which is of the oil bath type was found to function extremely well on the test model. Anyone useful with soldering should be able to make it in an hour. The original was made from 24G Brass but should this prove hard to get an ordinary cocoa tin will suffice. There is no need to emphasize about fixing the gears securely to the shafts because that is obvious, I would add that "Bakers Fluid" was used throughout the original. The gear box is secured to the noseblock by pushing the propeller shaft bearing tube through the noseblock and soldering a small plate to same, this being hidden by the gauze forming the radiator.

Rigging.

This operation must be performed with great accuracy so go slow and take care. First cement plywood dihedral braces either side of lower port wing main spar, when set push through holes in fuselage and cement lower starboard wing to port wing, cut out card templates as detailed on plan and use these to get correct position of wings, cement when correct position is obtained and leave to set. Obtain position for interplane and fuselage struts and cement, the latter being bound with wire as indicated. All that remains now is for the top wing to be placed on the templates and cemented. The flying and handing wires are made from 5 or 10 amp fuse wire.

Covering Doping and Colouring.

The fuselage is covered with heavyweight tissue, the wings with medium, and the tail and fin with lightweight. Waterstretch everything and give one coat of clear dope and one coloured. The upper surface of the wings and tail are dark green, also the fin and top and sides of the fuselage, the under surfaces are Chrome Yellow. All fittings, guns, exhausts, etc., are matt black, engine cowling may either be black or silver, propeller blades, silver birch, hub mahogany. (Precise details of colouring squadron markings, etc., may be found in "Camouflage of 1914-18 Aircraft".

Fittings.

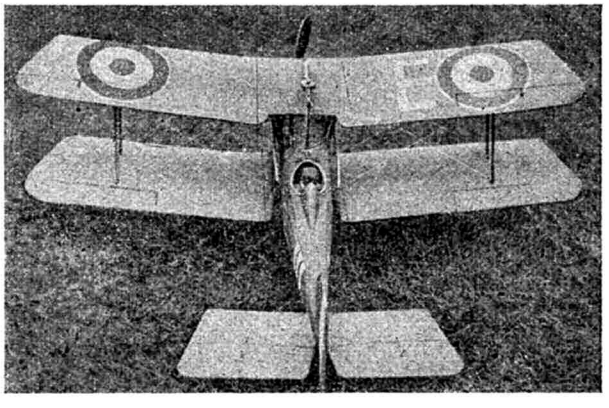
Guns and windscreen and exhausts should be fitted after final doping.

Flying.

The power required for flying the model is two skeins of ¼" × 1/20" rubber each consisting of 6 strands. The flying speed is in the region of 13 to 14 m.p.h. so it is advisable to check the position of gravity before attempting to launch, the C. of G. should be found approximately 5/8" in front of the lower wing main spar, it should balance correctly as no weight was required fore or aft on the original. Should the model stall under power add 1/16" down thrust packing, there should be no need to add that all initial testing should be carried out over long grass.

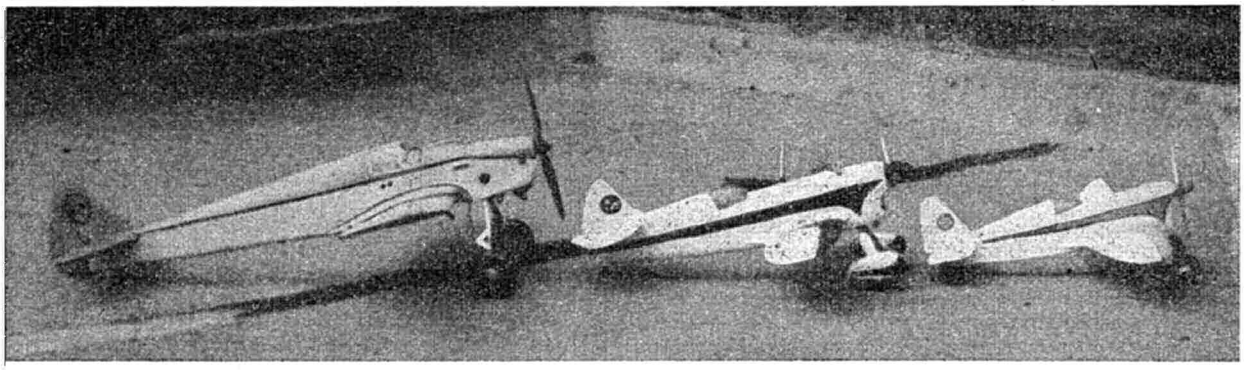
Full size plans, price 3/-, are available from the Aeromodeller Plans Service, Allen House, Newarke Street, Leicester.

In conclusion I shall be glad to answer any queries upon construction or flying of the model, sent to me c/o, the Editor.



CONTROL LINE COMMENTARY

By F. B. THOMAS



The Candy brothers! Candy II was published last month; here is the rest of the family from left to right:—Mark I, III, IV. The latter version, according to the author, becomes airborne with no forward run whatsoever!

IN this article I am going to talk about the flying of control-line models in some detail. In my last article I suggested that the budding U-control pilot should build himself a rubber-powered model. If he has done this, he will have learned a lot about flying these captive models, and he can embark with some confidence on flying his first powered model. In the September issue were plans of a good all-round control-line model suitable for training and moderately advanced flying. Though not a scale model, she looks quite nice, and is rugged enough to take some knocks.

Don't get the idea that control-line models are hard to fly. If well designed and trimmed they are usually very stable, and will fly quite happily as round-the-pole models if the controls are held in a neutral position. But the U-control beginner is like the novice pilot of a full-sized aircraft. He is rigid and inelastic in his hold of the control-grip, and he over-controls grossly and this starts the model pitching violently. Further " pump-handling " follows and things are out of control in a very short time. Even if our U-control aspirant has many hours of normal flying to his credit, he'll commit mistakes when he flies his first control-line. The only severe crash one of my models has sustained was when it was flown by a Tempest pilot with many hundreds of hours flying time—he broke the airscrew and bent the crankshaft. (This on the only model I've made without a knock-off engine mount.) I hold a pilot's " A " licence and a glider pilot's " C " certificate, but found U-control models tricky to begin with. The reason is that when flying a full-sized aircraft the control response is made obvious to the pilot by the change in the attitude of the nose of the aircraft to the horizon, and by acceleration and gravitational loads imposed on the pilot himself. When control-line flying, the pilot is seeing the model continuously in profile against a blurred and moving background. He doesn't feel that the model is circling round him.

You may remember that in my first article I stressed that flying in a wind will bring disaster to the novice. A fast-flying, highly-loaded control-liner flown by a practised hand can fly safely in a reasonable wind, but we will reach this stage later.

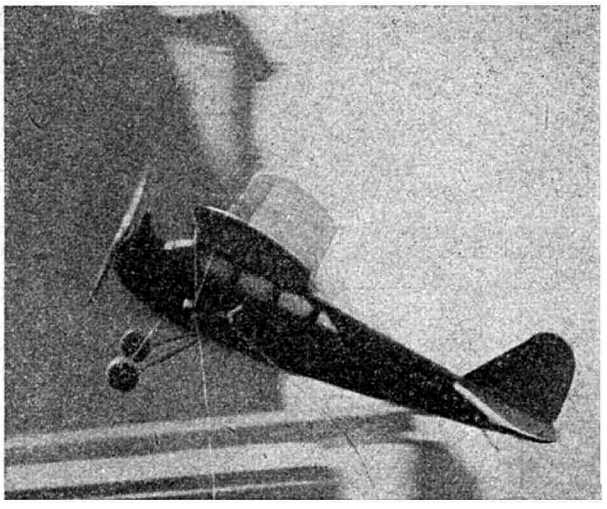
I am going to analyse a complete circuit of a slow-flying model in a wind. When a free-flying aircraft (model or full-sized) is set to fly in a circle it will fly a true circle in still air. If a wind is blowing, the circle will become an ellipse when viewed from the ground and the aircraft will complete the circle some distance downwind of the point where it started. But relative to the air in which it is flying the circle is still a true one, and the aircraft's airspeed remains constant.

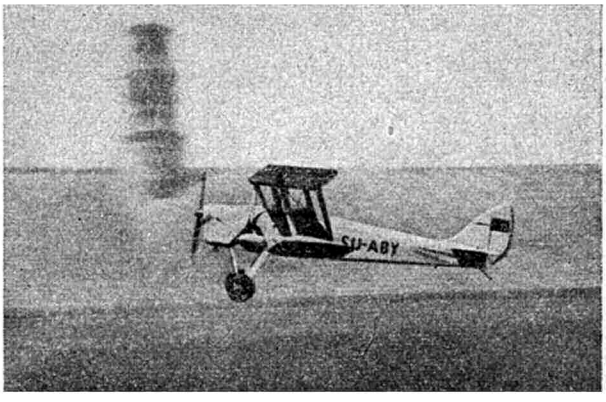
Now our control-liner in a wind is a very different proposition. The control lines impose a fixed flight circle on the model, and the wind blows across this circle. Let us assume that we are flying a slow converted free-flight model at 30 m.p.h. in a wind of 10 m.p.h. strength. We'll describe one complete circuit in detail, starting with the model flying across the direction of the wind on the downwind side of the circle (*i.e.*, downwind relative to the pilot); our model is now flying at 30 m.p.h. airspeed and 30 m.p.h. ground speed, and the cross-wind tends to blow the model away from the pilot, which keeps the lines nice and taut. Now the model swings round into wind, and its airspeed suddenly rises as its ground speed decreases. This is a gradual process because the momentum of the model carries it on for a little before the wind slows it up. If it could continue flying into wind in a straight line its airspeed would remain constant at 30 m.p.h. and its ground speed would be 20 m.p.h. As our model heads into the wind, its airspeed momentarily becomes 40 m.p.h. (30 m.p.h. airspeed plus 10 miles per hour headwind). If the control grip is not moved, this increased airspeed will cause the model to balloon up many feet into the air. It doesn't climb by raising its nose, it floats upwards on an even keel, like a sailplane in an up current. To check this exuberant upward bound the pilot eases the control-grip forwards to maintain a constant height, and the model reaches the second crosswind leg of the circle—this time on the upwind side of the pilot—with its ground speed reduced to perhaps 25 m.p.h. This reduced speed has lessened the centrifugal pull on the lines, and the wind is now blowing the model towards the pilot, which still further reduces the line tension. If the lines go completely slack, control is lost. To counteract this the pilot must walk backwards as he revolves, to accelerate and perhaps achieve 30 m.p.h. ground speed and 30 m.p.h. airspeed before it is forced to fly directly downwind. As soon as it is flying downwind its airspeed is reduced to 20 m.p.h. while its ground speed will start to increase. Suppose our model only possesses a small

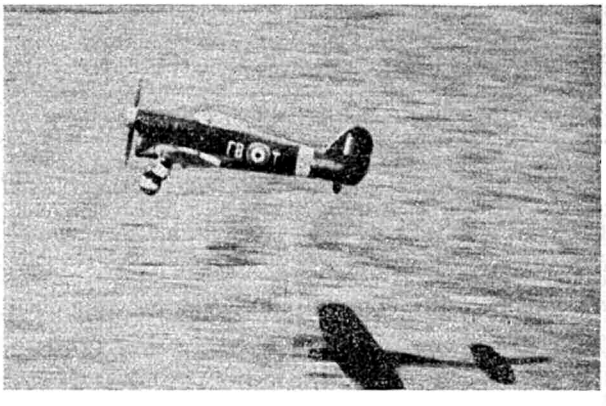
speed range, and stalls at 20 m.p.h. (its top speed being 30 m.p.h.); as she turns downwind her airspeed is reduced to the point where she stalls, while the tail wind has increased her ground speed to somewhere near 30 m.p.h., at which speed our model strikes the ground smartly, and any attempt to gain height by pulling back on the control grips merely accelerates the disaster by hastening the stall. This all sounds very complex, but it has an important bearing on our flying. A converted free-flight model is ideal for learning the game, but its small speed range—due to large wing area—makes it unwieldy in a wind. A small high-powered highly-loaded model may have a speed range of 30 m.p.h. or more above its stalling speed and is quite manageable in reasonable winds.

There is a flying characteristic that our control-line shares with a full-sized aircraft, and that is a tendency to continue a manœuvre once it has been started. If you ease the control grip back the model will start to climb, and it will continue to climb until a little time after it has been checked by an opposite—or downward—control movement. It is important to realise this, because it means that you must anticipate what your model will do. If climbing steeply you must start levelling out before you feel you want to. Remember, your model may be travelling 60 feet in a second, so your anticipation must be quick, positive and, above all, gentle, and remember that when your engine is running the elevator response is very quick and sensitive. When the engine is switched off and the model is gliding, there is no slipstream passing over the elevator, the response is more sluggish and a larger movement of the control grip is necessary. At the moment of landing, the model is brought into a fully stalled attitude with its wheels just clear of the ground, and a full backward movement of the control grip is necessary to achieve a three-point landing, in which the wheels and tailskid touch the ground simultaneously. A control-line model also possesses a flying characteristic that is not shared by full-sized aircraft. When your model is flying round you at high speed on the end of its lines, centrifugal force tends to maintain it at a height slightly below the level of the control grip. Centrifugal force acts in this way on a round-the-pole model, tending to maintain it at a constant height. To make our control liner climb above this height it must overcome a downward pull due to centrifugal force in addition to overcoming the force of gravity. Similarly, it requires quite a considerable forward movement of the control grip to hold the model in flight close to the ground. This centrifugal force effect is most marked when flying with short lines, and decreases rapidly as the lines are lengthened. So don't try climbing too high on short lines. If you do, the model will adopt a climbing attitude and may then quite suddenly stall and drop on an even keel, although it is still flying fast This roughly corresponds to a high-speed stall on a full-sized aircraft and the remedy is to ease the control grip forward before the stall has developed fully.

