OCT. 1947 **AEROMODELLER** 1/3

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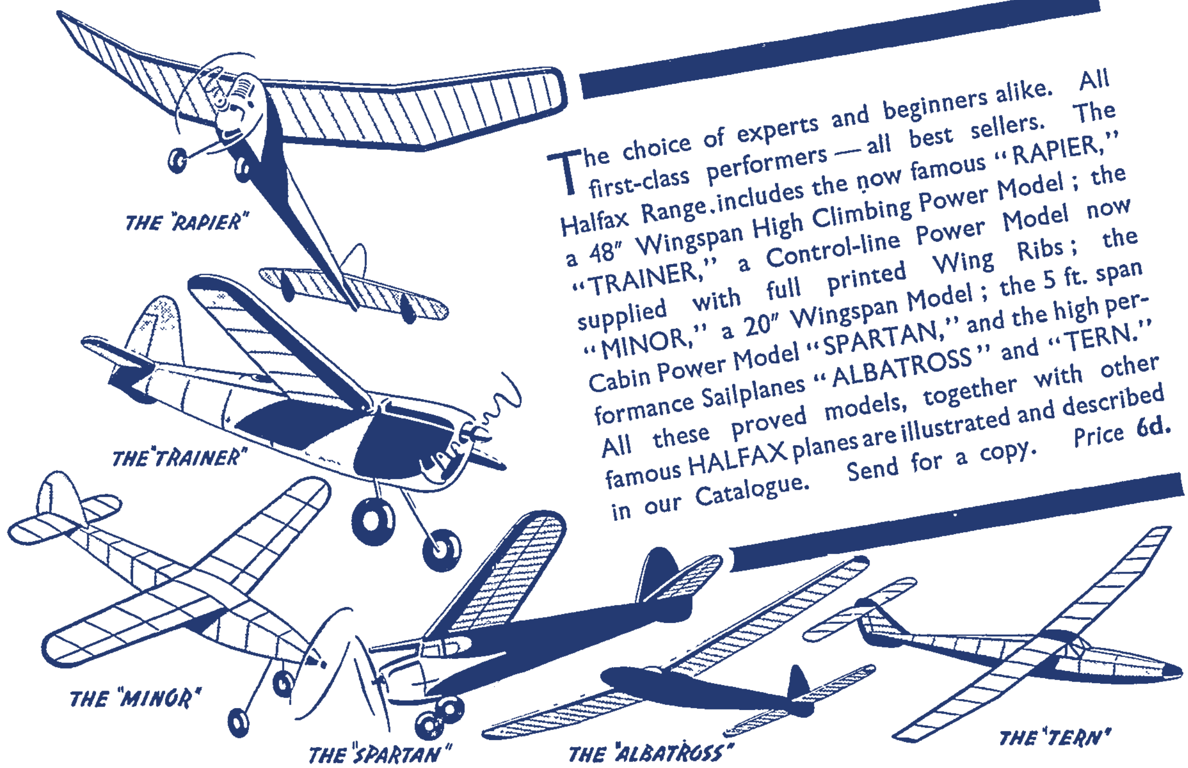

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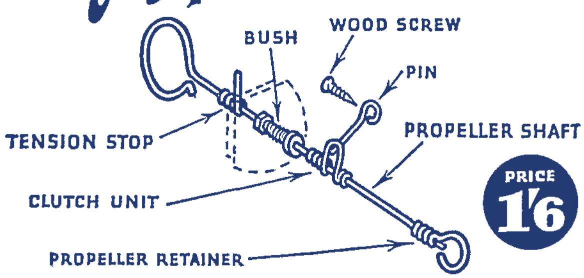

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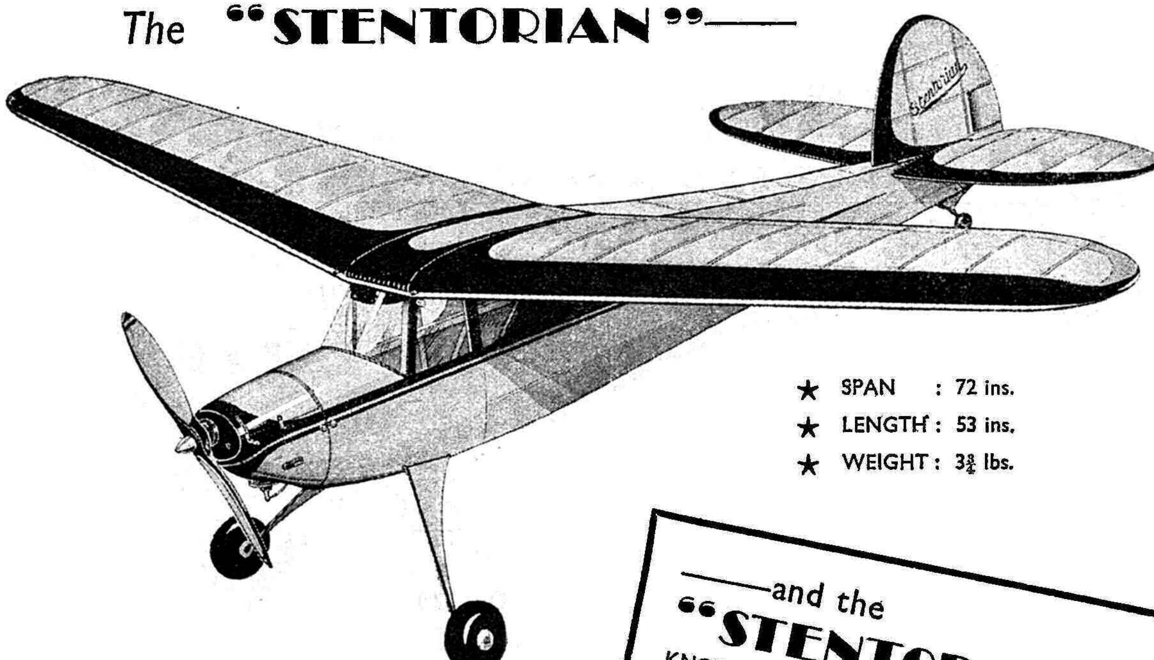

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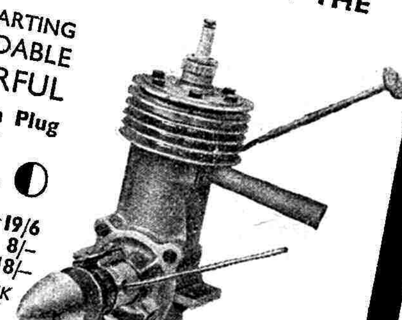

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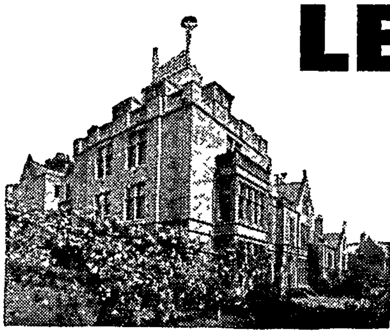

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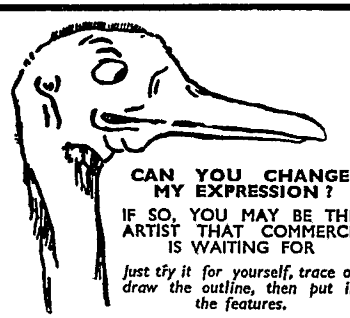

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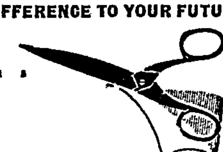

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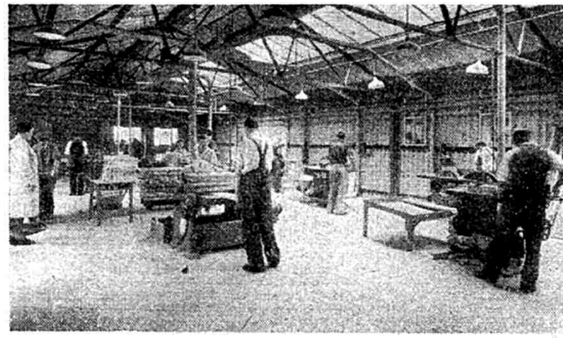

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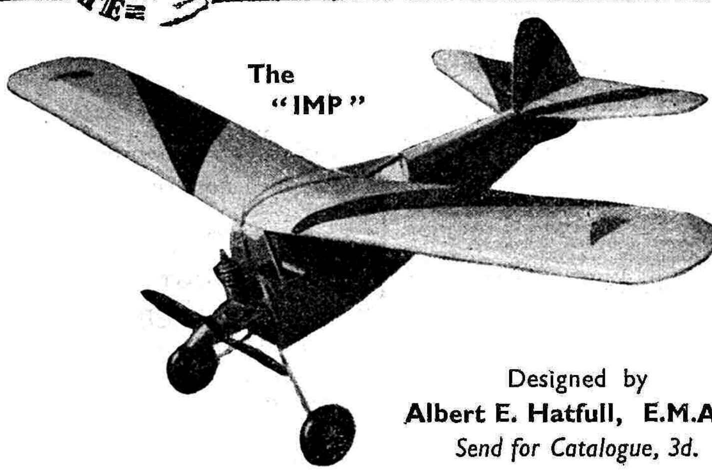

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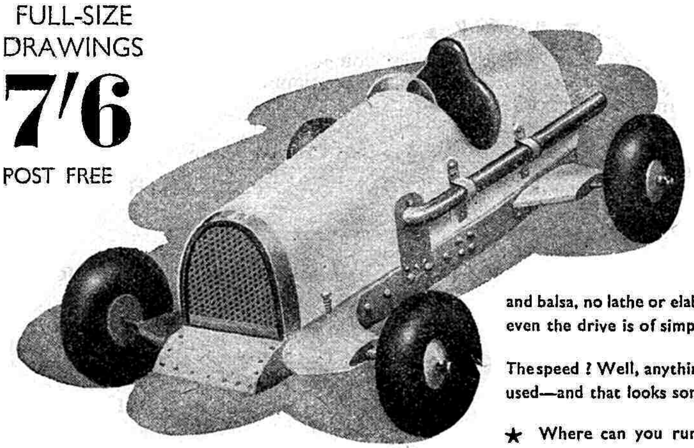

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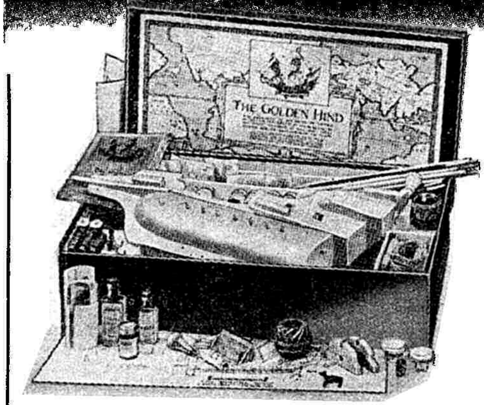