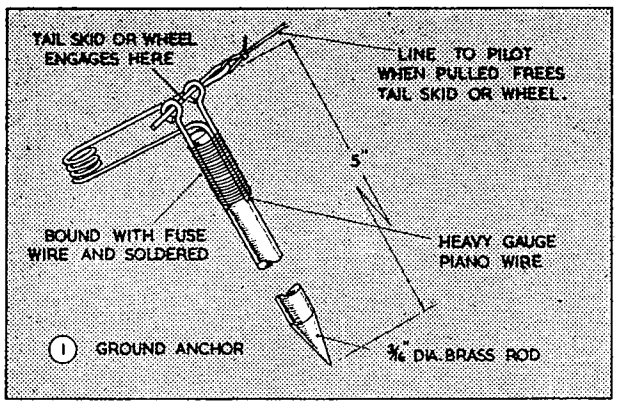
For your first few flights you'll need an assistant to hold the model after the engine has been started, while you pick up the control grip. When you've got used to

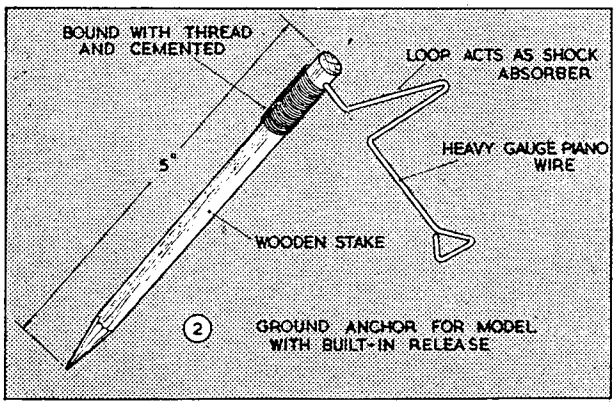






Photographs from top to bottom are as follows:— A converted free flight model in a mildly aerobatic mood, a 40-in. span flying scale Tiger Moth powered by a 2-cc. Majesco diesel, a Typhoon with the same engine and a retracting undercarriage and finally the author's control grip made of ¼ ply with a metal ground stake and ¼ dowel extension for the slack line. All the flying shots were taken by the author with the camera in one hand and the control grip in the other!





flying, you can dispense with your assistant by using a simple ground anchor (Fig. 1). This is driven into the ground, engaged in a loop at the end of the tailskid, or through a hole in the tailwheel. A length of string is attached, as shown, and laid along the ground *under* the control lines to reach the centre of the circle. After the control grip has been picked up, the pilot takes the release string in his left hand, and a gentle pull frees the model for take-off. The moment the plane is free, the pilot drops the release string. In the plans of Candy II the release is built into the tail of the model. A gentle pull on the third (slack) line frees the model. The line is pulled only far enough to achieve release, without cutting off the motor. A simple wire loop and ground stake is used to anchor the model. After release, the loop springs down to lie flat on the ground (Fig. 2).

Before we take our model into the air, a word about the petrol tank. When a model is circling fast, particularly on a short line, the petrol swings out in the tank under centrifugal force, and will often cause the motor to splutter and stop. This is easily remedied on most motors by twisting the tank and induction tube about 20 degrees out of the vertical so that the tank bottom points a little outwards (*i.e.*, away from the centre of the circle).

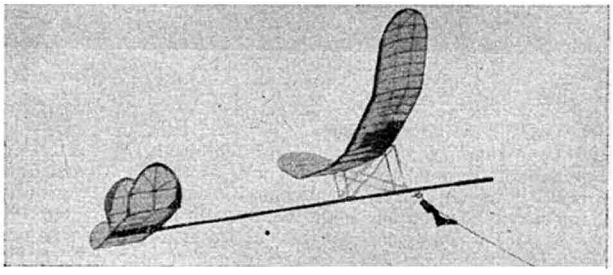
Now that we have all the theoretical knowledge at our fingertips, we'll take our model to an open stretch of closely-cut grass, free from overhanging trees, curious small boys and stray dogs, and we ll become airborne. Be very careful to brief all onlookers so that they will stand well clear of the flight circle. A nasty injury could be caused by a model flying at full speed. To begin with, the ground must be smooth for the whole flight circle, so that take-off and landings may be made anywhere. (Later we'll be able to use a small aerodrome, the remainder of the circle being rough.)

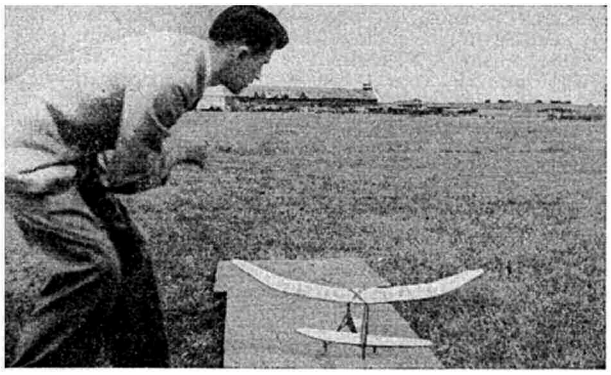
Place your model on the upwind side of the circle if there is any wind, but choose a flat calm if you possibly can. It is placed upwind to allow the model to take off downwind, so that it is flying fast by the time it heads into the wind. Measure out 30 feet of line and attach them to the model and control grip so that when the grip is vertical the elevators are in a neutral position. Your third slack line should hang down so as just to clear the ground when the grip is held waist high. Straighten the lines, check that the elevators are moving freely and in the correct sense in relation to the grip, and that the slack line works the engine cut-out when pulled. Stick the ground spike of the control grip into the ground (this type of grip was illustrated in the May issue of the AEROMODELLER) while you start up the engine; when running, set the needle valve slightly rich, to avoid leaning-out of the mixture in flight due to centrifugal force, and set the ignition advance and retard lever to about three-quarters full speed. Walk back to the centre of the circle, pick up the control grip, again check that the elevators are moving normally, hold the grip vertical with your arm extended in front of you, place your left hand lightly on the third slack line, and tell your assistant to let go.

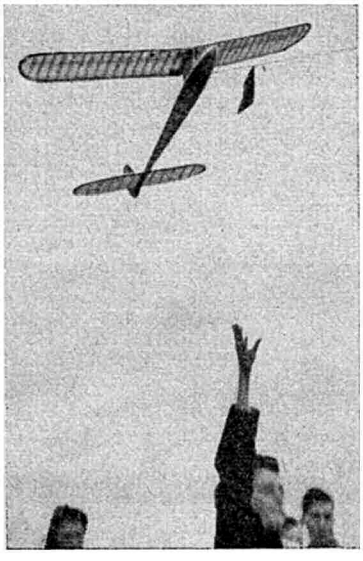
The model will start its take-off run, and you must let her gain speed on her own. Don't try and raise the tail quickly by a forward movement of the grip. If you do this, the forward line on the control plate is pulled in to tension, and is apt to cause the model to slew inwards towards the pilot. As the model gains speed, the tail will rise, and the model will become airborne. If she is flying level, leave her alone. If she tries to climb steeply, ease forward very gently with the grip until the model is flying level at shoulder height. Fly a few circuits, and don't try diving or climbing—merely correct very gently and get your model flying past about three feet above the ground, then switch off your engine by a gentle pull on the slack line. Leave the model to glide on her own and she'll land lightly on her wheels. Provided the elevator remains neutral, our model should take off, fly, glide and land without interference by the pilot. Try a few more laps until you have got used to the feel of things, then increase your engine speed to give a quicker take-off. (This, of course, applies to petrol engines and not to diesel-engined models.) When airborne, try the effect of a few gentle climbs and dives, but don't overdo it until you've gained some confidence and know what liberties you can take with safety. Always get your model flying low and fast before you switch off the motor, and keep her just clear of the ground as she loses speed on the glide, by slowly and progressively easing back the control grip, until you finish up with a perfect three-point landing.

I'll deal with more advanced flying at a later date, but in the meantime, put in all the practice you can and don't over-control. Remember that the control grip movement is an upward or downward movement of the wrist. A finer degree of control grip movement can be obtained by holding the grip vertical and raising and lowering the whole arm from the shoulder, the elbow being almost straight. If the beginner adopts the latter method, it will help to check over-controlling. Always check your lines when you pick up the control grip to make sure they are not twisted, and that the slack line is not fouling the control lines.

MIDLAND AREA RALLY







Heading photo shows general scene during the Open Rubber contest whilst immediately below is an unusual stick glider flown by Mr. Snowden of the Northampton M.A.C. Above is J. L. Drew of the Birmingham Post Office Club getting away nicely and left a Mick Farthing glider built by Brian Roberts of Coventry. Below shows a view of the "pits" before the power contest.

By H. G. HUNDLEBY

BAD weather, denoted by the unfurled brolly in our heading picture, not forgetting an unpleasantly high wind, was in unwelcomed attendance at Ansty aerodrome on Sunday, September 14th.

However, as this was the first wet meeting out of the many attended this year far be it that we should grumble, and certainly the performance of competitors in general was by no means damped as the results do show. Times were in fact amazingly high when one considers that most models were blown o.o.s. almost as soon as they had taken off. Of particular merit was E. W. Evans' three flight aggregate of 483·2 secs. gained with that familiar Wakefield described by many as being in a " certain condition " !

The wind took its toll of mainspars in the glider contest and many a tow line proved unequal to the strain, but for those that didn't there were a lot more that did and the stream of competitors seemed unending both in this and the Open Rubber Contest.

It was late in the afternoon before the power contest started and in view of this and the bad flying conditions only one flight per competitor was allowed. In keeping with the other events the standard of flying was high, in fact none of the entrants failed to take off. All the winning models were lost o.o.s. N. D. Howard's model powered with a new Arden 199 had an absolute vertical climb and gained a well deserved first place.

A point worthy of mention to all power contest flyers was the disqualification of three entrants who were unable to produce certificates of insurance.

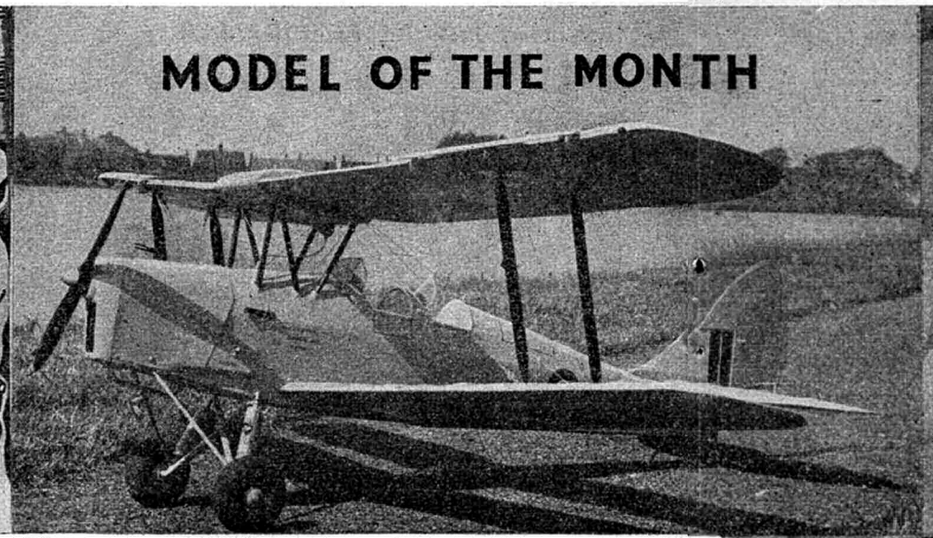
Crowd attendance was not up to the usual Midland Rally standards for which the bad weather was responsible, but this was more than compensated by the enthusiasm of competitors and organisers alike. One last word of thanks to the " Birmingham Mail " whose continued support of this event has contributed much to its success.

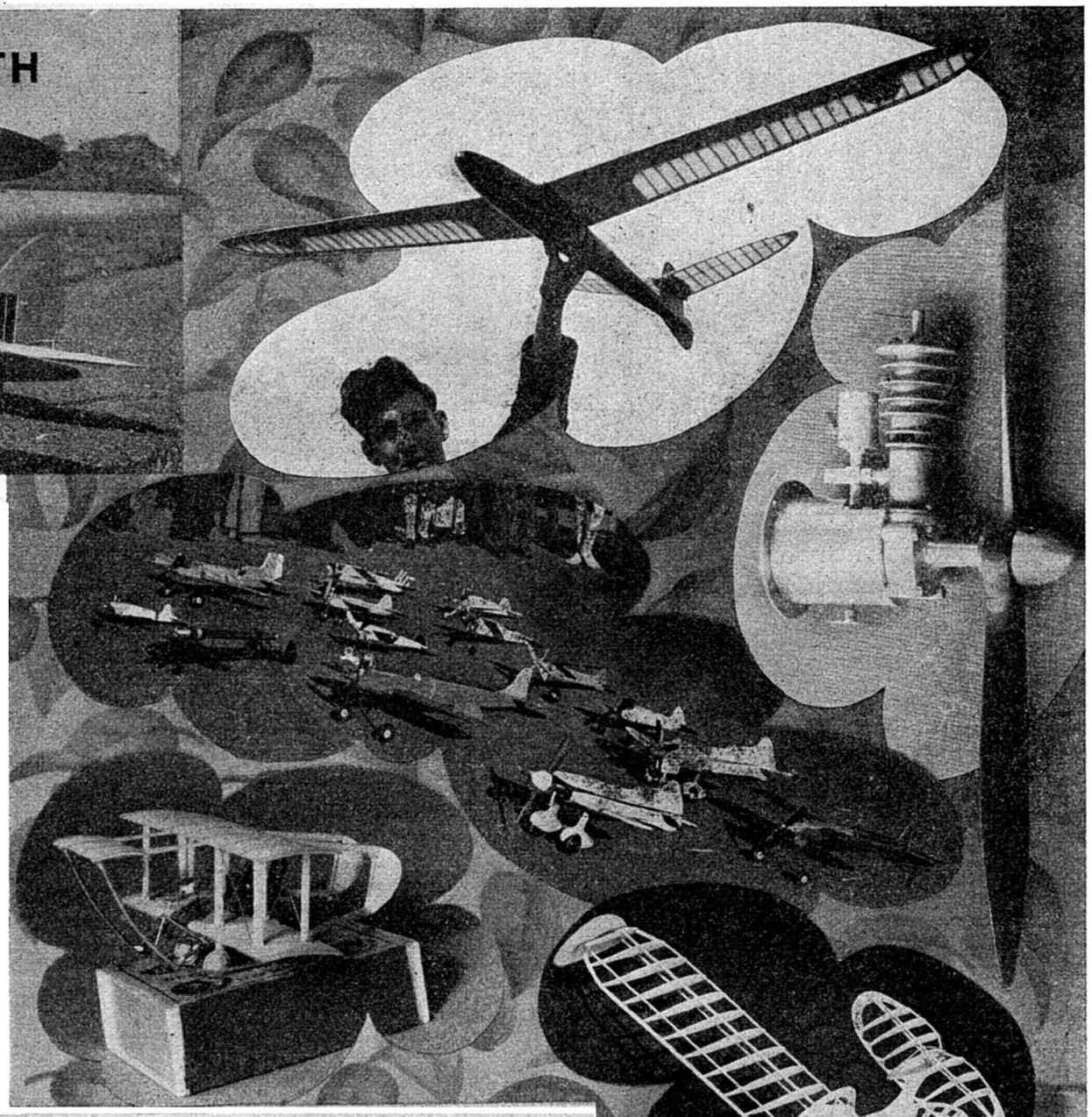
Competition Results are given in Club News.

"Aeromodeller" Photos.

MODEL NEWS

MODEL OF THE MONTH





BEER and balsa have always been the ideal combination for Fliar Phil, but now, his holiday over, balsa must once again take pride of place. His pylon model, feverishly built in the first two days of the holiday, is now being rebuilt rather less feverishly and rather more accurately . . .

And so to our Model of the Month—and what a model it is ! This magnificent flying scale power model is a 1/6th full size replica of the D.H.82 Tiger Moth, designed and built by G. B. Willett of New Malden, who made his first solo on the original machine 2402. Apart from the obvious quality of the construction and finish, there are many other interesting details such as the two half-inch gears through which the Mechanair engine drives the 13 in. prop. These adjust the thrust line so that no parts protrude from the cowling and scale lines and rotation are adhered to, without any appreciable effect on the performance. Good results from glide and taxi tests so far carried out promise well for that nerve-wracking power premiere. Good luck, Mr. Willett—good work.

This is too early for a happy ending, so round the clock to A. Campbell's " Estrellita " glider design which came to an untimely demise by investigating a neighbour's back garden wall. A very handsome model of 60 ins. span, Fliar Phil hopes that completion of the new fuselage so very necessary has enabled test flights to be successfully resumed.

Five minutes more to an interesting little 2 c.c. diesel designed and constructed by C. E. Grant of Leicester, which is especially fascinating as the whole engine was made from bar stock, no castings being used. Stroke and bore are $\frac{5}{8}$ in. and $\frac{1}{2}$ in. respectively, the piston being cast iron and the conrod silver steel. First attempts to make the engine with a valve in the piston to avoid a transfer passage proved unsuccessful owing to loss of compression. After an ordinary transfer passage was used, however, compression was terrific and the engine now gives over 6,000 revs. on almost any mixture, but preferring 60% ether, 40% paraffin.

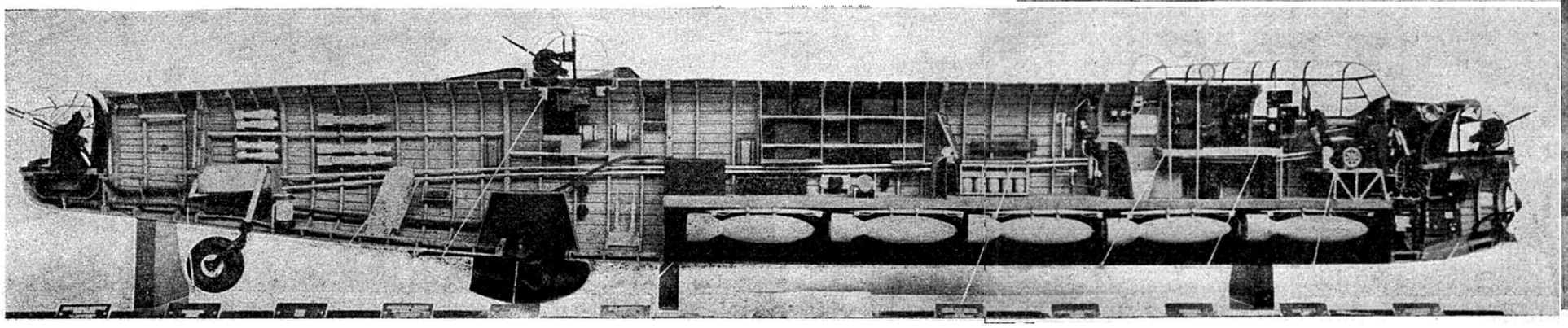
Time marches on to the imposing group of control-line jobs photographed by H. J. Nicholls at the St Albans Rally this year. This gives an obvious indication of the growing interest in this branch of the hobby, and although Fliar Phil does not personally care for this particular form of mechanical knitting, he appreciates that it can certainly be exciting. The jet model in the photo put up an unofficial speed of 98 m.p.h.—unofficial because it only completed two laps.

Turning to the " little " hand, here is a minute (sorry !) miniature by I. F Radford of Romford This little model was caused by convalescence from a 'flu bout early in the year, when postcards, matchsticks, paper clips, fuse wire, balsa and balsa cement were pressed into service to build this $2\frac{1}{2}$ in. span miniature based lightheartedly on the Wright Biplane and a box of matches, the latter appearing by kind permission of Mrs. Radford.

Five o'clock, and a most interesting canard designed and built by our old friend Guy Ramaekers, of Brussels, Belgium. Span is 36 ins., with a $4\frac{1}{2}$ in. chord and overall length 12 ins ; weight, uncovered, $3\frac{1}{2}$ ounces. The main airfoil is Clark YH and the subsidiary airfoil R.A.F 19, set at 6 degrees to the main airfoil at 0 degrees. We hope soon to hear the results of the flying tests.

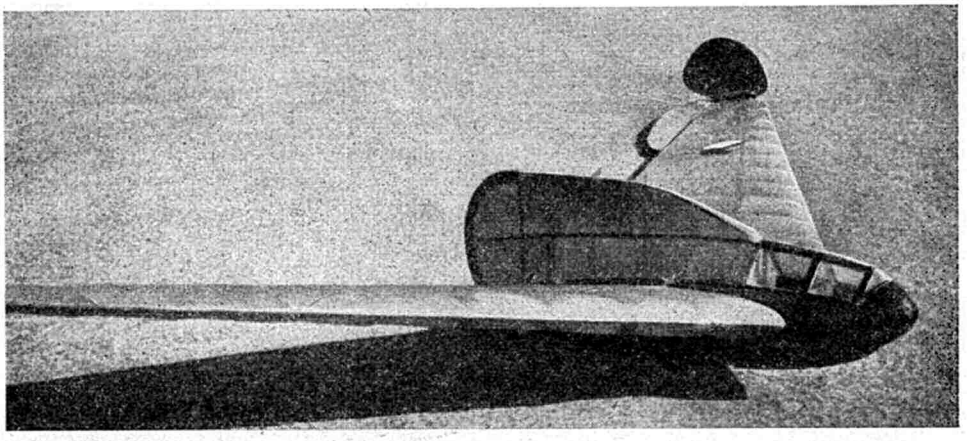
Six o'clock, and there goes the whistle, leaving just time for a squint at this very ornate " split " model Avro Lancaster built by Avro technicians to demonstrate the internal equipment carried on the bomber. Here is an idea for modellers who are a little tired of the ordinary solid—perhaps we shall see some similar efforts by the spring.

Fliar Phil packs up and goes home for his balsa and, perhaps, also a little lubricant . . . ?



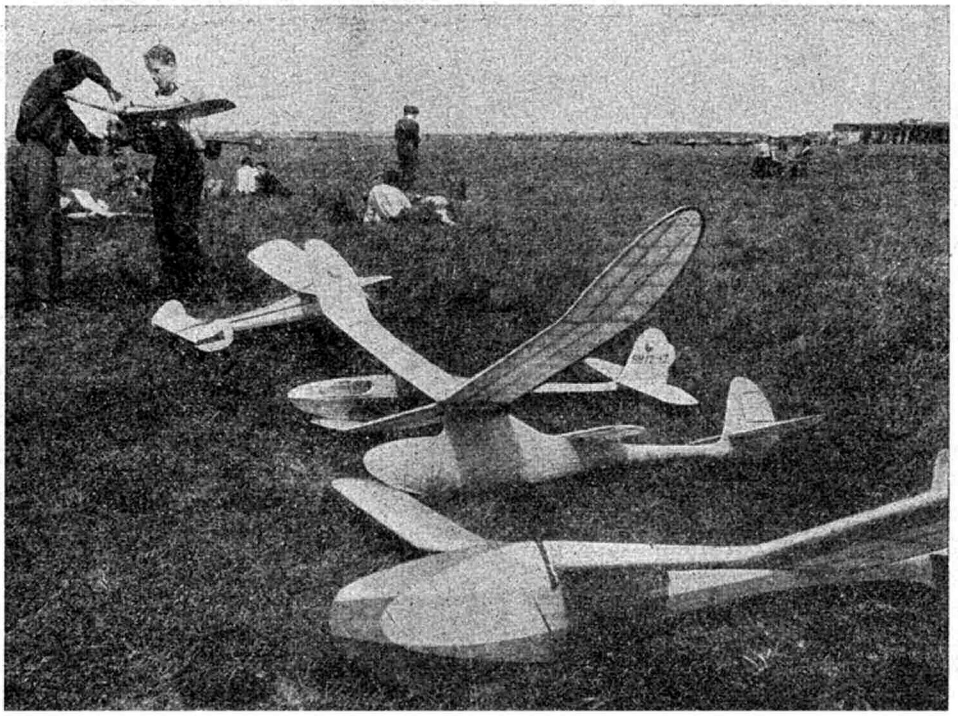
Aeromodelling in CZECHOSLOVAKIA

by MILAN HOŘEJŠÍ



Heading Picture : A typical group of power models on a Czech airfield. Sizes vary from about three feet to monsters of eight or nine feet span.

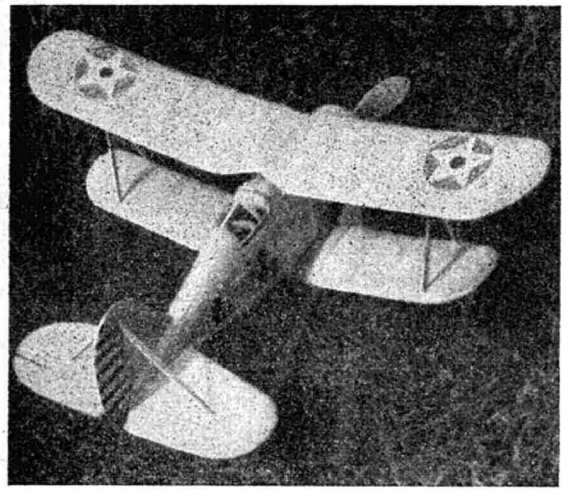
Upper left : A pleasing rubber driven scale model of one of the earlier Grumman fighters.

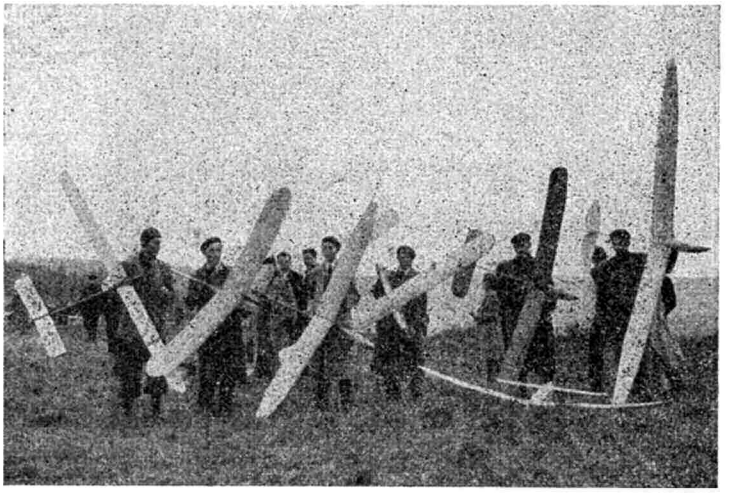


Upper right : A group of sailplane enthusiasts, which shows a tendency to large size , that on the right is over ten feet in span.

Centre left : Unorthodox designs have their following; a six foot tailless glider designed by Pan Vartecky is illustrated.

Bottom left : Sunday on the airfield. A close-up of sailplanes which gives a good impression of Czech building technique.





CZECH aeromodellers are to be found amongst the regular readers of the AEROMODELLER, and it seems right, therefore, that its columns should contain something about aeromodelling in this country. It is only necessary to give a very brief account of our activities before the war.

In pre-war years aeromodelling had many thousands of followers, not only amongst youngsters of school age, but also a substantial adult backbone. Rubber-powered models were the most popular at that time. Simple gliders were generally built as primary trainers; only older and more experienced modellers attempted high performance sailplanes. There was only a limited degree of interest in the construction of petrol-driven aircraft, mainly powered with German or American engines.

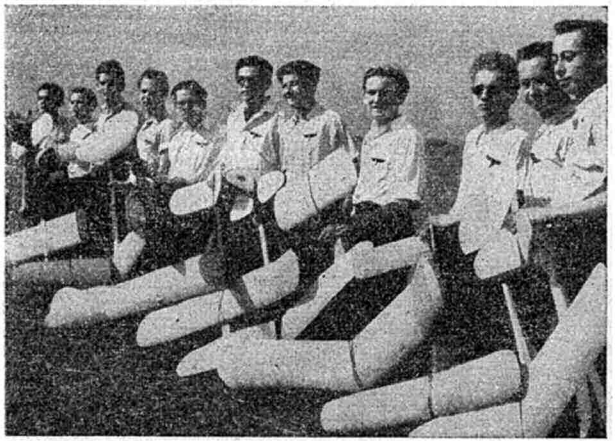
The years 1935–38 saw a considerable increase in interest. Aeromodellers increased in number while performances grew steadily better and better. The founding of many new aero clubs, an increased interest in soaring and the prosperity of private aviation was equally reflected in the aeromodelling sphere. Czech aeromodellers visited other countries to take part in international contests. Representatives visited France in 1936, when they took part in a meeting at Banne d'Ordnanche, and learnt much that was of value to them in subsequent years. Teams or representatives went to Austria in 1937, to Switzerland and Yugoslavia in 1938. In the same year a Czech team took part in the Wakefield Contest in Paris. Placings were encouraging, being ninth in Switzerland (ISTUS), and fourth in the King Peter Cup in Yugoslavia. Aeromodelling continued to expand. Hand in hand with this increase in interest came a demand for an expansion of books on theory, design and construction. Principal author at this time was Joseph Hosek, D.Sc., M.E., who wrote a number of works on aeromodelling theory. His books have enjoyed an international repute, the best known of them being "High Performance Model Aircraft," "Tailless Model Aircraft," "Aerodynamic Design of Model Aircraft" and "Model Aircraft Theory." The last named gives a complete theory of rubber-powered models, including motor calculations, theoretical ceiling, comparative flight figures, and, in fact, a thoroughly workmanlike review of his subject. It was about this time also that steps were taken to build a wind tunnel for model aeronautical research.