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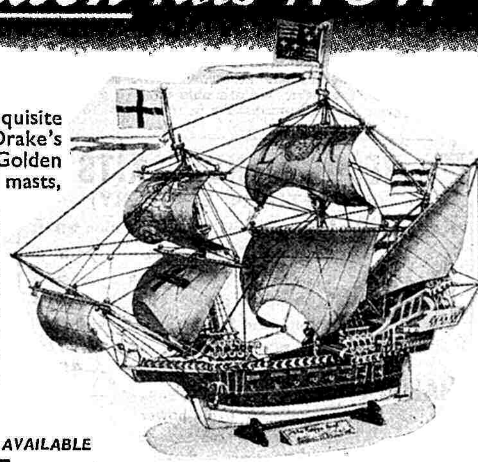

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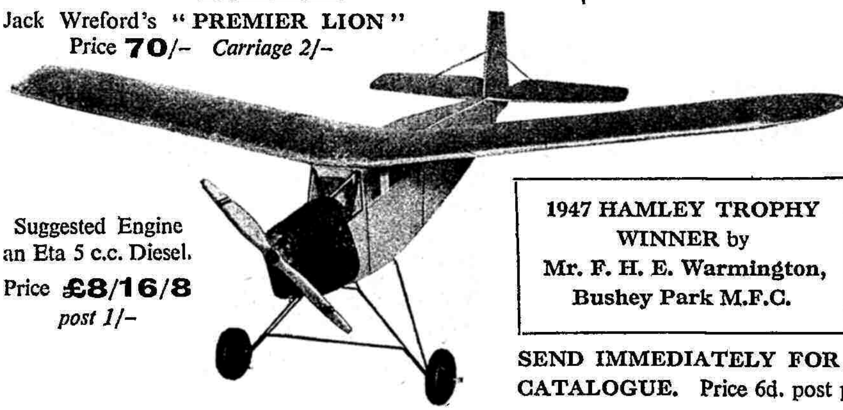

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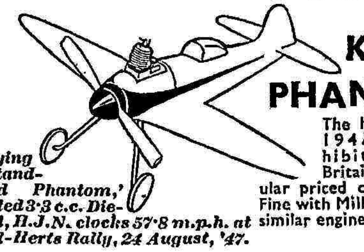

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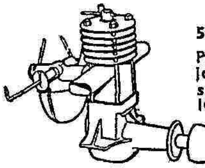

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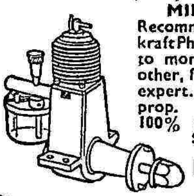

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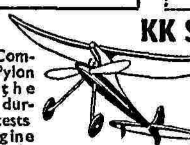

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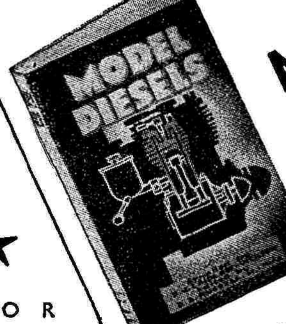

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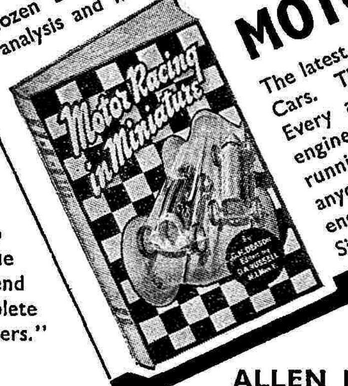

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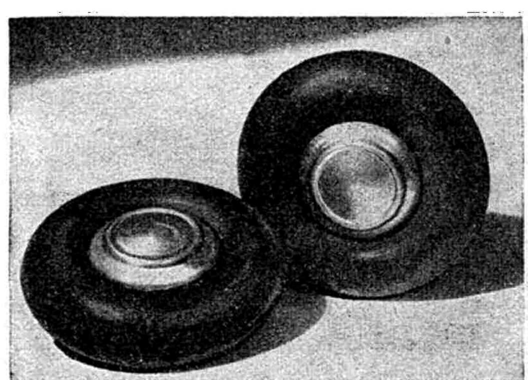

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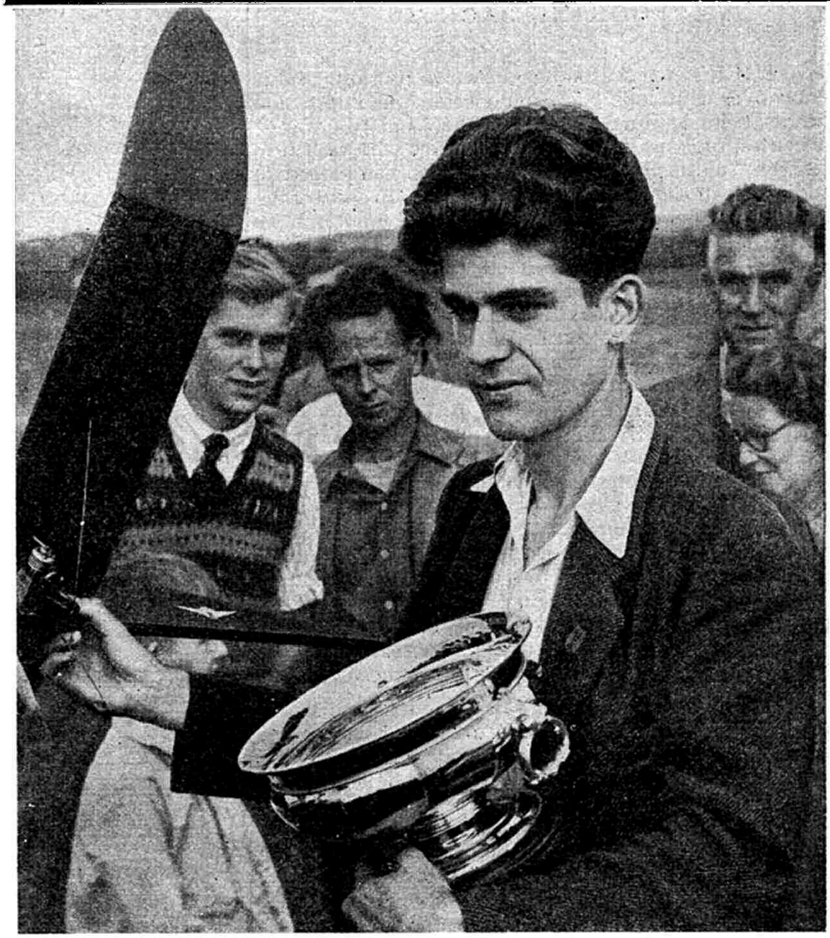

VICTOR LUDORUM—M. Jacques Morisset of France complete with The " Aeromodeller " Trophy and one of the models that helped him to win the most coveted award of the 1947 " International Week " at Eaton Bray.

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VOL. XII No. 141 OCTOBER 1947

EDITORIAL

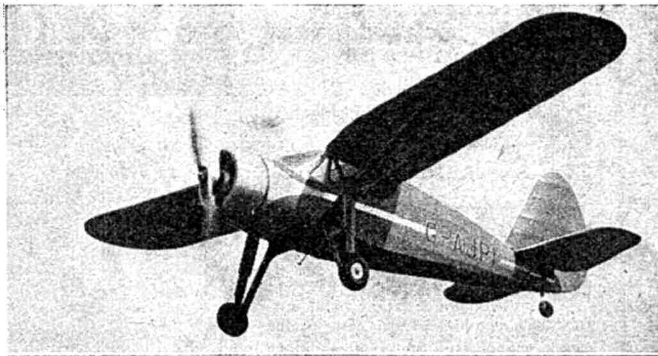
"LOOKING BACK."

ANOTHER flying season has drawn to its close, and it behoves us to look back and consider the impression it leaves behind. First, no doubt, there must be countless contest organisers all over the country with reason to bless the " old-fashioned " summer which has played so large a part in the success of their rallies. In spite of the support accorded to these many and varied functions, we do feel that in future years a little more thought should be given lest a surfeit of good things destroys the appetite for them. A few really outstanding events, well spaced throughout the length and breadth of the country, would perhaps be more certain of continued strong support than a host of minor contests occupying every week-end. The S.M.A.E. have made a move in the right direction in conjunction with their Area Councils in staging the British Nationals and the semi centralised Area Rallies as main events, while such annual occasions as the Eaton Bray International Week and the Northern Heights Gala will always be assured of popular support. From time to time, after every flying season, some Northern voice can be heard protesting that too little attention is paid to the special needs of that part of the country when venues for the main events are under consideration, and we cannot but agree that some more central site might well be chosen for next year's British Nationals, which were marred only by a paucity of Northern support.

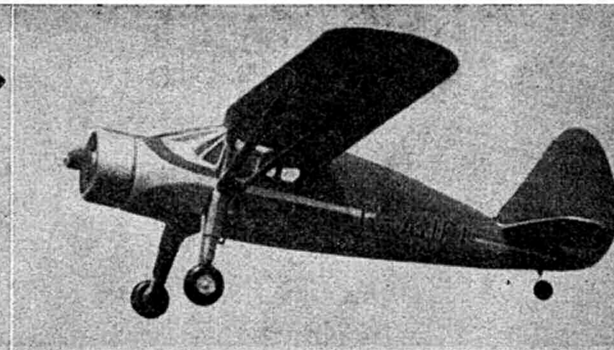
The advance of the mechanical age is reflected in the truly remarkable hold the miniature diesel engine has already fastened on the whole aeromodelling movement. Dyed-in-the-wool rubber fans have at last fallen for the lure of the power model, and where in former times, the air was rent by the expensive sound of breaking rubber, it now echoes and re-echoes to the characteristic scream of compression ignition. A quick count of engines readily available on the British market shows that manufacturers are now offering no less than fourteen different engines varying in size from 0·5 c.c. to 5·c.c. capable of powering every kind of model from three foot span designs weighing little more than a Wakefield to ambitious projects of eight or nine feet span weighing several pounds. British model engineers are to be congratulated on such a flying start from the scratch mark and would appear already to be not only overhauling but passing many of their longer established continental competitors. Indeed, we hear that at least one design is being exported in ever increasing numbers, a fact which explains some of the delay in home deliveries of the make in question.

In the wider field of international competition British teams have worthily upheld our sporting tradition in Switzerland, France and Ireland, besides putting up some excellent performances on our home ground against foreign visitors. In spite of increasing austerity we note that facilities will not be denied in the future for British participants to travel abroad and compete in international sporting events. Prestige is an invisible export of considerable value as the Government appreciates only too well.

Whatever the future holds in store we are confident that aeromodelling will continue to play its part in national recovery by brightening the leisure of the millions who " work or want " with relaxing handiwork at home and healthy exercise in the open air.



1/12 SCALE FLYING MODEL



Fairchild Argus BY E. J. RIDING

THE high-wing design of the Fairchild "Argus" lends itself rather well to the scale flying model builder.

Intended as a "follow-on" type to the little A.B.C. "Robin" which I described in the July, 1946, issue of the AEROMODELLER, the 1/12th scale 24 W.41a "Argus" shown here should provide no difficulty to the average scale enthusiast.

The working drawing, a ½ scale reproduction of which appears, on the accompanying pages, together with the Bagley cut-away drawing (Page 652) fully explains the method of construction and it is only necessary to explain one or two points which might give rise to queries of a technical nature.

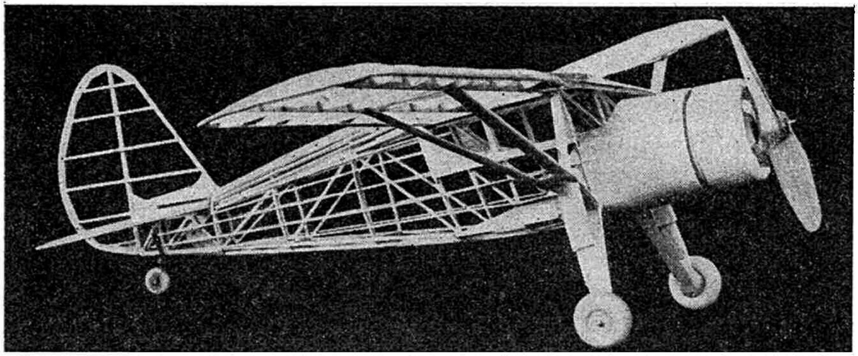
The undercarriage is built in two identical halves, each being pivoted at the bottom longerons. The upper strut ends in a loop, through which is threaded a stout rubber band which in turn passes through a paper or celluloid tube glued and bound to the top longerons. This provides all the spring that will be found necessary to absorb normal landing shocks.

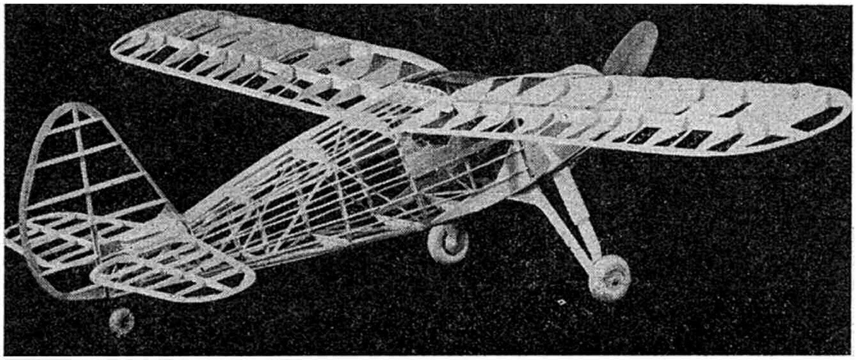
The interplane struts, as in the "Robin", are glued to the wing spars at one end and fit into brass sockets on the undercarriage at the other end. A hardwood peg at the lower end provides anchorage for the rubber band which ensures that both struts are retained in their sockets.

The tailplane and rudder are glued together as a unit and are held in position on the fuselage by means of two bamboo pegs at the leading edge of the tailplane and a

"Argus" in flight from take-off to ceiling! The two shots on the left-hand centre show the full size aircraft—but for the passengers it would be hard to tell which is which.

"Aeromodeller" Photographs.





Uncovered airframe of the 1/12th scale flying model Fairchild "Argus". These pictures serve to indicate the simple straightforward construction.

rubber band passing underneath the fuselage and connected to two 24 s.w.g. wire hooks bound and glued to the rear spar.

The covering of a stringer type fuselage is always tricky and it is advisable to do it in sections of say three stringer widths at a time. When completely covered the model is given two coats of clear dope and two of pigmented dope, the latter being preferably sprayed on with a "Flit" gun or similar apparatus.

The cowling ring is built up from 3/32 in. and 1/32 in. sheet balsa and is a convenient place wherein to place any ballast required. It is detachable from the rest of the fuselage and is located in the correct position by means of the square shaped fuselage framework fitting into an appropriate recess in the cowling ring.

Ribs Nos. 4, 6, 10 and 12 are 1/16 in. by 1/32 in. flat balsa strips glued into position over the wing spars as shown in the drawing. Power is supplied by ten strands of ¼ in. flat rubber, the skein at rest measuring about 1⅓ times the distance between the rear motor peg and prop. shaft.

Colour.

The model is painted in exactly the same colour scheme as its full-size counterpart, *i.e.*, in the house colours of the West London Aero Club at White Waltham. The fuselage is royal blue all over with aluminium flash and red letters outlined in aluminium. The wings and tailplane are aluminium and letters G-AJPI on the top and under surfaces of the wing are red. This colour scheme is admirably shown in C. Rupert Moore's cover painting this month, depicting full-sized machine in flight near Aylesbury with the Chiltern ridge in the background.

Flying.

Fully rigged and ready for flight the model weighs just a fraction under 7 oz. It should balance about the C.G. point shown on the plan. To achieve this add about ¼ oz. of plasticine to inside of the engine cowling.

For test flying, the motor is given 100–150 turns and the machine gently pushed off from a smooth stretch of ground. When model just begins to skim along take-off area in flying position it can be finally trimmed for flight by giving a slight upthrust to the nose block after which it should become airborne after a run of 10–15 feet.

Full-size plans may be obtained, price 2/6, post free, from Aeromodeller Plans Service, Allen House, Newarke Street, Leicester.

"*Aeromodeller*" *Photographs.*

The completed model which not only looks good but will repay care in its building with many hours of realistic flying.

A.1/4" = 1 FT FLYING SCALE MODEL

FAIRCHILD ARGUS.

BY E. J. RIDING.

2/6

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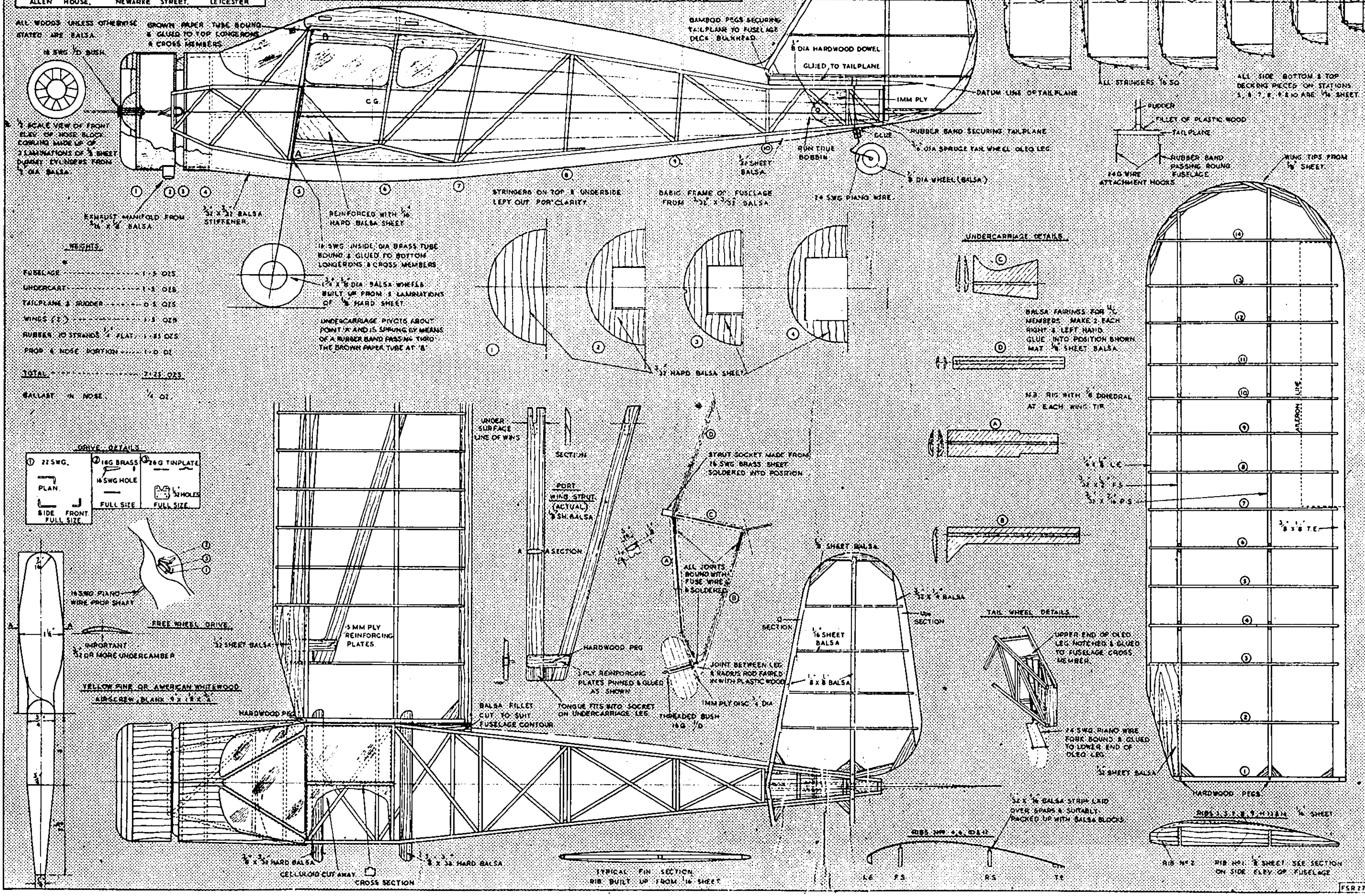
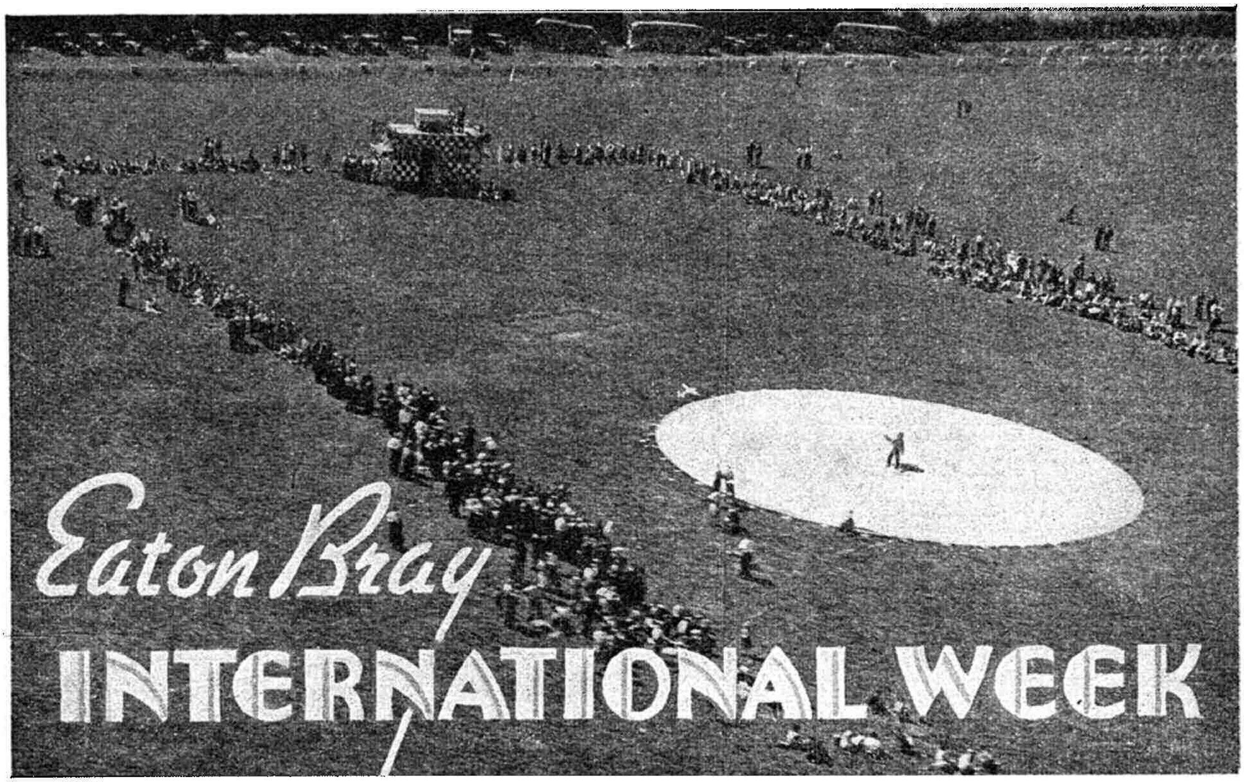
ALLEN HOUSE, NEWARKE STREET, LEICESTER