But the Germans came. The whole aircraft industry, the Czech Air Force, the aero clubs and organised aeromodelling were liquidated by the Nazis, and many leading figures in the movement killed, or transported to concentration camps. Nevertheless, those that remained, members of the banned aero clubs and such of the Czech youth as were left continued to meet and to build models.

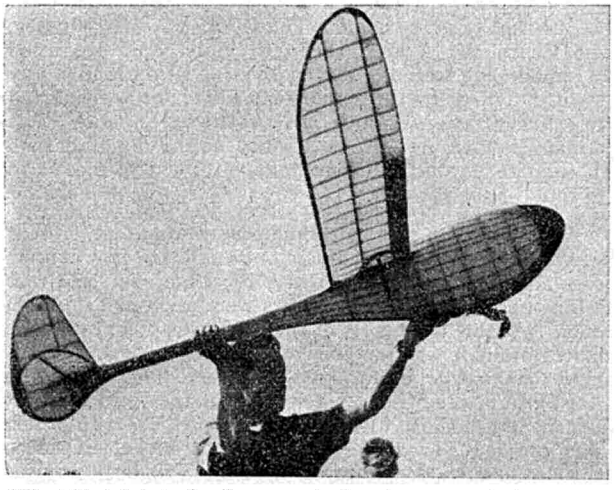
A shortage of rubber soon became apparent, and it was necessary to sell balsa only to the few known aeromodellers. Strange to say, by some chance, shops selling aeromodelling accessories were allowed to remain open. At this time most of the work was done by "lone hands" but it was possible to keep two groups of aeromodellers active under various guises. One was the Aero group, organised as a section of the Aero Aircraft Ltd.'s Sports Club, and the other, Ipro, a group which was centred round the firm of Ipro Model Supplies, the leading model aircraft firm in Prague. It was characteristic of the Nazi approach that model flying, as such, was not forbidden, though the central organisation, the Aero Club, was dissolved.

With the Allied victory in the spring of 1945, the Nazis went. It was then possible to reorganise the Aero Club of Czechoslovakia (ARCS), together with its aeromodelling section. This was arranged in three national sections, the CNA, or National Aero Club of Bohemia; the MSA, or National Aero Club of Moravia; and the SNA, or National Aero Club of Slovakia. The Central Secretariat is located in Prague, with offices of the Aeromodelling Section in Prague II, Smecky 22. Aeromodelling is recognised by the Ministry of Education and Culture as a subject to be taught in secondary schools, and a book for school use has been written by Bretislav Semrad, Chairman of the Editorial Board of *Mlady Letec* (The Young Flier), a new monthly aeromodelling journal first published in October, 1946. Mr. Semrad will be remembered as leader of the Czech party who attended the first International Meeting at Eaton Bray in 1946.

In addition to the national organisation there are also model aircraft clubs in each town, forming part of the local aero club, and they are encouraged to take part in both flying and administrative activities. Once again aeromodelling has been established on a firm footing and is growing apace with full official encouragement. Interest is centred mainly on gliders and power models.

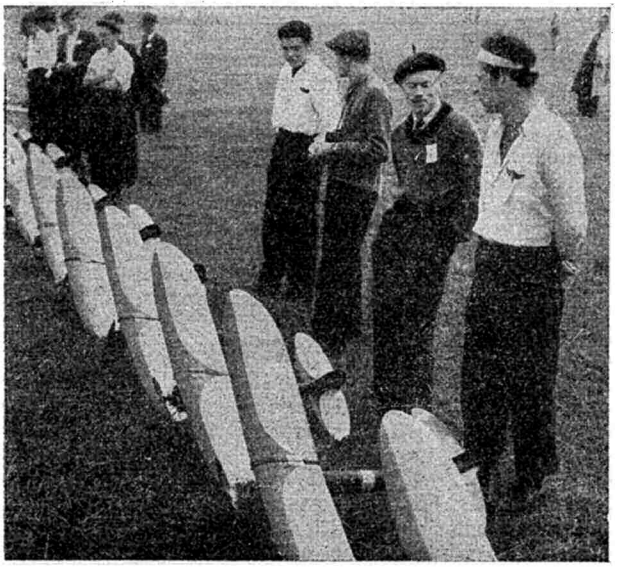


Typical team from IPRO Model Club, with all members flying identical models.



Glider with turbulent wire disrupter to leading edge seen at the 1946 Czech Nationals.

Below : Another IPRO team, this time for a power event with the Super Antares winner at Eaton Bray in 1946.



Rubber duration models continue in a minority on account of the continuing shortage of good rubber. In spite of this, performances put up even in this neglected field compare favourably with what is being done in other countries. In the development of power models however, Czechoslovakia has no reason to be unduly modest. While before the war there were no Czech engine manufacturers, petrol engines are now mass-produced in this country in large numbers, while many enthusiasts make their own engines in home workshops. Best known engine is the IPRO-IKAR 6 c.c. which powered the winning Super-Antares at Eaton Bray in 1946. To quote, if I may, from my article on this event which appeared in *Mlady Letec* :—

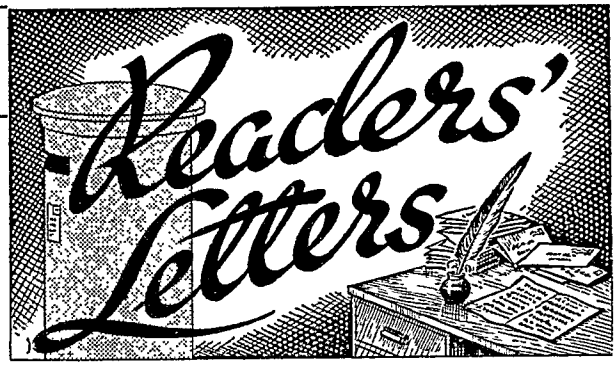
" . . . the main difficulty was the entire lack of timers, which made flight limitation very hard, and just before the flight it was necessary to meter the fuel against a stopwatch to enable the set limit to be kept . . . for that reason our main reliance was placed on the Antares and the Super Antares. . . . A. Jindra's Antares, for some reason unknown, failed to give more than a modest performance, and the honour of our flag rested entirely upon my Super Antares. . . . The model failed to start and it was necessary to retire to our pits and fit a new battery. . . . Then at last the little motor gave of its best and carried the model aloft as we, perhaps alone, had expected. Not until the plane landed again, contrary to its usual custom within the confines of the aerodrome, were we assured that its official motor run was just within the limit at 19 seconds, and that it had won the day and its first international success for Czecho-slovakia."

Czech manufacturers are also producing large numbers of Atom miniature compression ignition engines, or " diesels." Examples of this engine have been tested in England and received a most favourable report, em-bodying as they do several novel features of exclusively Czech design. These are appearing in two sizes, the Super Atom of 1·8 c.c. with fuel tank built round the crankshaft, and a larger Atom Major of 3·5 c.c.

Leading model club is the long-established Ipro, of Prague. Members of this group were regular winners in most of the pre-war contests, and continue to win steadily today. Club member J. Broz, one of our best-known modellers, was responsible for the design of the Super Antares in 1943, and this model has proved a regular contest winner since that date. Ipro makes a point of entering contests as a team, all members of which fly identical models, which has its obvious advantages. So successful have their efforts proved that it is not unusual to find a team of, say, ten occupying the first eight or nine places. A team of, say, ten large petrol models all identical in shape and finish looks most impressive and has a definite effect on the morale of the opposition !

In spite of the progress we have made we feel acutely conscious that we still have much leeway to make up before we can claim equality with aeromodellers in other lands, particularly Great Britain, France, Switzerland and the U.S.A. We are pressing on however with experimental work in such fields as U-control and R.T.P. flying, while members of the aeronautical group of the faculty of engineering are working on jet propulsion and radio control. We should welcome correspondence from modellers in these countries who can help us to catch up the years that we have lost during the Nazi occupation, and hope to be able to take part with modellers abroad in international contests for all groups of modelling with a growing share of success.

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



DEAR SIR,

In the September AEROMODELLER, page 580, a picture is printed of a 3 cylinder radial compressed air engine with a caption describing it as a typical engine of the early period with which Mr. Paveley's interesting article was concerned. I am afraid this was not quite a correct description, as the particular engine concerned which was designed and made by me in 1934 was a great advance on these early engines.

It was built almost entirely of steel, with all bearings phosphor-bronze bushed and aluminium slipper pistons. It was fitted with a brazed-up steel crankshaft and had a master connecting rod with compound big end to which the other two rods were articulated exactly as in modern full sized practice. The admission and exhaust events were controlled by a flat-faced rotary valve of phosphor bronze, and ample passage ways were provided. The engine was extremely economical in its use of compressed air, and would have been the subject of further experiments had it not been practically impossible at that time to obtain materials for making suitable air containers.

Southgate, N.14. H. E. WHITE.

DEAR SIR,

It was with great interest that I read Mr. Paveley's article on Compressed Air Jobs. Reading the article took me back to 1938, when I was Secretary of the now (?) extinct Guildford and District Model Aero Club.

It was while acting in the capacity that I met an old gentleman of about 75—I forget his name now, whose favourite pastime was the manufacture of Compressed Air Motors, which were marketed under the name " Demon ".

At this time he was giving up this hobby owing to his sight failing and two of my friends and myself purchased some of his motors and tanks

We had a horizontal twin, a Vee-four, Vee-twin and a 4 in. line of all things, all of them were about ¼ in. bore and ½ in. stroke. The tanks were about 16 ins. long, and 3 ins. dia. at the widest part, being made of 24 s.w.g. tin plate, bound with 24 s.w.g. Copper wire, and soldered.

The rear end of the tank accommodated the air valve and many were the efforts made to pump up enough air to run the horizontal and Vee twins for a decent time. We never could muster up enough wind to run the Fours. These tanks would take up to 120 lbs./sq. in.

We never managed to make anything fly with these motors —we couldn't seem to fit the tanks into a nice looking fuselage.

I stated that these tanks would stand 120 lbs./sq. in. and this I put down to the fact that they were bound with copper wire and soldered. The extra weight added by doing this is infinitesimal compared with the extra air pressure that the tanks would take.

The last I heard of my friends experimenting with the motors and tanks, was in September 1938 when I started to become interested in the actual aeroplane and joined the R.A.F. What has happened to them since, I do not know for the Club disbanded shortly afterwards and so far as I know up to now has never been restarted.

Here's wishing you all the best and looking forward to more of these " Flashbacks ".

Bournemouth. W. FROBISHAM.

DEAR SIR,

May I through the medium of your columns offer a suggestion to those dealers in aeromodelling supplies, who at present offer so little detail in their advertisements ?

Running through the pages of advertising these days, it is often impossible to see precisely what is being offered at the price stated (price by the way, is the one item that is invariably inserted) and to many aeromodellers, particularly to newcomers to the hobby these advertisements are utterly useless.

Quite frequently advertisements fail to quote spans of models supplied in kit form, so that an intending buyer has no idea whether he is getting a 15 in. or 60 in. job for his half guinea Internal Combustion engines are rarely described with their full dimensions given, so that the scale model fan cannot tell if he will be able to cowl the " XK " 5 c.c. Diesel in his 1/12 scale Ju. 87.

In the case of airwheels, diameters are quoted, but not the minimum required axle length : timers are rarely advertised with any indication of the maximum time setting they can accommodate, and many kits advertised are not described as " wet or ' dry ". These few examples may seem immaterial when one is thinking of modellers who can get to a shop and see for themselves, but there are many lone hands, both at home and overseas who do all their buying by post, and it is these people who are affected adversely by bad advertising.

R.A F. Mauripur, Pakistan. A. C. HEBDEN.

DEAR MR. HALIFAX,

I have been using your fairly old series of articles " Elementary aerodynamic design-sailplanes " which appeared in the AEROMODELLER last year, to design a 300 sq. in. glider and have found them very useful. There is one point, however, which you do not make very clear, and I would like you to explain the following point more clearly if you can spare the time please.

In Part II, Wing incidence calculations you state, " talking about extra to wing drag ". We must find the actual drag of all these (i.e. fuselage, tail unit, and interference) in ounces, add them together and divide by $\frac{p}{2}$ SV² this last presumably to bring them to coefficient form. Now, what is " S " in this case ? Even if you add together the tailplane, fin and fuselage plan view areas, what can be added for interference ?

If you could possibly elucidate this point for me I should be very glad, and meanwhile, thanks for a grand series of articles which make theoretical designing possible for the more ordinary of us aeromodellers.

Southampton Model Aeroplane Club. D. J. FOSTER.

We publish Mr. Halifax's reply below for the benefit of other readers. (Ed.)

DEAR SIR,

Since the publication of the article mentioned by Mr. Foster, I have received nearly a hundred letters on this matter, and since the trickle is fairly steady I should like to clear up the matter once and for all.

For the method in question, the drag of all parasitic components should be summated, and the total divided by

$\frac{p}{2}$S.V.² where $p = \cdot 00238$. S = the wing area.

V = the model's flying speed in ft./sec.

This method is now out of date, however, which is not altogether surprising in the light of the fact that it was written over two years ago, and about a subject which has seen remarkable progress in the last few years. The modern method (which was described in part 12 of my " Aerodynamic Design " series) requires no calculation at all : a wing section is chosen and the best angle of attack obtained from a table——just like that !