MATERIALS REQUIRED

STRIP	SHEET	36" OF 16 SWG PIANO WIRE
30 STRIPS OF 1/16" X 1/16" X 36" BALSA	1 SHEET OF 1/32" X 3" X 36" BALSA	1 1/2" " 22 " " "
10 " " 3/32" X 3/32" X 36" "	1 " " 1/16" X 3" X 36" HARD	5" " 24 " " "
1 STRIP " 3/32" X 1/4" X 36" "	1 " " 3/32" X 3" X 36"	8" OF 16 SWG 1/D BRASS TUBING
1 " " 3/32" X 3/16" X 36" "	1 " " 1/8" X 3" X 36"	1/2" X 1/8" OF 18 SWG BRASS SHEET
1 " " 3/32" X 1/2" X 36" "	MISCELLANEOUS	3" X 1/4" " 26 " " "
2 " " 1/8" X 1/8" X 36" "	1 PIECE OF YELLOW PINE 9" X 1 1/4" X 3/4"	1/2" X 1/2" " 26 " TINPLATE
1 " " 1/8" X 1/4" X 36" "	2" OF 1/8" DIA DOWLING	2" X 2" " 1 MM PLY
1 " " 1/8" X 3/8" X 36" "	2" " 3/16" " SPRUCE	1 1/2" X 1" OF 5 MM PLY
		SMALL PIECE OF CELLULOID





Eaton Bray INTERNATIONAL WEEK

EATON Bray's Second International Week will live in the memories of both British and foreign visitors not only for the keenly fought competitions, which after all occupied but a part of the time, but also for the grand get together spirit that found nearly sixty visitors from all over Europe sharing the same workshops, the same flying field and the same glorious weather with over a hundred British enthusiasts who had brought their tents along to make the most of everything.

Visitors this year included the expected strong contingents from France with twenty-three members and Belgium with seventeen. Newcomers were Italy with six in their party and an observer from Palestine in the shape of Ing. Tobias Syne, who "discovered" balsawood as a building medium, and took back copious notes on all aspects of the hobby for the betterment of Palestinian model clubs. In mid-week Harry Yorke of the S.M.A.E. telephoned to enquire if a team of Dutch aeromodellers could be squeezed in—they came and left their mark with first place in the Open Sailplane Event, third in the F.A.I. Class Sailplane Event and equal fifth in the Aeromodeller Trophy for best all-round performance.

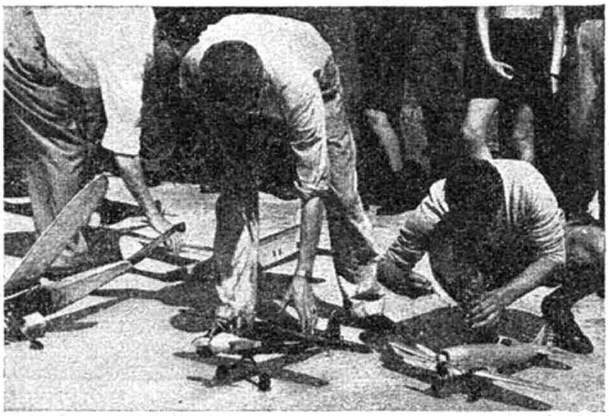
Jacques Morisset of France proved the *Victor Ludorum* and becomes first holder of the magnificent hundred-guinea silver gilt bowl presented by the AEROMODELLER. Points were awarded in each event towards this prize and at the beginning of the last day's flying Piero Gnesi of Italy was leading from Cyril Houghton of Luton, Sysmans and Lippens of Belgium, with Morisset seventh.

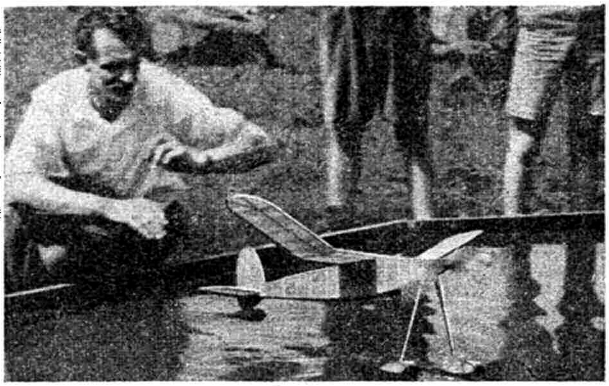
As was the case last year, the visitors from abroad were far from up to British standards in the rubber

Heading: Some of the crowd enjoying the U-control event. Centre: MacBean discusses his Dynajet with the Managing Editor and Lt. Col. Bowden while awed Mick Farthing looks over his shoulder. Bottom: Sqd. Ldr. Watson and young hopeful Tommy come out to fly.

Aeromodeller Photographs

Top: Zero plus one second! Belgian entrants counted out under the two minute starting rule. Upper Centre: Italians put on last dabs of paint in the Concour's d'Elegance. Lower Centre British seaplane entry just unsticking. Bottom: Some of the seventy-three tents that formed the British colony.



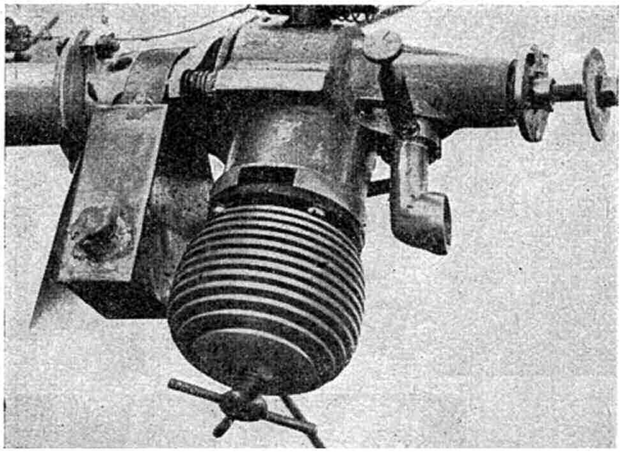


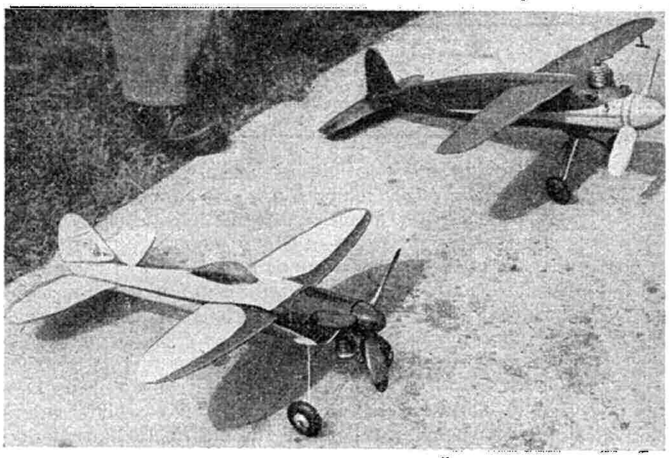
events—even today rubber is virtually unobtainable in Europe. A notable exception was Francesco Conte of Italy—who earned the nickname of Victor Mature during his stay. A grand flight of 569·5 seconds put him into first place in the Open Rubber Event, and lost the model —a usual occurrence he declared, as in four previous contests identical models had disappeared with an average of twenty minutes a time and won on each occasion. In the near future it is hoped to offer plans of this unusual pylon winged job which has exceptional length of fuselage and mainplane located nearly amidships, when readers will have an opportunity of trying out an Italian version of the Mick Farthing copyright. Apart from this solitary foreign invader British entrants occupied the next nine places in the Open and the first seven in the Wakefield Formula Event. It was pleasant to see such names as G. E. Salt, S. A. Taylor and N. G. Marcus high up the lists. In the Seaplane Event British rubber again proved itself with the first seven places—winner being N. G. Marcus; Castellani of Italy the best foreign entry at eighth place.

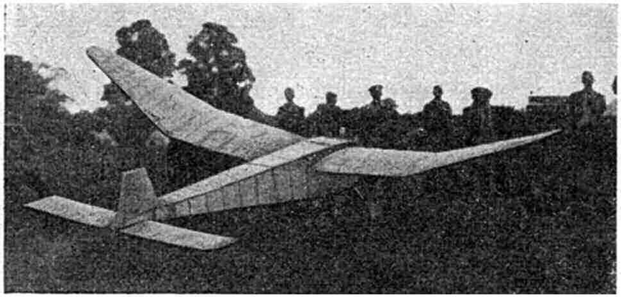
The Power Contest attracted a strong British entry, but in spite of a spirited effort by Houghton to come second left little doubt that our visitors still know just a few more of the answers. Winner Piero Gnesi entered a ten-foot wingspan lightweight with tube fuselage of hollow dural, powered by a new Movo of 10 c.c. capacity. On half throttle this wafted the monster up a hundred and fifty feet, where it resolutely hovered for nearly five minutes on a fifteen and half seconds engine run. Third place went to Lippens with what had been accepted as the standard Belgian type—a square box fuselage with sharply tapering wings and flat-plate tail.

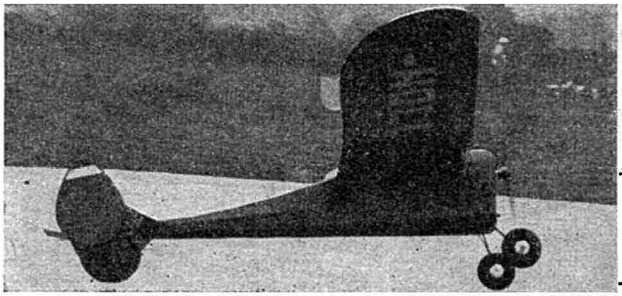
While those who fancied a little precision flying were away at the Bowden the Experimental Classes were fought out. Again the Italian contingent provided many of the thrills with some spectacular control line flying. They had already confessed their doubts of managing their highly-powered racers on the Eaton Bray take-off area and had built a special pylon, but in spite of these doubts they achieved speeds in the neighbourhood of 90 m.p.h., which was more than satisfying to the spectators. Big thrill of the day however, was A. H. W. MacBean's

Aeromodeller Photographs







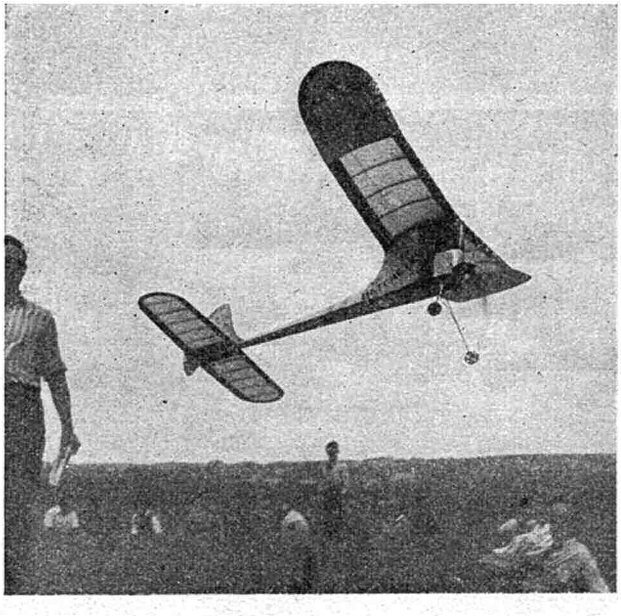


Dynajet powered flying wing which took off with that most soul-stirring howl that only a jet can give—the noise alone is shattering and the performance something that must be seen to be believed.

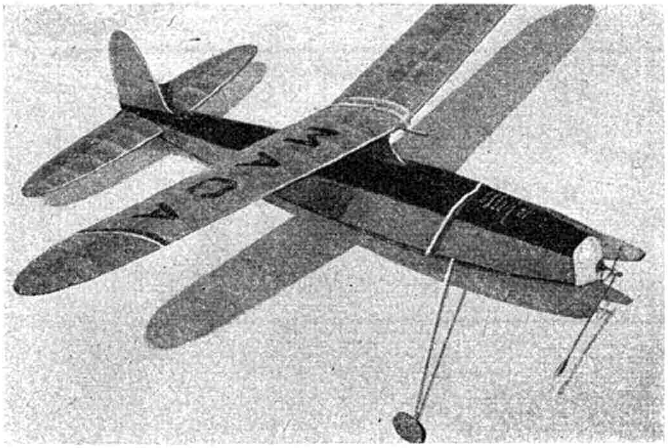
The last week-end of the meeting was honoured by the presence of Mons. Robert Donne, Chevalier of the Legion d'Honneur and President of the National Aeronautical Federation of France, who flew over on the Saturday to visit Eaton Bray and the Bowden Trophy Contest. On the Bank Holiday Monday, Lt. Col. Bowden came down to see the sport, but could not be persuaded to judge the Concours d'Elegance on account of S. A. Miller's striking "Bowden Contest" entry. Such scrupulous fairness, however, did not prevent the model taking the Prix d'Elegance, repeating its recent victory at Langley.

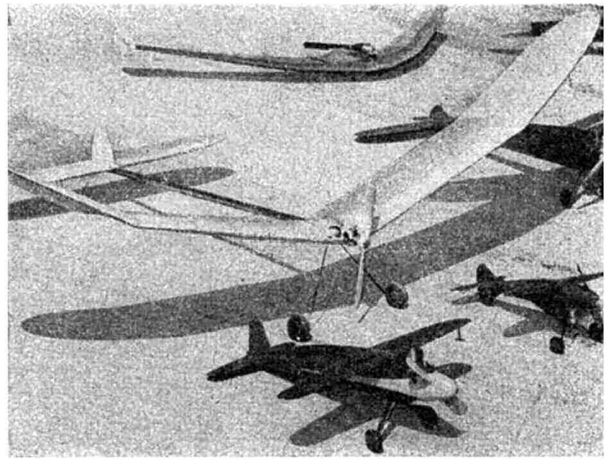
Old friends and new shared the honours in the two sailplane events. The F. A. I. Formula was won by Fillon with his well known Champion—thus repeating last year's success—with a flight of 907 seconds o.o.s. J. F.

Top Left: 10 c.c. Movo diesel—power unit of Gnesi's winner. Top Right: Two sleek U-Controllers from Italy. Upper Centre: Sysmans power winner—the typical Belgian design. Lower Centre: A Dutch power model that performed well. Bottom: Ted Buxton's Hatcheteer goes up like a lift. Bottom Right: Tournadre with Fillon's unusual all-wing design.



Aeromodeller Photographs

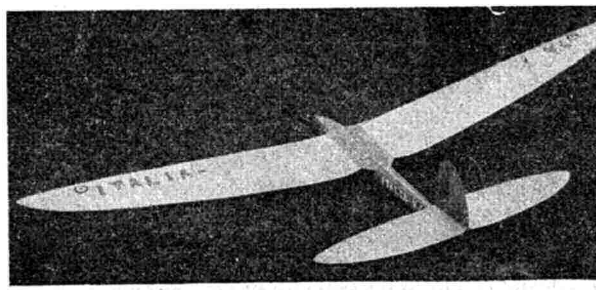


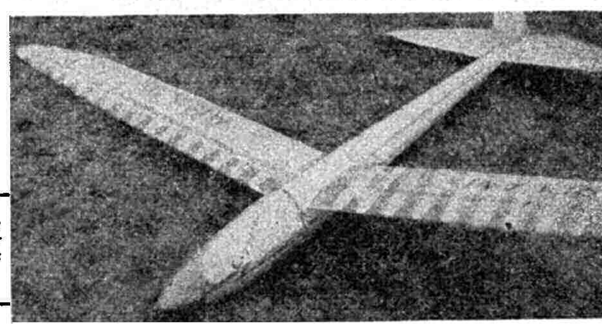


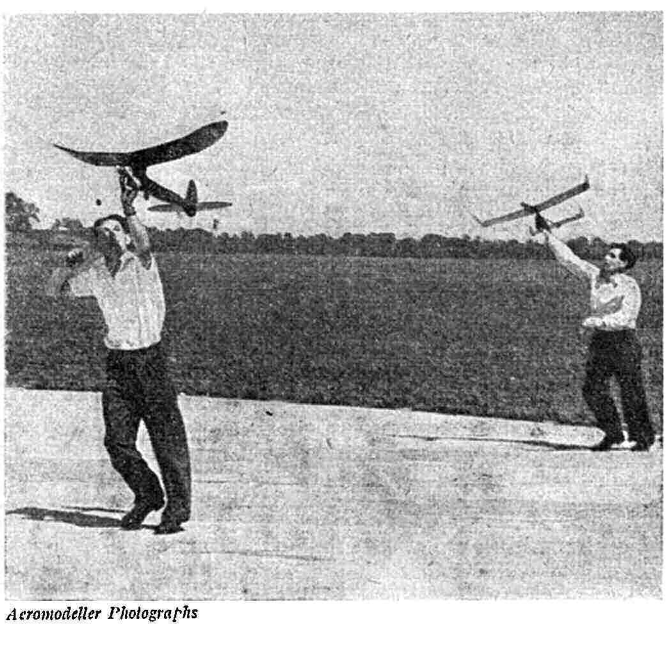
Hekking of Holland took the Open Class flying a model similar to that which had proved so reliable at the Swiss International Meeting in June. Marcus was best British entry in the F.A.I. class at tenth place, while B. F. Chandler of Croydon led the British at third place in the Open Contest. The Power Event shook our visitors until near the end, for Mrs. Gunter looked a likely winner. Jules Maraget made a great effort and stole the lead for the stronger sex to lose it ultimately to Emile Sysmans of Belgium with the remarkable motor run: glide ratio of 28·15. He was flying the standard Belgian " box " with a special power unit—the new 5 c.c. Super Delmo, weighing 6 ozs. and producing 1/3rd of a horsepower!

So a second International Week came to a successful end, blessed on this occasion with phenomenal weather. Prizes were so distributed that only Palestine went empty away—and there too several notebooks full of " gen " must be regarded a fair reward! Already plans are on foot for next year. Next year. . . well, who shall say. . . .

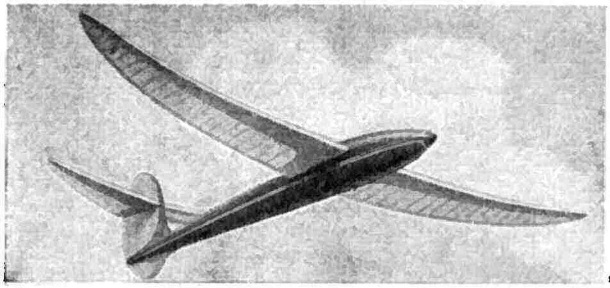
Top Right: Gnesi's ten-foot power model dwarfs the control-liners. Top Left: Tournadre's winning rubber model in the Concours. Upper Centre: Typical Italian sailplane. Lower Centre: Dutch sailplane with celluloid covered leading edge. Bottom: Sysmans launches his rubber model. Bottom Left: Start of power model with glider in tow.