Campden. JOHN HALIFAX.

AIRCRAFT DESCRIBED No. 1

THE PERCIVAL PRENTICE

By E · J · RIDING

SINCE the early nineteen thirties the name Percival has been connected with low-wing cabin aircraft of all-wooden construction, and the long line of Gulls, their brethren the Proctors and Q.6's has now given rise to an aircraft which although of similar outward appearance to these latter, embodies a method of construction which is new to the firm at Luton.

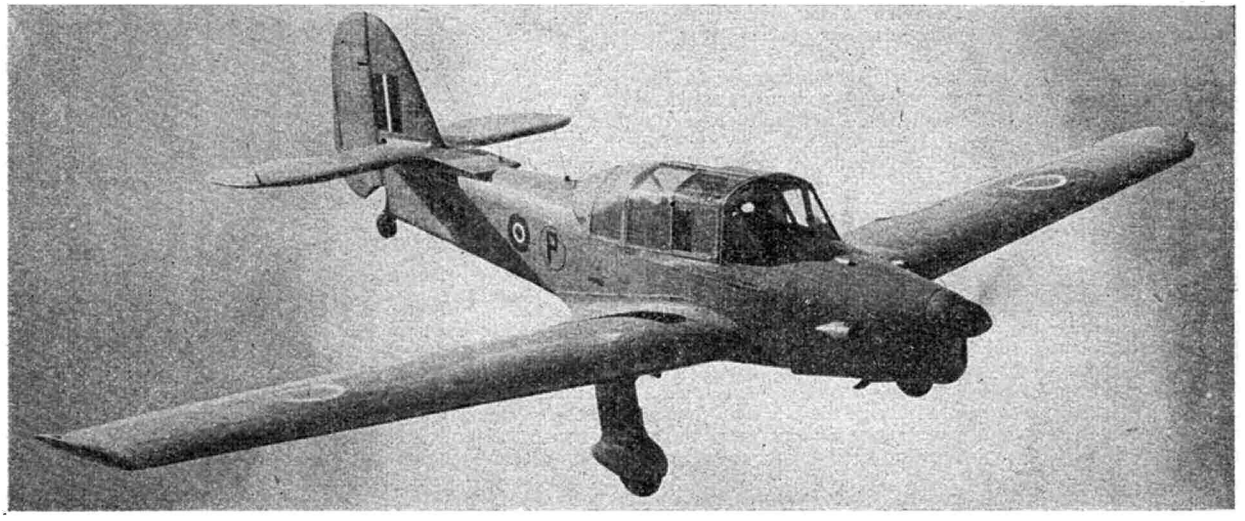
Built to Air Ministry Specification T.23/43, the three-seat layout of the Prentice was conceived in the days when service instructors had a great number of pupils to put through the same course in a given time, and it was thought that by adding a third seat another pupil could both watch and listen in over the inter-com. to everything that went on between the instructor and the first pupil, thus saving a lot of unnecessary verbal repetition on the instructor's behalf. The idea has now been carried on into the peacetime R.A.F., and a considerable number of Prentice aircraft have been ordered for duties in Training Command. It is also in production at the Brough factory of Blackburn Aircraft Ltd.

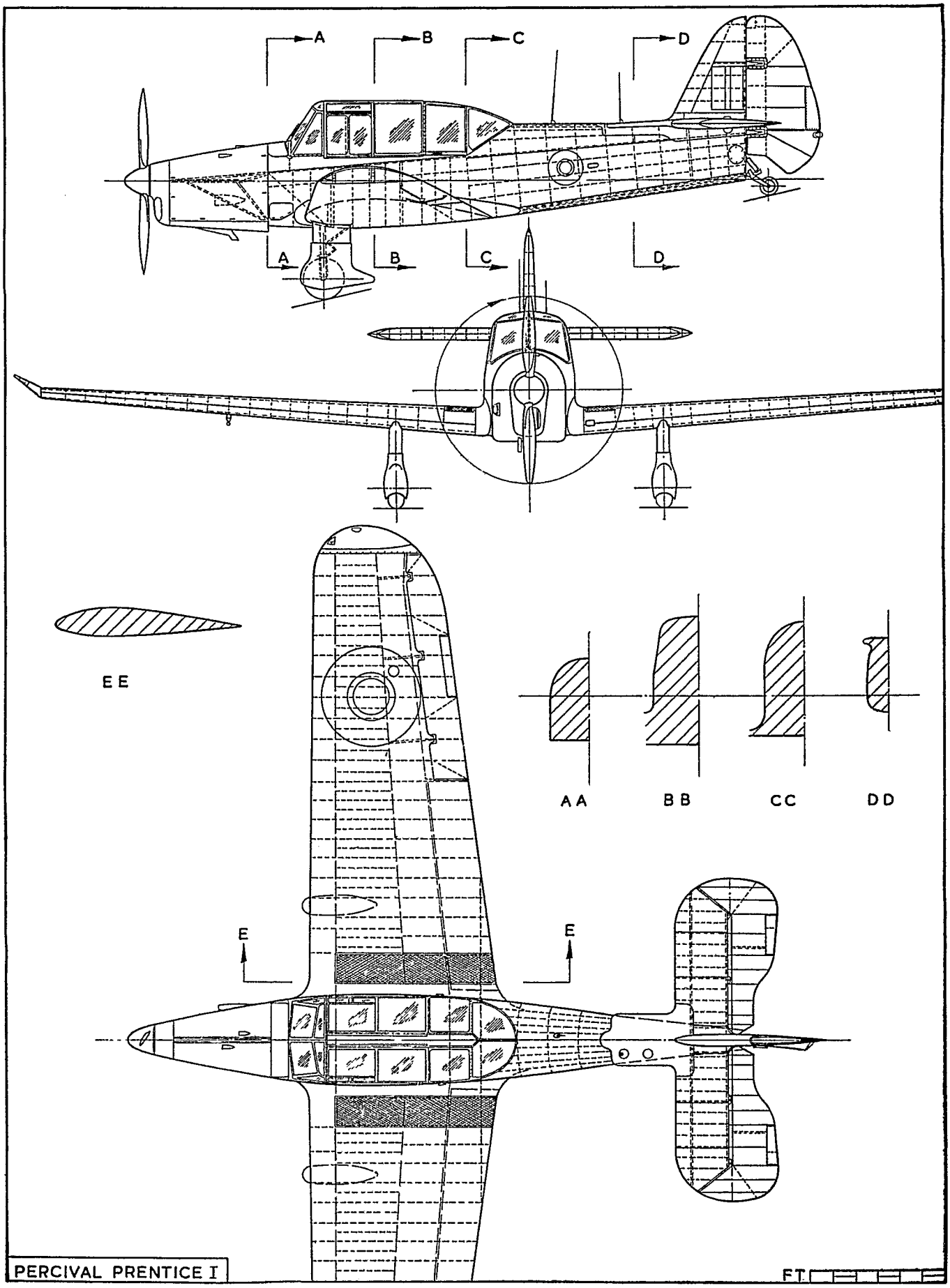
Colour. Training yellow all over with fin flash and standard red, white and blue roundels on both surfaces of the wings and on the fuselage sides. The serial number, *e.g.*, VN.702 is painted in black in the positions shown in our photographs and on the cover painting this month by Mr. C. Rupert Moore, A.R.C.A.

Construction. All metal. Fuselage built in two portions, forward one containing crews quarters, and a semi-monocoque aft section, both made from light alloy frames, stringers and sheet. The wings, built in two portions and bolted direct to the fuselage, incorporate light alloy flanged and webbed spars to which are attached the leading and trailing edge sections. After jig assembly the whole component is covered with light alloy sheeting. Split trailing edge flaps made in three sections stretch spanwise from aileron to aileron. The tailplane and fin are both of cantilever pattern embodying light alloy spars, ribs and sheeting, whilst the rudder, elevators and ailerons are of light alloy construction with fabric covering. The undercarriage has a track of 12 ft., each leg being bolted to the front face of the front spar. 40 gallons of fuel are contained in two wing root tanks, and a 4-gallon oil tank with cooler is mounted in the leading edge of the port wing.

Specification: Length, 31 ft. 3 ins.; span, 46 ft.; height, 8 ft. 7 ins.; wing area, 305 sq. ft.; loaded weight, 3,950 lbs.; max. speed, 150 m.p.h.; cruising, 133 m.p.h.; landing, 60 m.p.h.; range at cruising speed, 454 miles; ceiling, 15,000 ft. (These figures refer to the Prentice I with unsupercharged 6 cyl. in-line inverted 251 b.h.p. D.H. Gipsy Queen 32 engine. With 296 b.h.p. Gipsy Queen 51 supercharged engine the range is 505 miles, all-up weight 4,000 lbs. and ceiling 18,526 ft.)

"Aeromodeller" Photographs.





PERCIVAL PRENTICE I

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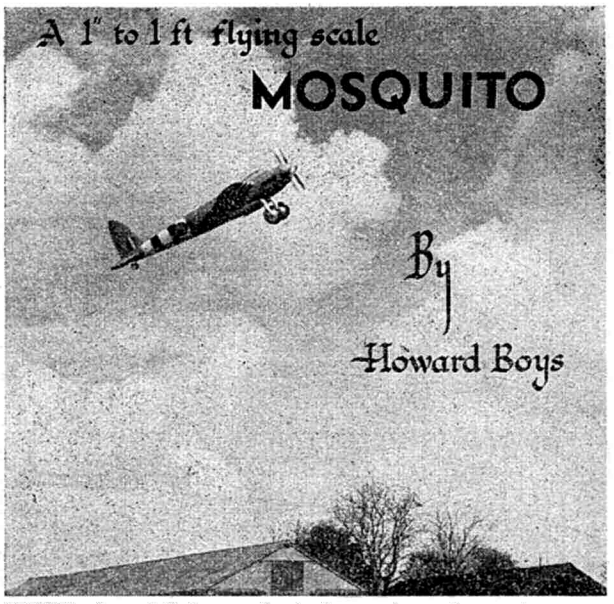


THE aim of flying scale designers has always been to reproduce the characteristics of the original machine in a model, both in stationary and flying poses, with duration only of secondary importance as long as the model would fly and fly well. The name of Howard Boys has been associated with efficient flying scale models in this category for a very long time, and here we feature another of a long line of justly famed models that he has produced. Recently the AEROMODELLER Research Staff had the opportunity of handling a model built to this design and putting it to a very thorough test. An idea of the ruggedness of the construction can be gathered from the fact that throughout the whole of a hard morning's flying the only damage sustained by the model was very superficial, although those testing the model had of course to trim entirely from scratch as it had only just been completed by that master model builder, A. J. Cockle, of Northampton, whose enviable dexterity with paint brush and sandpaper has won him many awards in various parts of the country.

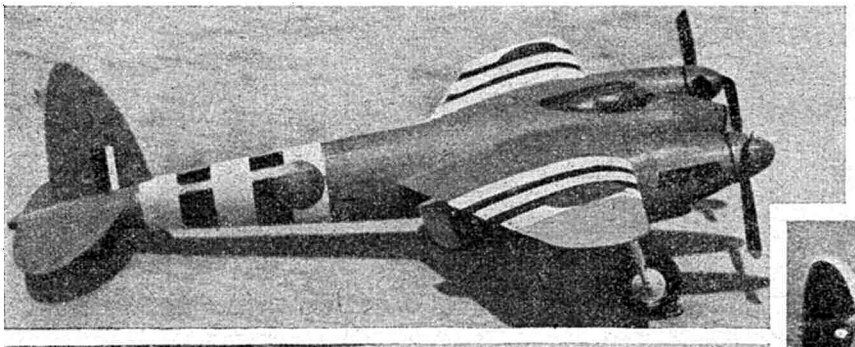
Take-off tests were first made from the concrete after glide tests had shown the model to be correctly rigged without the need of any weight alteration On three hundred turns the machine made a fast take-off in true "Mossie" manner, hurtling off the deck once airborne and rising rapidly in a fast climbing turn to a fair height and then planing in to a flat "engine-off' landing in the grass. The model proved most consistent, repeating this performance quite flawlessly on subsequent flights. From a hand launch the height obtained was considerably greater with a consequent increase in total duration. The model flew very fast but stably, with that quickness of movement that characterises the full size machine. In particular the ease with which it performed a tight banked turn was most impressive.

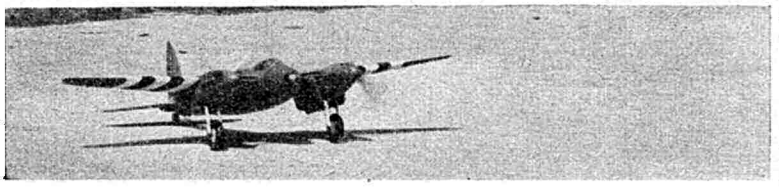
The design of the model structurally is very sound, incorporating a monocoque fuselage and considerable sheet covering on the wings. Despite this rigid construction, which helps to no mean degree the remarkable scale appearance demonstrated by the accompanying photos, the all-up weight is not excessive, and if less attention is paid to high "scale" finish the weight could probably be considerably reduced and the performance stepped up in proportion.

The general building of the model presents no great difficulties, though it may be as well to issue the old warning that this is hardly the model for the less experienced. In particular the rigging and flying call for great care. The centre section is integral with the fuselage, the wings plugging in by means of dowels, and here correct alignment is absolutely vital—the slightest inaccuracy wreaking havoc in a model of this type. The fixing of the tailplane calls for equal care, and it is essential that no flying surface is warped.

Remember that the model is not a lightweight and will fly fast, though the angle should be flat. Therefore, test for trim only over long grass, and go very steadily with weight adjustment as the model is sensitive in this direction. Experienced aeromodellers who are tired of the everlasting duration model and are looking for an outlet for their ingenuity will find plenty of scope for their activities in building and flying the Mosquito. Flying scale types seem to be sadly neglected by the majority of modellers, but the wheel will undoubtedly turn full circle to the time when this most interesting branch of the sport will again receive all the support it deserves. The plans of this model, quite one of the most interesting we have published, are available as usual from Aeromodeller Plans Service, Allen House, Newarke Street, Leicester, for 6/– post free.