Aeromodeller Photographs



50 INCH WINGSPAN CONTEST SAILPLANE "Invicta"

BY G · R · WOOLLETT

Fuselage. Pin in position the four backbone strips. The half formers are now added. Ensure that they are maintained at right angles to the building board while the glue is drying. Unless otherwise stated "Durofix" is used on the hardwood parts. Slip a small piece of 1/32 in. sheet under the top of former F5 as this one does not extend to the full height of the fuselage.

When dry commence planking using strips of 1/16 in. hardwood sheet approx. ¼ in. in width and varying with the fuselage curvature.

The port side of the fin is now built integral with the fuselage and for this purpose the ribs are cut into two halves.

Pin and glue the outline strip in position. Add the half ribs except 4B. The frame is completed by glueing the rudder post and the ⅛ in. by 3/32 in. spar in position. Before fitting the spar taper it at both ends on its outside from the end ribs to 1/16 in. thick. Steam it until it fits the rib slots and those in the fin outlined. The covering can be left until the fuselage is completed.

Pencil mark the portion to be cut away for the centre section on the port side, use mark previously made on F5 and F7 to assist in this.

Glue several of the centre planks on the starboard side and check the alignment of the fuselage by vetting.

Construct the tow hook and attach it as shown. Tie a length of wax thread to the wire loop on it and thread the other end through the paper tube to the rear of F13. Complete the planking, remembering to fill the first compartment and half of the second with plasticine. Add the paper ballast tube at the same time. This is glued to the front of F2. Drill the planking on the port side to allow for filling with lead shot. Glue on the nose block.

Glue the remainder of the fin ribs, spar boom and webs, checking the alignment from time to time. Drill the backbone strips and glue in the aluminium bushes for the rudder. A small block from scrap balsa holds the end of the rudder bias spring and this should now be fitted.

Fit the tailplane tongue and ensure that it is at right angles to the fin. Ensure that the packing block is the correct size. R4b can now be fitted.

Cover the fin, commencing with a piece on either side to fit between R2 to R4. Cut the top, fit snugly beneath the tailplane tongue, then stepping it down in front and to the rear of R4.

Shape the rudder and fit the bamboo pegs and 24 S.W.G. spring. When complete and doped the top corner must be cut out containing the peg, then the peg inserted into its tube, the rudder fitted and the two parts cemented together again. Make sure that the spring is coiled sufficiently and its end plugged into the block to bias the rudder to starboard.

Cut away the fuselage planking from F4—F7, keeping accurately to the pencil marks. Do *not* cut through the formers.

Mainplanes. It is advisable to have a base board long enough to build both wings and the centre section with the tongues and box in position while the ribs, etc., are assembled. Pin the lower spar booms into position after the ends of the outer wing panel ones have been slotted for the wing tips. Put the two outer booms to that of the centre section.

Soak the trailing edge and pin in position, pack its leading edge up with strips of 1/32 in. scrap.

The ribs can be cut out using a template of ply for Nos. W1 and W20. Sandwich the 1/32 in. strips between them and bolt together with two 4 B.A. bolts. Mark the spar position and from it the chord of each alternate rib. Join the points and file to shape. Slots for the spars are now made and afterwards positioned for the wing tongues and centre section box marked and cut.

Glue the root ribs in position and fit squarely. Build the wing box and glue in position with ribs W2c mounted on the box prior to fitting to the centre section. Add the centre section top spar and web the box to the booms with 1 mm. ply. Fit the leading edge and corner gussets.

Fit the outer plane ribs and the wing tongues in position.

Taper the top spar boom for its last 2 in. and steam to meet the wing tip. Glue the spar and wing tip in position and clamp the spar into the rib slots. Add the leading edge and then allow the wing to set. When dry web in between the ribs with 1 mm. ply and plank the top surface of the wings. This does not include the centre section which is left until assembled on the fuselage. Plank as you would a fuselage using 1/16 in. square strips at the leading edge. Glue the 1/32 in. by ⅛ in. capping strips to the top surface.

Sheet the under surface of the centre section so that the sheeting ends slightly inboard of ribs W2c.

Offer up the completed wing to the fuselage. Check the alignment with the fin. With the fuselage held firmly on the building board glue the centre section spar to former F5. Clamp in position and fit gussets and blocks to the leading and trailing edges. When dry, sheet cover the top surface in one piece and fair in the top of the fuselage to the aerofoil. Small trailing edge fillets, ¾ in. radius, are now added and balsa scrap glued in position to complete the fairing for the centre section.

Tailplane. Commence with the bottom spar boom, ribs, leading and trailing edges in the usual manner. From T4 rib pack beneath the spar boom at each rib position to the tip. See the plan for size of packing required. Build in a similar manner to the wings.

Fullsize plans may be obtained, price 2/6 post free, from Aeromodeller Plans Service, Allen House, Newarke Street, Leicester, see ½ scale reproduction opposite.

A 50" WING SPAN CONTEST SAILPLANE.

INVICTA.

DESIGNED BY G.R. WOOLETT

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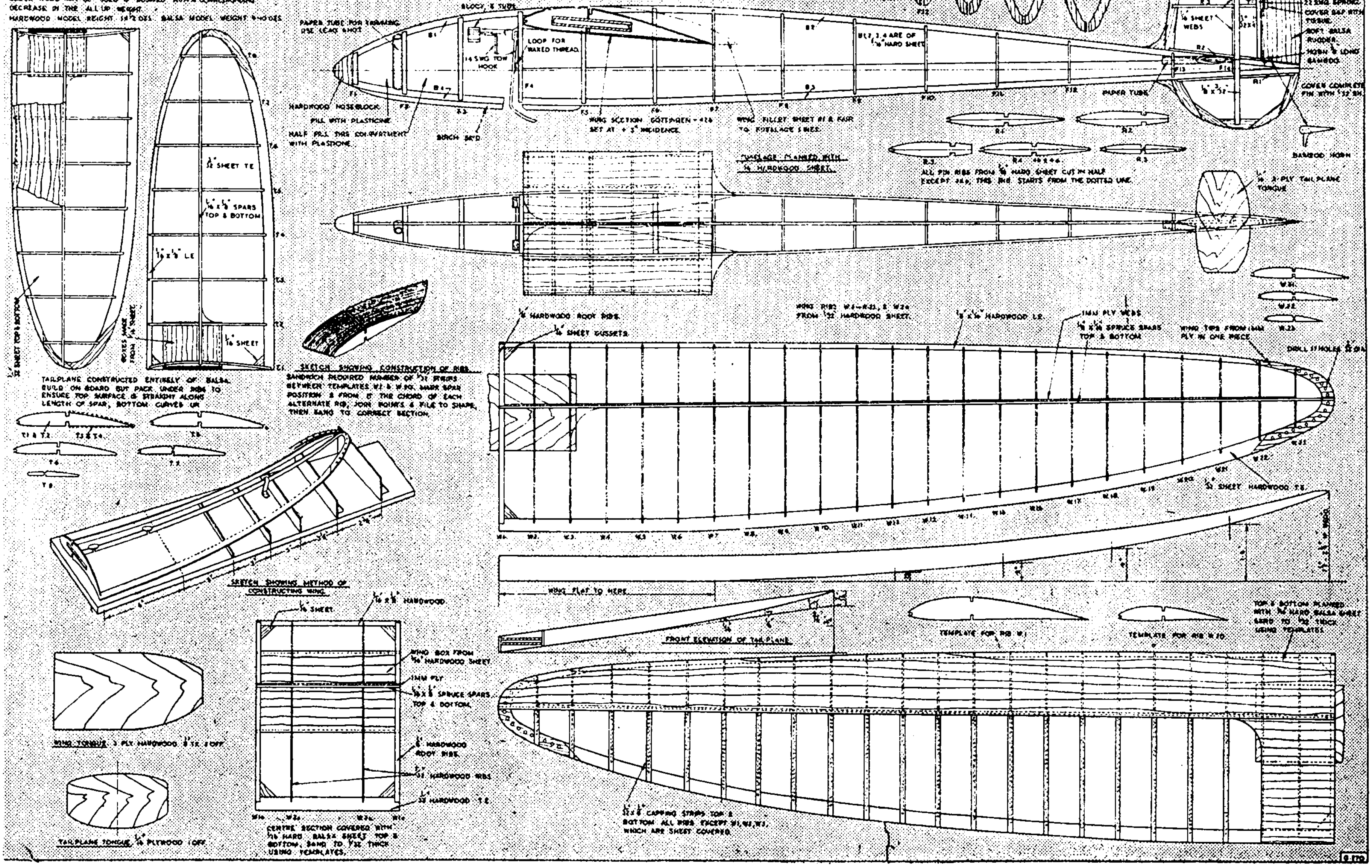
ALLEN HOUSE, NEWARKE STREET, LEICESTER

2/6

MATERIALS REQUIRED	
4 STRIPS OF 1/16" x 1/8" x 36" SPRUCE.	1 SHEET OF 1/8" x 3" x 12" PLYWOOD
2 SHEETS OF 1/32" x 3" x 36" HARDWOOD	1 " " 1/32" x 3" x 4" "
3 " " 1/16" x 3" x 36" HARD BALSA	1 PIECE OF 1/4" x 1" x 1 1/2" SOFT BALSA
1 SHEET OF 1/16" x 3" x 36" HARDWOOD	2" PIECE OF 22 SWG SPRING WIRE
1 " " 1/8" x 3" x 8" "	2" " " 16 SWG I/D ALUM TUBING
1 " " 1/8" – 3 PLY "	3" " " 14 SWG PIANO WIRE
1 " " 1/16" x 3" x 12" PLYWOOD	2" " " 1/16" DIA BAMBOO

ALL WOODS UNLESS OTHERWISE STATED ARE HARDWOOD. BALSA WOOD MAY BE USED IF DESIRED WITH A CORRESPONDING DECREASE IN THE ALL UP WEIGHT.

HARDWOOD MODEL WEIGHT 5 1/2 OZS. BALSA MODEL WEIGHT 4 1/2 OZS.



THE BOWDEN INTERNATIONAL CONTEST

SPECIAL AEROMODELLER REPORT BY H · G · HUNDLEBY

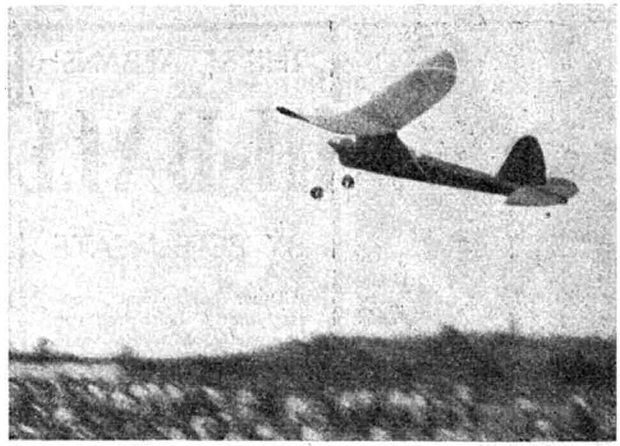
FOR those of us who have witnessed the large number of power duration contests this season the Bowden Trophy made a pleasant and refreshing change. Colonel Bowden is to be congratulated for stimulating interest in this precision type competition which certainly was an exacting test of both man and machine. As many readers will know from earlier announcements a points system was evolved embracing appearance, starting of motor including correct running of same, take off, landing, and a stipulated flight time of 45 secs. A flight of under 30 secs. or over 60 secs. resulted in disqualification and one helper was allowed per entrant.

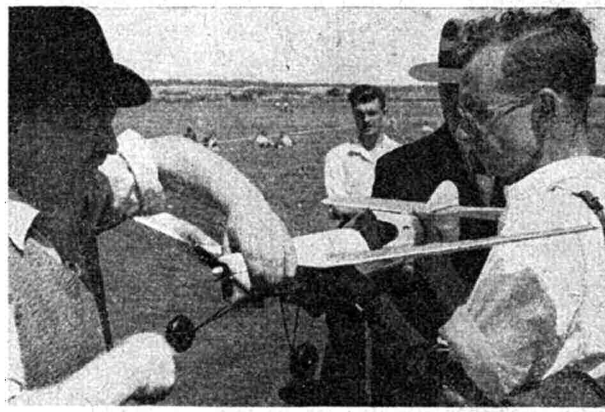
There was a total entry of 54 competitors including visitors from France, Belgium, Holland, Eire and Palestine, the majority of foreign competitors coming over by coach from International Week at Eaton Bray.

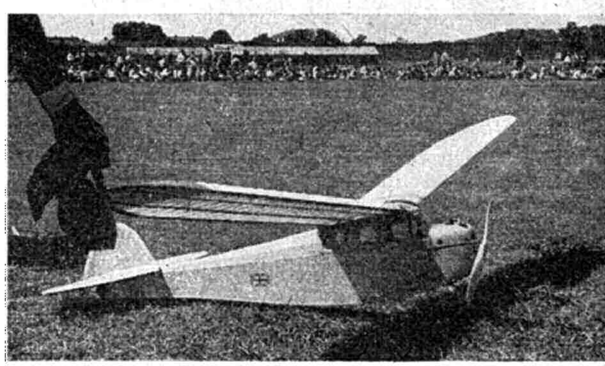
The contest was late in starting, which gave plenty of time for test flying and also eliminated one or two unfortunates who smote the hard unyielding tarmac at high speed. In spite of the somewhat involved points scheme competitors were dealt with at a goodly rate, this due mainly to the 2 minutes starting rule and the impartial strictness of the judges. Just how well they did their job can be gauged from the final results—even the winner Mr. C. T. Buffery lost 24 points out of the 100 maximum. Mr. Buffery was flying the original prototype of the Frog 45, which is a small cabin model of very pleasing lines powered with a Frog 1 c.c. diesel motor. In contrast was the runner up, the famous Super Buccaneer, an ancient and well used version built and flown by one of the "old school"—Mr. J. Blunt. This model which had apparently laid in a loft since before the war, was dusted free of cobwebs and

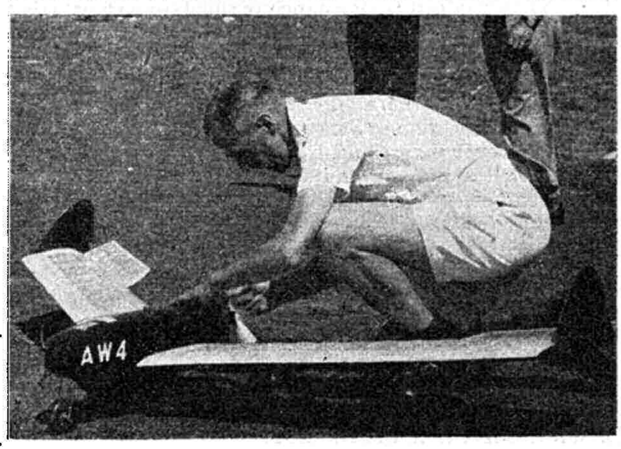
Heading picture shows winner C. T. Buffery receiving congratulations from Lt.-Col. Bowden; on right Henry Nicholls looks back over the crowd before coming under the judges' eagle eye. Below left: J. Blunt poses for the Aeromodeller camera. Bottom: M. Chabot, French leader with M. Donne, President of the National Aero Club of France and Father Amiard.

" Aeromodeller " Photographs.









taken to the flying field where the motor, an early model " D " Brown Junior, burst into song again in spite of its long period of inactivity. Other old timers were close on the heels of Mr. Blunt, namely Mr. Wreford of the Essex Power Club and our old friend " Rip " with his attractively finished " Quick Silver ". Two interesting tailless models were entered, one by Sam Crow who can't seem to leave them alone and the other by Mr. A. H. Wilson. The performance of the latter's machine was most impressive, especially the abnormally long take off run followed by a sudden almost vertical climb, characteristics peculiar to the tailless model.

The first foreign entry on the list was Fillon the French maestro, flying his " Champion of France " one of the few pylon models in the contest. Other models of note were M. Ferber's 5 ft. span flying scale Piper Cub, a very pretty effort indeed, and a neat midwing semi-scale model entered by Mr. Moss. "G.W.W." arrived with a model built specially for precision contests but failed to start on each of his flights. The cause of his trouble turned out to be a broken electrode in the plug which was indeed a stroke of real bad luck.

One feature of the meeting that brought back memories of earlier days was a flow of information regarding competitors and models provided by J. C. " golden voiced " Smith, who enlisted the aid of Father Amiard when the names became a little too Continental.

It was not long after tea before the last competitor came under the scrutiny of the judges and then followed an expectant lull as the results were tabulated and checked. Col. Bowden presented the trophy to Mr. Buffery amidst the clicking of camera shutters and so ended a very successful " reliability trial ".

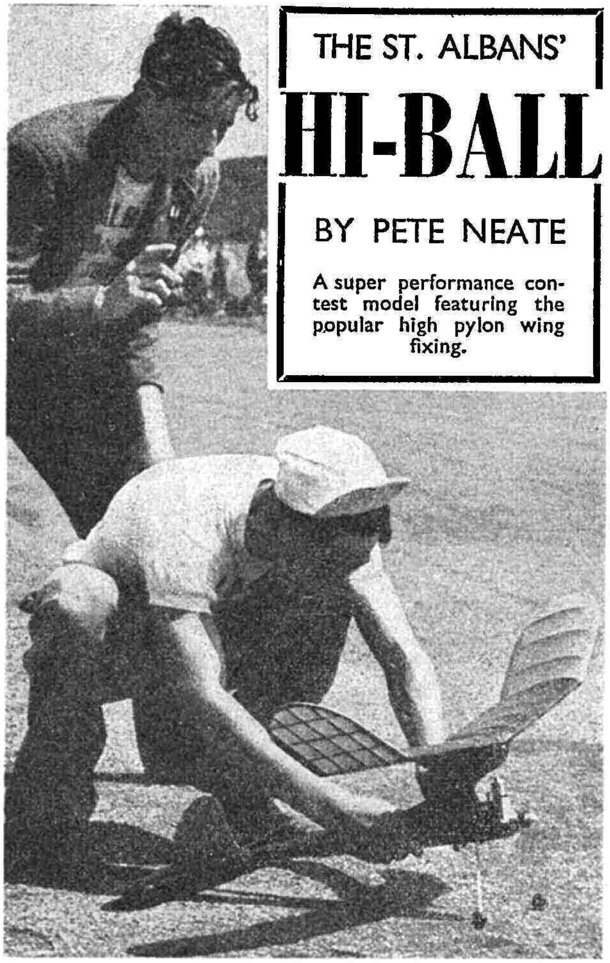
Above : Rogers of Weybridge with his substantial " Shadow ". Top right : Fillon's " Champion 1947 " well up. Upper centre : Moss of Southgate starts up his attractive low-wing entry. Lower centre : G. W. W. Harris's new model that " Just wouldn't ". Bottom : A. H. Wilson with his sensational tailless model that, while unplaced, stole much of the applause.

THE ST. ALBANS'

HI-BALL

BY PETE NEATE

A super performance contest model featuring the popular high pylon wing fixing.



Heading picture shows the special "hands off" launching technique developed by the St. Albans Cement-Squeezers. Engine is revving, and launcher holds the model steady with hands round the fuselage; timer can be set at the last moment without coming near the airscrew arc; hands come away smartly and the most pernickety judge will be unable to fault for a push start.

As a fitting start to what should be a long series, if pylon models retain their undoubted popularity, we present here one of the most successful diesel models of original design in the 1947 competition season, and the first pylon power model to be featured in our pages. Some idea of this model's performance can be gained from the fact that out of six successive contests the Hi-Ball won five. Anyone who has seen the model performing at the Nationals or at Eaton Bray will understand why. The standard performance of this fascinating little model is a take-off run of negligible distance followed by a literally vertical corkscrew climb for all of the usual twenty seconds engine run, followed by an amazingly flat glide which keeps the model in the air for well over a two minute average. Strangely enough the original model has never yet caught a thermal, although perhaps this is as well to judge from its best flight to date of three minutes forty-six seconds without such aid. All credit to young designer Pete Neate of the St. Albans' Cement-Squeezers.

Despite the pylon power-house type of design the model succeeds in achieving a not ungraceful appearance. There is plenty of strength built into the construction, and the original model though scarred is still flying as well as ever. The simple construction is extremely robust and has an additional advantage in that, despite the low drag circular section, it does not require any jigs. Designed as it is for power duration flying the total weight when complete with engine should only be ten ounces, when the wing area of approximately two hundred and thirteen square inches gives a very light loading.

For F.A.I. competitions such as the major S.M.A.E. events it is only necessary to make a five minute modification to the pylon in order to incorporate the necessary extra fuselage cross-sectional area to bring it up to formula. This is very simply done by cementing a length of $\frac{1}{8}$" square balsa down each side of the pylon from the fairing to the fuselage and then covering this modified pylon with tissue. It will be found that this alteration has no effect upon the model's performance.