"Aeromodeller" Photographs





MONTHLY MEMORANDA

RADLETT EXHIBITORS

BY O. G. THETFORD

OVERLEAF will be found a special two-page pictorial survey of the new aircraft displayed at the S.B.A.C. Show at Radlett this year and this column is devoted to notes on these types together with some comments on the markings and colour schemes.

The Auster VI (145 h.p. Gipsy Major VII) A.O.P. aircraft displayed was one of a batch to be supplied to the Royal Canadian Air Force and was doped training yellow, with the Canadian number " 16658 " in black on the fuselage and beneath the wings. The civil variant of the Auster VI, known as the Avis, is a four-seater with a 145 h.p. Gipsy Major X motor. The prototype, shown at Radlett on the second day, carries the experimental number " Z-2 ".

Few aircraft at the Display excited more interest by virtue of their beautiful lines than the Airspeed Ambassador (two 2,600 h.p. Bristol Centaurus 631) 48-seat airliner. The first prototype registered G-AGUA was shown. It is now reported that the military variant, the Ayrshire troop-carrier, has been abandoned. Airspeeds also had on show a production Consul G-AJWS and an Ambulance Consul G-AJWR.

A standard production Firebrand V and the new S.28/43 Firecrest strike torpedo-monoplane represented Blackburn Aircraft, Ltd. Both wore normal Naval camouflage, the Firecrest having additionally the yellow " P " on the rear fuselage. The Firebrand was numbered EK-743 and the Firecrest RT-651. Some notes on the Firecrest were included in last month's article.

The Boulton Paul P. 108 Balliol (820 h.p. Bristol Mercury) three-seat trainer appeared in the old-type training colours (yellow all over) with the serial number VL 892. The production version, fitted with the Siddeley Mamba or Rolls Royce Dart airscrew-turbine, is due to fly any day now.

On show from the Bristol Aeroplane Co., Ltd., was the Freighter XI, registered G-AIFF, which introduces increased span and round wing-tips, the total span now being 108 ft. The Wayfarer XIIA has the same modification. The Brigand I displayed, RH 797, was the fifty-fifth production aircraft, and was resplendent in the new Coastal Command colours (all-white except for grey top surface to wings and tailplane). The Buckmaster I on show was camouflaged on top and training yellow underneath with the serial number RP 151.

The Cunliffe-Owen Concordia (two 1,010 h.p. Alvis Leonides) 10-seat feeder-line aircraft, was displayed in its second prototype form, registered G-AKBE, and having a five-inch extension on the nose section of the fuselage.

Two D.H. Vampires were displayed, a standard Mk. I TG 443 appearing in sky blue and a Mk. III VF 345 in aluminium. Also in aluminium was the Sea Hornet XX, numbered VR 837. The third prototype, D.H. 108, was flown, which is all-aluminium and numbered VW 120. An imported Chipmunk with the British registration G-AKDN was also displayed.

Elliotts of Newbury, Ltd., Eon (100 h.p. Cirrus Minor) four-seat low-wing monoplane, was notable for its tricycle undercarriage and somewhat Gallic lines. It is finished in a delicate pastel blue and registered G-AKBC.

The Fairey Firefly Trainer, MB 750, was interesting in that it appeared in the new Service trainer colour scheme which is all-aluminium with a yellow band encircling the fuselage and the wings. In standard Royal Navy camouflage, the Firefly IV TW 695 was fitted with a six-blade contra-rotating airscrew. The Fairey Gyrodyne helicopter (500 h.p Alvis Leonides) was finished silver with the letters G-AIKF in black.

Three tailless research gliders by General Aircraft, Ltd., the Types 56 Medium V, Maximum V and Medium U, were painted training yellow with black diagonal stripes beneath and numbered respectively TS 507, TS 513B and TS 510D, the number appearing in black on the rear of the nacelle, beneath the prototype " P ".

A standard Fighter Command Meteor IV, RA 449, was shown and had the new aluminium finish now becoming increasingly common on Service aircraft. Other examples of Service aircraft with aluminium finish included the Handley-Page Hastings, the Heston A 2/45, the Scottish Aviation A 4/45, the Short Sturgeon, the Supermarine Attacker, the Vickers Valetta and the Westland Wyvern. Retaining the camouflage were the Hawker Sea Fury X, the Avro Lincoln II heavy bomber, the Theseus-Lincoln and the Seafire 47, while the Prentice three-seat trainer was all-yellow.

The Hastings troop-carrier, TG 502, was accompanied by its civil counterpart, the Hermes, in its Mk II trial-installation version, G-AGUB. The production Hermes IV for B.O.A.C. will follow early in 1948.

Hawker's new jet-propelled fighter, the N. 7/46, was undergoing flight tests at Farnborough during the Radlett Show so the Hawker contribution was limited to the second-prototype Sabre-Fury, VP 207, the second prototype Centaurus-Fury, NX 802, and a standard production Sea Fury X, TF 955.

The new Heston A. 2/45 two-seat twin-boom A.O.P. monoplane (240 h.p. Gipsy Queen 33), VL 529, has remarkable landing and take-off qualities, though an ugly appearance.

Miles Aircraft Ltd., showed their first prototype Marathon, G-AGPD, with the triple fins and rudder, the new Merchantman (four 250 h.p. Gipsy Queen 30), M. 68 Boxcar G-AJJM, Gemini IA G-AIDO, Messenger IIA G-AKBO and Aerovan IV G-AJKW. The Merchantman, an enlarged all-metal development of the Aerovan, still carries its experimental number " U-21". The M. 68, with four 100 h p. Cirrus Minor motors, features a detachable roadable transporter incorporated in the nacelle.

Percival's production Prentice trainer was numbered VR 192 and was accompanied by the prototype Merganser (two 296 h.p. Gipsy Queen 51) now sprayed blue, with the letters G-AHMH in white.

Portsmouth Aviation's unorthodox twin-boom Aerocar (two 155 h.p. Cirrus Major) made its first public appearance, registered G-AGTG. The Aerocar, which seats four in its central nacelle, is to be built in Short's old factory at Rochester and also in India. It should appeal to charter and taxi operators.

Only example of the Tudor range present was the Hercules-powered Mk. VII, G-AGRX. The Nene-powered Tudor VIII is due to make its first flight as we write. Three other Avro " heavies " on show included a standard Bomber Command Lincoln II, RE 348, the Ghost-Lancastrian, VM 703, and the Theseus-Lincoln RA 716.

Remarkable for its very comprehensive system of slots and flaps, Scottish Aviation's first product, the Prestwick A 4/45 three-seat high-wing A.O.P. monoplane (250 h.p. Gipsy Queen 34) created a stir of interest. It is numbered VL 515, and will be followed by the Pioneer four-seat civil version.

Of the Short range, the Solent flying-boat detailed to fly over the Show was B.O.A.C.'s " SCAPA," G-AHIS. The Sturgeon prototype, RK 787, was a repeat of the 1946 entry.

Also a repeat of the 1946 item was the showing of the first prototype Attacker, TS 409, by Supermarines. Accompanying the Attacker was a series production Seafire 47, VP 428, and the prototype all-yellow Spitfire Trainer, now bearing the civil letters G-AIDN in black. A four-seat commercial version of the well-known Sea Otter amphibian, registered G-AIDM, was also on view.

The demonstrator Viking IB, G-AJJN, complete with Union Jack on the tail assembly, was admired for its magnificent finish. The Valetta I, which carries 36 troops and is to replace the Dakota in the R.A.F., is the military version of the Viking and VL 249, was displayed.

Finally, mention must be made of the Westland Wyvern (2,690 h.p. Rolls Royce Eagle 22) single-seat Naval strike fighter. The second prototype, TS 371, was shown, this aircraft having fixed wings. Folding wings, similar to those of the Seafang, will be a feature of the third Wyvern.

RADLETT 1947.

A SPECIAL "AEROMODELLER" CAMERA REPORT

BY E. J. RIDING

1. HANDLEY PAGE HERMES II (FOUR BRISTOL HERCULES 120).
2. AIRSPEED AMBASSADOR (TWO BRISTOL CENTAURUS 631).
3. AVRO LANCASTRIAN (TWO MERLINS, TWO D.H. "GHOSTS").
4. PERCIVAL MERGANSER (TWO D.H. GYPSY QUEEN 51).
5. BRISTOL T.170 MK. XI. (TWO BRISTOL HERCULES 632).
6. PORTSMOUTH AVIATION AEROCAR (TWO CIRRUS MAJOR III).
7. SHORT SOLENT (FOUR BRISTOL HERCULES 637).
8. GENERAL AIRCRAFT "MEDIUM V" TAILLESS GLIDER.
9. AUSTER AVIS (D.H. GYPSY MAJOR).
10. WESTLAND WYVERN (R. R. EAGLE 22).
11. SLINGSBY TYPE 21 SIDE-BY-SIDE GLIDER.
12. SHORT NIMBUS SAILPLANE.
13. AVRO LANCASTRIAN (GHOST.)
14. SUPERMARINE SEA OTTER CIVIL VERSION (BRISTOL MERCURY 30).
15. SCOTTISH AVIATION 4/45 (D.H. GYPSY QUEEN).
16. PORTSMOUTH AVIATION AEROCAR.
17. FAIREY GYRODYNE (ALVIS LEONIDES).
18. PERCIVAL PROCTOR VI (D.H. GYPSY QUEEN II).
19. CUNLIFFE-OWEN CONCORDIA (TWO ALVIS LEONIDES).
20. MILES M.68 BOXCAR (FOUR CIRRUS MINOR II).
21. HAWKER FURY I (NAPIER SABRE VII).
22. BOULTON-PAUL BALLIOL (BRISTOL MERCURY XXX).
23. AIRSPEED CONSUL (A-S CHEETAH X).
24. MILES MARATHON I (FOUR GYPSY MAJOR 71).

"Aeromodeller" Photographs.

CLUB NEWS

BY CLUBMAN

Our "glamour boys" this month are members of the Sale M.A.C. shown here at a recent meet.

I WRITE this a week before the holding of a special S.M.A.E. meeting (in Manchester) to discuss and receive recommendations for the 1948 Competition Programme, and press dates, etc., make it impossible to give you further gen in this issue. However, I hope to be able to fully discuss the various suggestions that are bound to be put before the meeting in the next issue. Competitions are the life-blood of our hobby, but overcrowding of the annual calendar tends to take the enjoyment out of things, and I am sure that half a dozen well-organised and supported National meetings would suffice to meet the appetites of most modellers to-day. Additional meetings would be arranged by clubs to meet the demands of their members, but I am of the opinion that we must get away from the present tendency to make each and every week-end a competition date—staleness sets in, and models are hurriedly built, trimmed and lost.

It is pleasant to record that Mr. Houlberg was again honoured by being unanimously elected President of the Model Commission of the F.A.I. at their recent meeting in Geneva, Lord Brabazon being once again returned to Presidency of the F.A.I.

As I fully expected, control-line flying is catching on in this country with ever increasing rapidity, and I welcome this class of model flying if only for the ideal opportunity it gives for demonstration purposes to the general (uninformed) public. I make one plea only, and that is—please don't let us get speed crazy. The urge for speed is common to-day, but we have the example of our American friends as a glaring insight into the difficulties following in the train of m.p.h. chasing. I therefore ask the newly elected sub-committee of the S.M.A.E. to carefully frame their recommendations for the conduct of control-line flying in order to keep the field open for all types of model.

National records have received a little more attention these last few months, and four more figures have been homologated by the S.M.A.E. Reg Parham of Worcester has set up a fine time of 8 : 55·4 for seaplanes (rubber driven), other waterplane records going to R. A. G. Bellinger—1 : 08 with his power-driven monoplane R.O.W., and yet another to the bag of C. E. Bowden, this time a flight of 1 : 12 from Poole Harbour with his power-driven flying boat. The other record this month is to the credit of R. A. Twomey (Ampleforth), who pushed up the H.L. Glider (F.A.I.) Class A time to 5 : 45·6.

MIDLAND AREA RALLY RESULTS

Open Rubber (105 entries)	E. W. Evans	(Northampton)	483:2 secs.
	F. E. Smith	(Northampton)	457 "
	G. Salt	(Birmingham)	439:2 "
Open Glider (112 entries)	R. I. Robinson	(Birmingham)	389:4 "
	Cpl. Watkinson	(Cranwell)	"
	E. R. Jones	(Birmingham G.P.O.)	237:2 "
	J. E. Thompson	(Wolverhampton)	234:6 "
Open Power	N. D. Howard	(Cheadle)	133 "
	D. Bason	(Northampton)	113 "
	B. J. Howard	(Cheadle)	96 "
	(20 sec. engine run. 86 entries.)		
Concours	Power C. L. Houghton		(Luton)
	Glider W. S. Saunders.		(Leamington)
Senior Champion	G. Salt	(Birmingham)	
Junior Champion	J. E. Thompson	(Wolverhampton)	

The second Welsh Rally, organised under the auspices of the **SOUTH WALES AREA** was held at Clyne Common, Swansea, on the 4th August. Highlights of the day were the close fight between Bud Morgan and L. Popham in the power event, and D Bicknell's flight of 6 mins. o.o.s. in the Glider Class. Results were :

Open Rubber	P. Lilley	(Cardiff)	3 : 16·8
	M. Vickery	(Swansea)	3 : 13
	P. Smith	(Bridgend)	3 : 02·3
Open Glider	D. Bicknall	(Bridgend)	7 : 10
	J. Blackmore	(Cardiff)	4 : 47·75
	M. Vickery	(Swansea)	3 : 34·4
Open Power (20 secs. engine run)	B. Morgan	(Cardiff)	2 : 30·5
	L. Popham	(Cardiff)	2 : 29·5
	E. Davies	(Bridgend)	1 : 43

August 24th dawned fine and warm for the "All Herts. Rally" sponsored by the **ST. ALBANS M.A.C.** S. A. Miller of Luton was again the winner of a Concours event, this time with his "Ivory Gull," which easily accomplished the minimum flight of 20 seconds required. (I trust we have seen the last of those special "spit-and-polish" models especially prepared for Concours events, and never put into the air.) Much to the annoyance of the lightweight fans, a Wakefield model won the Rubber event, possibly owing to the wind which suddenly sprang from nowhere. This also affected the gliders, but abated in time for the power events to take place. Most spectacular was the jet-propelled control line job flown by F. Guest of Bushy Park, which turned in a speed of 98·4 m.p.h. All that could be seen was a black blur zipping round the circuit ! ! Full results were :

Concours	S. A. Miller	(Luton)	"Ivory Gull"
	L. Sharp	(Bushy Park)	"Slicka"
	K. Landon	(Watford)	"Ventura"
Open Rubber	P. T. Capon	(S.M.A.E.)	8 : 50
	N. C. Peck	(St. Albans)	8 : 40·75
	O. T. Dudley	(Blackheath)	8 : 14
Open Glider	P. Neate	(St. Albans)	9 : 49·4
	Y. E. Denyer	(Croydon)	8 : 40·2
	B. C. Chandler	(Croydon)	8 : 34·7
Open Power (15 secs. engine run)	E. Keil	(Essex Power)	6 : 25·5
	P. Neate	(St. Albans)	4 : 31·5
	C. Houghton	(Luton)	3 : 06·4
Control line (Speed)	F. Guest	(Bushy Park)	98·4 m.p.h.
	R. Moulton	(Zombies)	59·9 "
	H. J. Nichols	(Northern Heights)	57·75 "
(Stunt)	M. Booth	(Zombies)	30 points
	R. Moulton	(Zombies)	29 "
	D. Brockman	(Zombies)	29 "

Members of the **DONCASTER & D.M.F.C.** have been doing well at various rallies, Hetherington and Helliwell collecting places at the York and "Daily Dispatch" meetings. Hetherington has also raised the club R.O.G. record to 15 : 15 with his lightweight job.

High wind and a squally rain greeted the **BRISTOL & WEST M.A.C.** for their attempts at the National Cup and M.E. No. 2 events, run concurrently with the club open Glider event. Bob Moon won the latter event with an aggregate of 1 : 58, K. Sergent getting 1 : 33·6 and Ken Moon 1 : 11·6. Best flight of the day, 1 : 10 by M. Garnett, was unfortunately not a contest flight! A Wakefield type contest for the "Packer Cup" went to G. Woolls with a three flight aggregate of 3 : 25·1, Garnett placing second with 3 : 12·9, and Price third, time 2 : 19·3.

The **WAKEFIELD** (Yorks.) **M.F.C.** held a very successful Open Day on the 14th September, many local clubs attending. Best time of the day was put up by W. Denison of the home club in the rubber event, his aggregate being 5 : 14. Wildgoose of Pontefract won the glider class with 5 : 10·6, another Pontefractite, Mr. Turner, winning the junior event with a time of 1 : 50·8.

BRAUNTON & NORTH DEVON M.F.C. welcomed the Plymouth M.F.C. to their ground on the 7th September, and in spite of a fresh wind and fog patches, a very pleasant day was spent. Braunton won the rubber event (best single flight 1 : 16 by F/Lt. Beasley), whilst the visiting club had their own back in the sailplane event.

Members of the **LEEDS M.F.C.** are showing renewed interest in r.t.p. work, thus indicating first signs of an approaching winter! M/s. Best and Turner recently demonstrated some miniature electrically-driven models, very like tiny petrol pylon jobs, of less than 12 in. span. Since the last report from this club, some soaring flights have been recorded—especially to make a liar out of the poor Press Sec.

Some pretty good times were put up in an inter-club contest staged between the **SOUTH-EAST BIRMINGHAM M.A.C.** and their local rivals the South Birmingham club. Over zealous test flying before the contest lost two models for M/s. Patrick and Thomas, and it was left to D. H. Laight and A. Hares to fight things out for the honour of their respective clubs. Results:

Rubber	**D. H. Laight**	**(S.E. Birmingham)**	**3 : 52·3**
	A. Hares	**(South Birmingham)**	**2 : 48·5**
	K. Lees	**(South Birmingham)**	**2 : 19**
Glider	**A. Hares**	**(South Birmingham)**	**5 : 03·4**
	D. H. Laight	**(S.E. Birmingham)**	**3 : 46·8**
	J. Bailey	**(South Birmingham)**	**3 : 31·5**
Power	**B. Hewitt**	**(South Birmingham)**	**2 : 10·8**
	K. Thomas	**(S.E. Birmingham)**	**1 : 06·8**
	J. Phelps	**(S.E. Birmingham)**	**: 45·6**

Hey lads—here's a new way of getting those models out of the tree tops! N. D. Lorimer of the **PRESTON & D.M.A.C.** had the brain wave of ringing up the N.F.S. following the lodgment of his power job in the tallest tree available, and the ladder and hose boys obliged to good purpose, having the job down in five minutes with the help of a trick ladder and a searchlight! (Yes, it had got dark by then.) **WARNING!** Don't go trying it yourselves—it can only come off once in a blue moon, and we don't want authoritative statements regarding the proper use and purpose of our fire-fighting forces.

The **PETERBOROUGH M.A.C.** glider record was broken three times on the same day, when, following o.o.s. flights of 2 : 35 and 3 : 20 by M/s. Cook and Slade, B. Riley put up his pylon wing sailplane on what was intended to be a test flight from a short line. However, a thermal was contacted, and the job disappeared after clocking 7 : 17.

Taking advantage of the recent fine weather, the **LEICESTER M.A.C.** staged a Power duration contest, S. Seville winning with a ratio of 3·87, Geoff. Dunmore following very close behind with 3·86. J. Marsh put up a fine flight of 22 : 7·8 o.o.s. with a Wakefield model of his own design, featuring retractable undercart and folding airscrew. An unusual feature of the flight was that it was made at approximately 8 p.m., at which time thermals are not exactly common. Members of the Grantham club were entertained, and returned short of two gliders, both lost in the same thermal after flights of 7 : 18 and 7 : 38 o.o.s. G. E. Dunmore set up a new club power record with a ratio flight of 5·9, but it is not expected that this time will last very long. (An amusing incident occurred when W. Crane's diesel-powered job shed its engine when at about 150 feet altitude. The engine continued running until it hit the deck, the plane making a stalled glide. Fortunately the engine landed in long grass, but was not recovered for some days!) Collecting three firsts, a second and a third at the "Centre of England Rally," Leicester were adjudged champions, and received a suitable trophy.

The **CUMULUS CATCHERS** (formerly Victoria M.A.C.) had some good flying at their glider meeting, A. Ross losing his model after a flip of 8 : 17, his aggregate winning time being 10 : 19. D. G. T. Reece placed second with 6 : 10·2, with H. Portnoy third 4 : 18·6. Ross again showed the way home later in a rubber competition, aggregate this time being 10 : 40; Reece once more playing second fiddle with 7 : 00, and R. Clark third with 4 : 10·4. To complete the picture Ross lost his Mills-powered "Slicker" after a time of 23 : 14 o.o.s. from a 24-second engine run. (Theah's some hefty thermals round them thar hills!)

In a month of well-nigh perfect flying weather, R. Cole, a junior member of the **SWANSEA & D.M.A.C.**, put up an amazing performance in breaking the existing club Glider record of 2 : 30 with flights of 4 : 15, 4 : 50 and 12 : 50 in succession. He used a "Mick Farthing" lightweight which was lost on the final flight. At a later meeting, he lost a second machine of similar design after a time of 11 : 50, this being the third time this year he has passed the ten-minute mark.

The **GOOLE GUILD OF AEROMODELLERS** collected a first and a third at the Brough Rally. Club records to date are: Rubber, 5 : 25 o.o.s. by P. Heddy; Glider, 5 : 36 o.o.s. by C. H. Charles; and Power, 14 : 40 (from 20-second engine run) by D. L. Blackbourne.

P. Montgomery of the **KIRKCALDY M.A.C.** was selected to visit Holland for the Dutch National Championships held in August, and won the Power event with his scaled-down version of Shulman's "Zomby" which has placed in every contest entered to date. In the other events he unfortunately lost his rubber-powered job on a test flight, and his glider on the first competition flight, so did not place in these events!

The Smith family seem to be cleaning things up with the **BOURNEMOUTH M.A.S.**, Mrs. S. flying her biplane to first place in the "Ladies' Competition" with a time of 1 : 12, Mrs. Robbins placing second with 0 : 41·5. The "Reliability Cup" went to Phil Smith with 85·5 points, Capt. Grant second with 85, and R. Smyth coming third with his tail-less job at 84 points.

Nine members of the **ST. HELENS M.A.C.** took part in a club power duration contest, winner being R. Scott with a time of 1 : 41·6. A. Banks won the open rubber event with an aggregate of 4 : 11. Junior E. Travis holds the glider record with a flight of 8 : 36 o.o.s., his brother, S. Travis, being holder of the rubber-driven record, time 5 : 20.

SOUTHAMPTON M.A.C. members prepared for some weeks for the first Hobart Challenge Trophy contest, and were rewarded by a spectacular win, the score being: Southampton, 32 points; Portsmouth, 6 points. Considerable interest is now being shown in control line flying, and several very successful models can be seen flying regularly on Southampton Common, there being an ideal site for this type of flying in the form of a dried-up lake with a flat concrete bottom.

Owing to inability of obtaining suitable accommodation this year, the **HARROGATE M.E.S.** has had to cancel arrangements for holding the usual exhibition. The postponed date is April, 1948; fuller details in a later issue.

An entry of 64 models from 8 clubs was received for the second annual Rally of the **BELFAST M.F.C.** at Hannahstown in August. Competition throughout the events was keen, and the final times reflect the fine conditions prevailing, although thermals were at all times at very high altitudes. Results:

Open Rubber	**G. Drew**	**(Belfast)**	**9 : 51·7 agg.**
	W. Tinnion	**(Dublin)**	**8 : 11·5 ,,**
	H. Patterson	**(Belfast)**	**7 : 57·5 ,,**
Open Power	**M. Stuart**	**(Dublin)**	**3 : 13 ,,**
	R. Hanna	**(Ulster)**	**3 : 12 ,,**
	W. Little	**(Ulster)**	**2 : 22 ,,**

Best time of the day was put up by W. Tinnion in the rubber event, flight time 8 : 11 o.o.s. "Monty" won the power event with two flights only, his model being an orthodox type, which proved superior to the pylon jobs.

The second annual Rally of the **CAMBRIDGE M.A.S.**

was held on July 5th, the high wind taking toll of the entries. Visiting clubs made a keen show, but with one exception all contests were won by the Cambridge boys.

Inter-club meetings are a regular feature with the **MORDEN & D.M.F.C.**, the home lads winning three power events to date. D. Tuffin broke the club rubber-driven record with his " M.F." lightweight with a time of 8 : 45, the model flying from Epsom Downs to Reigate.

I glean from the newly published club mag. of the **EASTLEIGH & D.M.A.C.**, the following list of club records :

Open Rubber	J. Saffery	8 : 12·2 o.o.s.
Open Glider	E. Moody	6 : 42
Tailless Glider	A. Palmer	1 : 10
Indoor, R.T.P.	W. Emery	1 : 04

K. Walsh aggregated 10 : 33 to win the " Clift Cup," also placing well in the monthly contests for the Glider Shield.

Over 1,000 folk representing 18 clubs attended the **READING D.M.A.C.** Gala Day in fine weather, many models going the way of all thermal hangers-on. G. W. W Harris lost two models, thus robbing him of higher placings in the results, but all events produced some very close finishes, the rubber class particularly so. Full results :

Glider	R. Carpenter	(Alton)	9 : 24·5
	G. W. W. Harris	(Reading)	7 : 31
	J. Buckeridge	(Northern Heights)	5 : 01
Rubber	J. Buckeridge	(Northern Heights)	7 : 06
	G. W. W. Harris	(Reading)	6 : 55
	C. F. Haddock	(Reading)	6 : 54·5
Power	G. G. (Pop) Harris	(Reading)	11·0 ratio
	P. Burne	(Reading)	6·27 "
	G. W. W. Harris	(Reading)	5·04 "

Members of the **DUBLIN M.F.C.** have been concentrating on rubber-driven models of late, and as a result of this they took first three places in the open rubber event of the competitions staged by the Phœnix club in September. Full results were :

Open Rubber	W. Tinnion	(Dublin)	6 : 24·9
	W. Brazier	(Dublin)	3 : 49·5
	W. Brazier	(Dublin)	3 : 29·4
Open Glider	G. Hoey	(Phœnix)	2 : 05·7
	W. Seymour	(Phœnix)	1 : 55·2
	L. Collier	(Phœnix)	1 : 54·39

There were 20 entries for the **ENFIELD & D.M.A.C.** club contest for the Bambridge Trophy (rubber models), winner R A Parker aggregating 5 : 46 against P. Plummer's 5 : 20 G. Westaway " agged " 4 : 30 to get third position. M J Revett clocked 6 : 20 in the open rubber event at the West London club Rally at Langley, the loss of the model robbing him of taking a second flight.

Whew !—who said thermals were confined to the Southern counties ? C Christianson of the **SALE A.C.**, whilst test flying his " Spiv II " power model, put up a flight of 40 minutes on a 20-second engine run. The model was chased, kept in sight, and retrieved within two minutes of landing—by car ! ! Earlier P. Whitt raised the club glider record from 9 : 40 to 12 : 30 o.o.s.

Members of the Windsor M.A.C. of Australia wish to make pen-pals over here, particularly with clubs, so any who would like to take up the challenge should write to the Secretary at 8, Errol Street, E. Prahran S.I., Melbourne, Australia.

Three more fellows announce their intention to start clubs in their areas this month, addresses as follows :—R. H. Towndrow, 47, Talgarth Road (Basement), Fulham, W 14; D. B. Ashman, 236, Borough Road, Middlesbrough, Yorks.; and J Marrey, c/o The Model Shop, Station Road, Ashington, Northumberland.

A goodly batch of new clubs announce themselves this month, and it is pleasing to note the ever-increasing strength of the club movement in this country. I would stress the further step essential to a fully organised movement, i e, affiliation to the S.M.A.E. (which now incorporates the A.B.A.). In this way the full strength of the keen aeromodellers would be felt in all matters pertaining to their hobby, with obvious benefits all round.

THE CLUBMAN.

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W. Richer, 1, St. Mary's Road, Colchester, Essex.
EAGLE A.M.C.
A. S. Baker, 56, Park Road, Bromley, Kent.
SUDBURY HEIGHTS M.A.C.
B. L. J. Neal, 73, Eastmead Avenue, Greenford, Middlesex.
ASHFORD & D.M.A.C.
M. Cloke, 2, Romney Road, Willesborough, Ashford, Kent.
EWELL M.C .
H. F. S. Bromley, 29, Miles Road, Epsom, Surrey.
YATESBURY M.A.S.
3082366 A/C Nicholson, Hut W.42, 4 Wing, R.A.F., Yatesbury Wilts.

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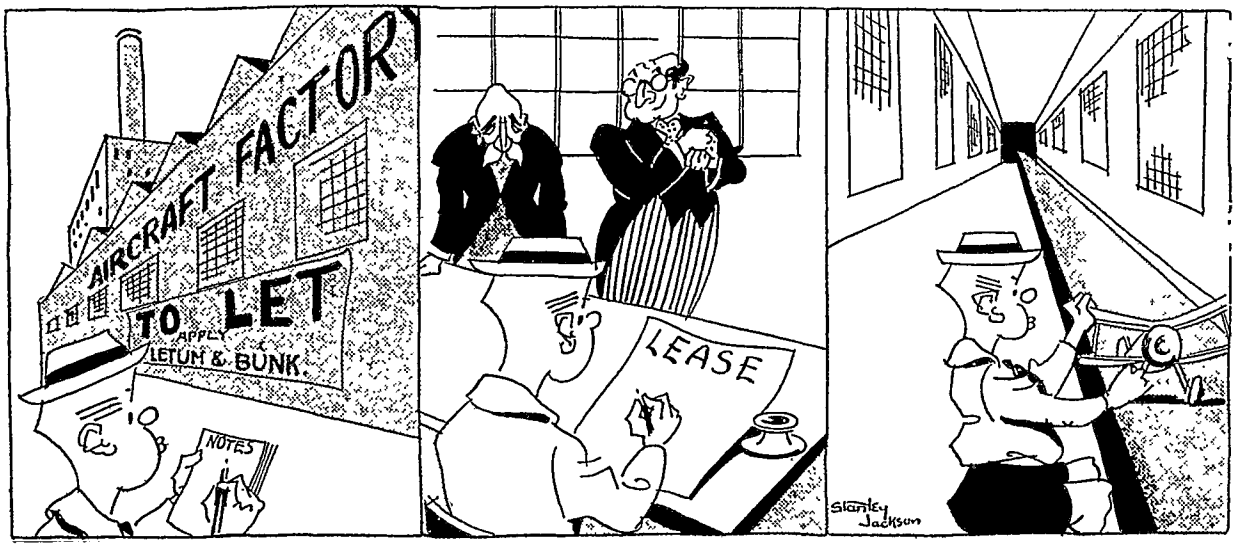
WEST MIDLAND M.A.C. (Kenilworth Branch).
F. Robertson, 11, Southbank Road, Kenilworth.
DURHAM CITY M.C.
K. J. Warriner, 1, D'Arcy Street, Langley Park, Co. Durham.
AINTREE M.A.C.
R. Walker, 40, Cobham Avenue, Orrell Park, Liverpool, 9.
EAST KENT M.A.C.
D. A. Rigden, 32, Downs Road, Canterbury, Kent.
BROMSGROVE M.A.C.
W. Louch, 13, Sidney Road (Prefabs), Sidemoor, Bromsgrove, Worcester.

Egbert . . . . . .



CLASSIFIED ADVERTISEMENTS

PRESS DATE for January issue—December 1st.
ADVERTISEMENT RATES:
Private **Minimum 18 words 6s., and 4d. per word for each subsequent word.**
Trade **Minimum 18 words 12s., and 8d. per word for each subsequent word.**
Box numbers are permissible—to count as 6 words when costing the advertisement.
COPY should be sent to the Classified Advertisement Dept., the "Aeromodeller," The Aerodrome, Billington Road, Stanbridge, Bed

FOR SALE

Brand new "Majesco Minor" 4·5 c.c. petrol engine, complete with coil, condenser, spare plug, flight timer—all new. £7. 10s. 0d. post paid, value £8. 2s. 6d.—Flying Officer Gibbins, Officers' Mess, R.A.F. Station, Topcliffe, Yorks.

AEROMODELLERS, September, 1940—December, 1946, except September, 1942, and June, 1943. Good condition. 50s. 0d. the lot.—R. Preston, 31, Shakespeare Drive, Shirley, Birmingham.

46 in. "Miss Tiny," silk covered wing and tail, fitted "Milford" 1·5 c.c. diesel, prop., timer, air wheels. Ready to fly. £6. 10s. 0d.—Scott, 13, Teviot Dale Place, Edinburgh.

Club Scientific 5 ft. span, air wheels, case, £6. 10s. 0d. Drome Hydroplane fitted E.D. diesel, case, £6 or sell separately.—Details from C. Reynolds, Town Lane, Mobberley, Cheshire.

Frog 45 minus engine, £3. 15s. 0d. "Aircraft Fighting Powers, Vols. 1—5 and "Westland Aircraft," £5. Brewster "Buffalo" rubber job, 27 in. span, £2. 5s. 0d.—Landon, 4, Goodwin Road, Shepherds Bush, London, W.12.

Scale Typhoon 41 in. span, £15, complete with 5·9 engine, air-wheels, 4 blade prop. Lovely job, control line. Test flown 5 minutes. Nife cell, 25s. 0d. extra.—Dudgeon, 11, Carmichael Street, Law, Carluke, Lanarkshire.

Trojan 4·3 c.c., 2 plugs, coil, condenser, prop., minus petrol tank. Good condition, £3. 10s. Funghan's stop watch, £3. New rev. counter, offers.—Fairbairn, Colebrooke Terrace, Abington, Lanarks.

1946 American "Arden 099" (1·6 c.c.) petrol engine, complete with coil, condenser, prop., also Banks coil. All as new. Perfect running condition. £9.—Box No. 96.

1947 Ohlsson 19, 3·5 c.c. Brand new, still in maker's box. coil and condenser, £10. Ohlsson Gold Seal. Running order, £5.—Gregory, Manx Air Charters, Airport, Ronaldsway, Isle of Man.

New Frog 1·75 c.c. engine with coil, condenser and time switch, £4.—M. J. O'Brien, 3, Hunter Road, Wimbledon.

36 AEROMODELLERS, January, 1944—December, 1946, complete. Good condition. Offers.—Taylor, Eastwood Hostel, Derby Road, Eastwood, Notts.

"A.F.P.s," volumes I—VI, new bar one. £5 complete or offers to Neville, Mutlow Hall, Saffron Walden, Essex.

E.D. diesel, bench run 10 minutes, with spare propeller. Pair 2¼ in. "Sorbo air wheels," perfect condition. £4. 10s. 0d.—Box No. 97.

3 c.c. Dyne diesel engine, brand new, only run once. What offers.—Box No. 98.

"Flight," 11 volumes, 1940—45, 37 1/48th solid kits, mostly C.M.A.s. £10. S.A.E. details.—Jordan, 23, Herbert Street, Cambridge.

5 ft. Spartan powered by 2 c.c. E.D. diesel, good running order. Not yet test flown. £8 or nearest.—McIloney, 39, Motherwell Road, Carfin, Lanarkshire.

"Whirlwind Six" engine with flywheel, less coil and condenser, almost new. £6. 6s. 0d.—Ward, 18, Jubilee Avenue, Grantham.

"A.F.P.," volumes I—VII. Condition as new. £9 or nearest offer.—Hardy, 16, Mullens Road, Egham, Surrey.

3·5 c.c. Atlas petrol engine, as new. Best offer over £7 secures.—McConnel, 55, Egerton Crescent, London, S.W.3.

Frog 45 kit, also 175 engine, brand new. Best offers secure.—Durlby, 16a, Institute Road, Swanage, Dorset.

Frog 175 complete, needs attention. £3 or nearest offer.—Wilson, 26, Welwood Avenue, Muirkirk, Ayrshire.

Janes "Aircraft," 1942, 14s. 54 "Aeroplane Spotters," from March, 1944, inclusive, 7s.—Wilson, "Farm Cottage," Horsley, Surrey.

Brand new. 3·5 c.c. Cannon, American aero engine, complete with plug, coil, condenser, airscrew and Austincraft timer. Bench tested. £6. 10s. 0d.—Tel. GRA. 0577. Shannon, 126, Central Park Road, East Ham, E.6.

Continental Elia diesel 4·3 c.c. Perfect condition. 2 props. Nearest offer to £5 secures.—Box No. 93.

AEROMODELLERS, May, 1938—January, 1947, £2. 10s. 0d. Also 16 model aircraft books, £1. 10s. 0d.—Champeney, 167, Wynchgate, Winchmore Hill, London, N.21.

"Antspants" with new Ohlsson 23, Banks coil, new airwheels, Austin timer, spare prop., plug, excellent flier in strong carrying case. £12. Owner going abroad.—Box No. 92.

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AEROMODELLERS, 1946, good condition, 10s. 0d. "The Design and Construction of Flying Model Aircraft," 7s. 6d. Webley & Scott 1947 Junior Pistol, plus targets and 500 rounds ammunition. £4. 10s. 0d.—M. Gosling, 30, St. John's Road, Orpington, Kent.

Complete "Hall Racer" kit, fuselage almost finished. Photos of fuselage supplied to enquirers. Owner going abroad. £3. 10s. or nearest.—Adams, 78, Domonic Drive, New Eltham, London, S.E.9.

MMIs diesel, new, £4. 10s. 0d. "Snip" diesel timer, 5s. 0d. AEROMODELLER, March, 1944—June, 1947, £1. 2s. 6d. "A.T.C. Gazette," January, 1945—June, 1947, 7s. 6d.—Box No. 95.

E.D. powered "Halfax Rapier," ready to fly. First over £5. 10s. 0d. secures.—A. Vidler, 10, Bramble Road, Wye, Kent.

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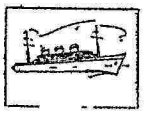
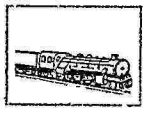
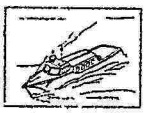
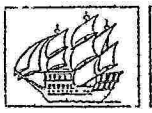
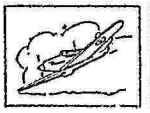
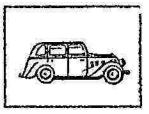

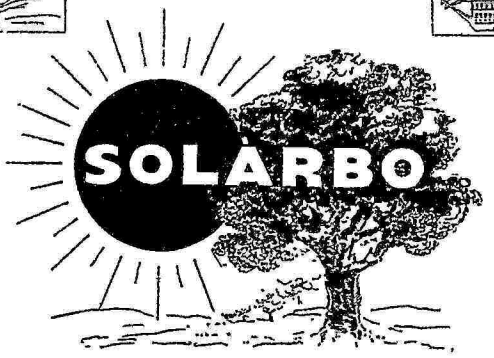

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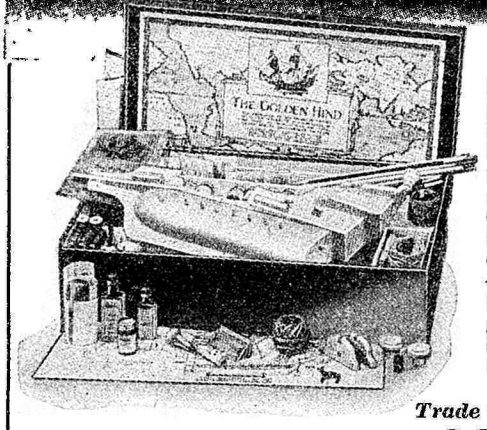

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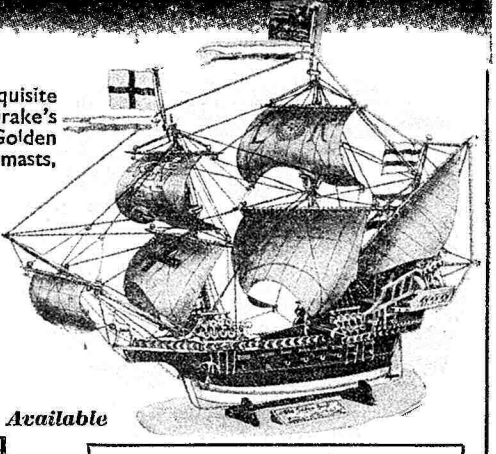

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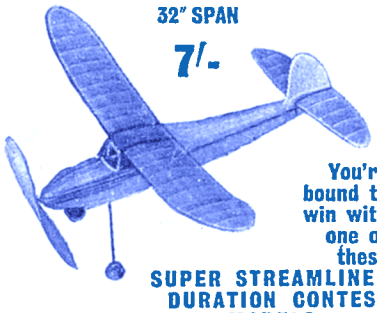

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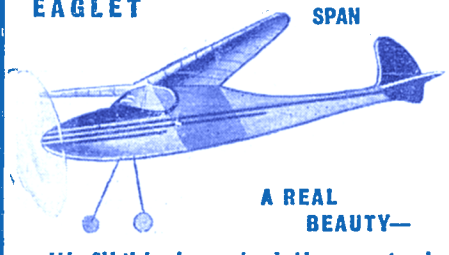

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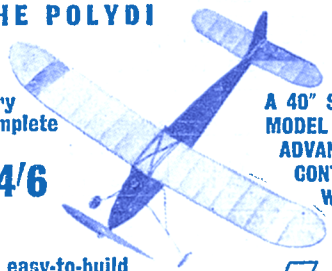

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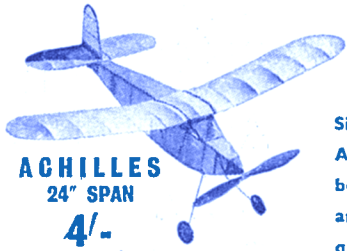

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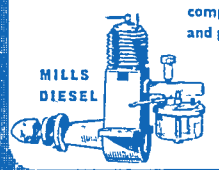

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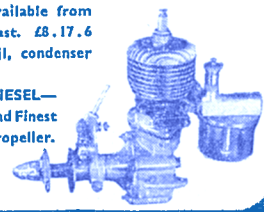

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