Designed essentially for the low capacity British diesels now on the market, the model will take any 1 to 2 c.c. engine—the original was fitted with a Mills 1·3 c.c. As this original engine was rather hotted up it is possible that an even better performance may be obtained with engines around the 2 c.c. mark, although in the ordinary course of events there is no doubt that the Mills has sufficient power for all the model's needs.

For the newcomer to pylon power modelling, the Hi-Ball presents no difficulties of construction or trim. It is undoubtedly an ideal model for this purpose, although it should be emphasized again that the flying qualities more than satisfy the experts! Plans of this model are available from Aeromodeller Plans Service, Allen House, Newarke Street, Leicester, price 2/6 post free, and a $\frac{1}{4}$ scale reproduction is given opposite. There will be many a Hi-Ball in high placings in the 1948 flying season.

Fuselage

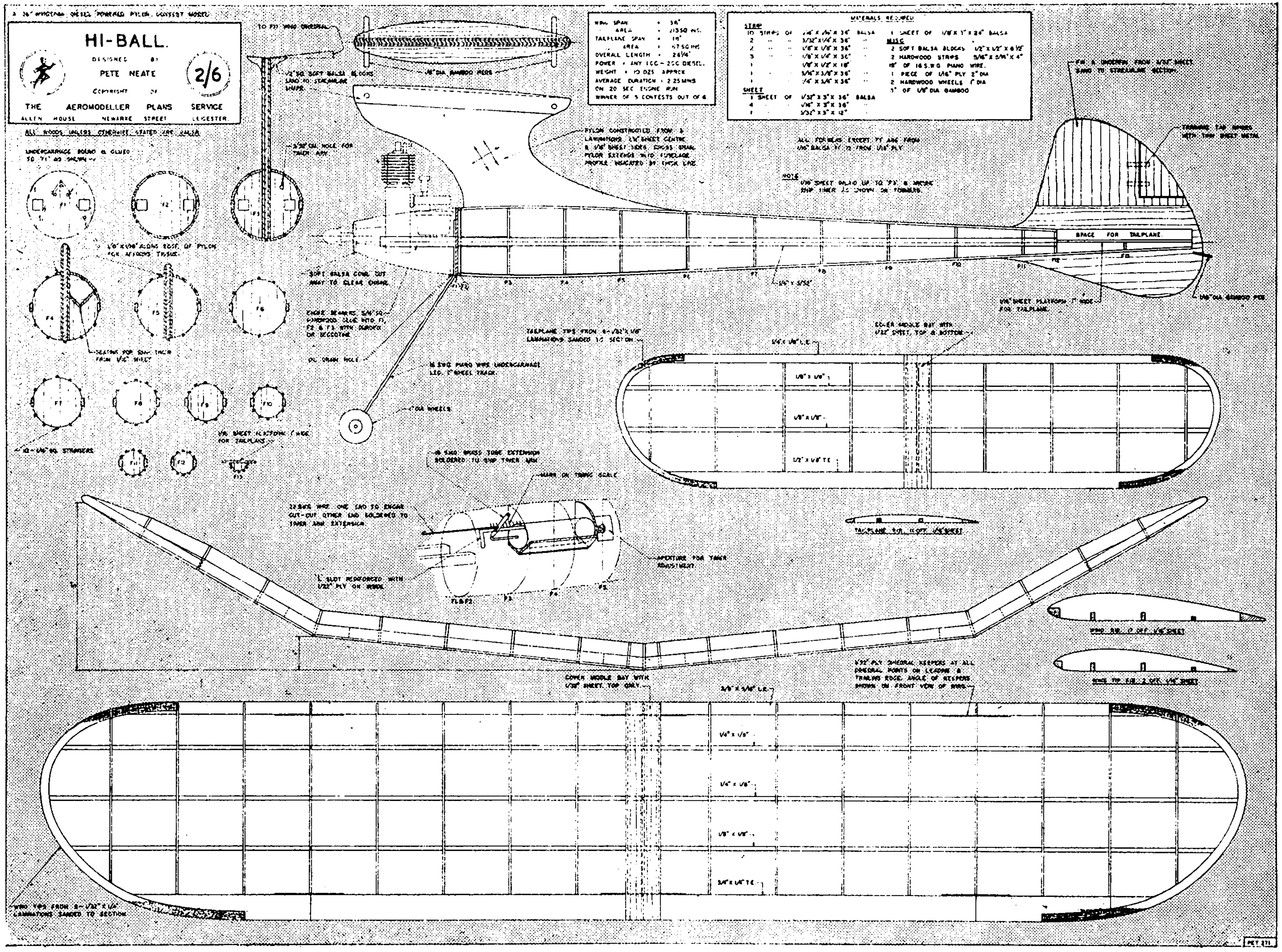
First the pylon is cut out of $\frac{1}{8}$" sheet with 1/16 in. sheet laminated on each side, the $\frac{1}{8}$" sheet grain vertical, the 1/16 in. sheet horizontal. The first six formers are then cemented onto it. When this is dry the two main stringers, $\frac{1}{4}$" $\times$ 3/32 in., are cemented in, cut off to the correct length and joined together at the tail. Then these two stringers are marked off every two inches and the rest of the formers put in. Next the ten 1/16 in. square stringers are cemented on. When all is thoroughly dry the 1/16 in. ply former with the undercart bound to it is cemented on and the engine bearers are put in, using large cement gussets. The necessary sheeting up to former No. 2 and around airdraulic timer is fixed. The timer is attached as in sketch on plan. The fuselage is either covered with flax tissue, with two coats of dope or double covered with jap, first with grain vertical and then with grain horizontal.

Wing and Tailplane

First the spars and the leading and trailing edges are pinned to the plan and the ribs cemented into position. The laminated tips are made by driving pins in at about $\frac{1}{8}$" intervals around the inside line of the tip, coating the strips of $\frac{1}{4}$" $\times$ 1/32 in. with cement and bending round and then compressing these together with further pins and leaving for an hour to set. They are then sanded and the dihedral built in. The tailplane is built in the same manner as the wings.

Flying

The model is test glided until satisfactory glide is obtained—this is done either by packing up the leading or trailing edge of the tailplane. Launch with the lowest possible revs—if the model turns sharply in one direction it should be corrected by the trim tab until it both climbs and glides to the left.



HI-BALL.
DESIGNED BY
PETE NEATE
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
ALLEN HOUSE NEWARKE STREET LEICESTER.
2/6
ALL WOODS UNLESS OTHERWISE STATED ARE BALSA
UNDERCARRIAGE BOUND & GLUED TO 'F1' AS SHOWN
WING SPAN : 36"
AREA : 213 SQ. INS.
TAILPLANE SPAN : 19"
AREA : 67 SQ. INS.
OVERALL LENGTH : 24 1/4"
POWER : ANY 1CC - 2CC DIESEL.
WEIGHT : 10 OZS. APPROX.
AVERAGE DURATION : 2.25 MINS. ON 20 SEC. ENGINE RUN
WINNER OF 5 CONTESTS OUT OF 6.
MATERIALS REQUIRED
STRIP
10 STRIPS OF 1/16" X 1/16" X 36" BALSA
2 3/32" X 1/4" X 36"
2 1/8" X 1/8" X 36"
3 1/8" X 1/4" X 36"
1 1/8" X 1/2" X 18"
1 5/16" X 3/8" X 36"
1 1/4" X 3/4" X 36"
SHEET
1 SHEET OF 1/32" X 3" X 36" BALSA
4 1/16" X 3" X 36"
1 3/32" X 3" X 12"
1 SHEET OF 1/8" X 3" X 24" BALSA
MISC.
2 SOFT BALSA BLOCKS 1/2" X 1/2" X 6 1/2"
2 HARDWOOD STRIPS 5/16" X 5/16" X 4"
18" OF 16 S.W.G. PIANO WIRE.
1 PIECE OF 1/16" PLY 2" DIA
2 HARDWOOD WHEELS 1" DIA
3" OF 1/8" DIA BAMBOO
PYLON CONSTRUCTED FROM 3 LAMINATIONS. 1/16" SHEET CENTRE & 1/16" SHEET SIDES. CROSS GRAIN. PYLON EXTENDS INTO FUSELAGE PROFILE INDICATED BY THICK LINE.
ALL FORMERS EXCEPT F1 ARE FROM 1/16" BALSA. F1 F2 FROM 1/16" PLY.
SPACE FOR TAILPLANE.
1/8" DIA BAMBOO PEGS
1/8" DIA WHEELS
SOFT BALSA COWL CUT AWAY TO CLEAR CHOKE.
COVER MIDDLE BAY WITH 1/32" SHEET, TOP & BOTTOM.
COVER MIDDLE BAY WITH 1/32" SHEET, TOP ONLY.
APERTURE FOR TIMER ADJUSTMENT.
MARK ON TIMING SCALE
TAILPLANE TIPS FROM 6 - 1/32" X 1/8" LAMINATIONS SANDED TO SECTION
WING TIPS FROM 8 - 1/32" X 1/4" LAMINATIONS SANDED TO SECTION.
10 - 1/16" SQ. STRINGERS

BACK to his soapbox for a while, Consus presents another offering of your favourite discourse, with Bagley to wield the chalk by his side. He would like to mention that at the moment he had plenty of contributions in stock, but if the idea is really of such stunning brilliance—well, let him have it.

Here is a new idea for the crashproof petrol model addicts, sent in by K. A. Richardson of Grimsby. To take the one crash from which a model seldom survives Mr. Richardson thought up the device illustrated in Fig. 1, which is in essentials a telescopic engine mount by which the engine and all the accessories move backwards together until the shock from a collision head-on with, for instance, a brick wall is transposed to the forward slung undercarriage. Needless to say, the method works equally well for any kind of solid obstacle, and if desired can be amalgamated with an ordinary knock-off mount to give complete prang-protection. Where a cowling is used, both motor and cowling may be made to slide, the motor on the inside and the cowling on the outside of the fuselage shell, or if preferred, the motor only may slide, as the very occasional crashes of this nature will warrant the destruction of a simple cowling when the engine and model are saved as a result.

Every aeromodeller is sadly aware of the warped habits of wings when drying, but S. G. Wilson of Dunfermline makes sure that his wings and tailplanes remain perfectly true while drying by the far from dopey apparatus shown in Fig. 2. The clamps are placed at strategic spots around the plan of the wing under consideration and the parts that grip are suitably sectioned to take the respective wing sections at the points where they hold, being lined also with thin felt to prevent their crushing the balsa. The number and position of the clamps will vary with individual wings, but they are easily moved, being merely lightly screwed in the required position. Only one point to watch—if you are using full strength glider dope make sure you have a nice thick board !

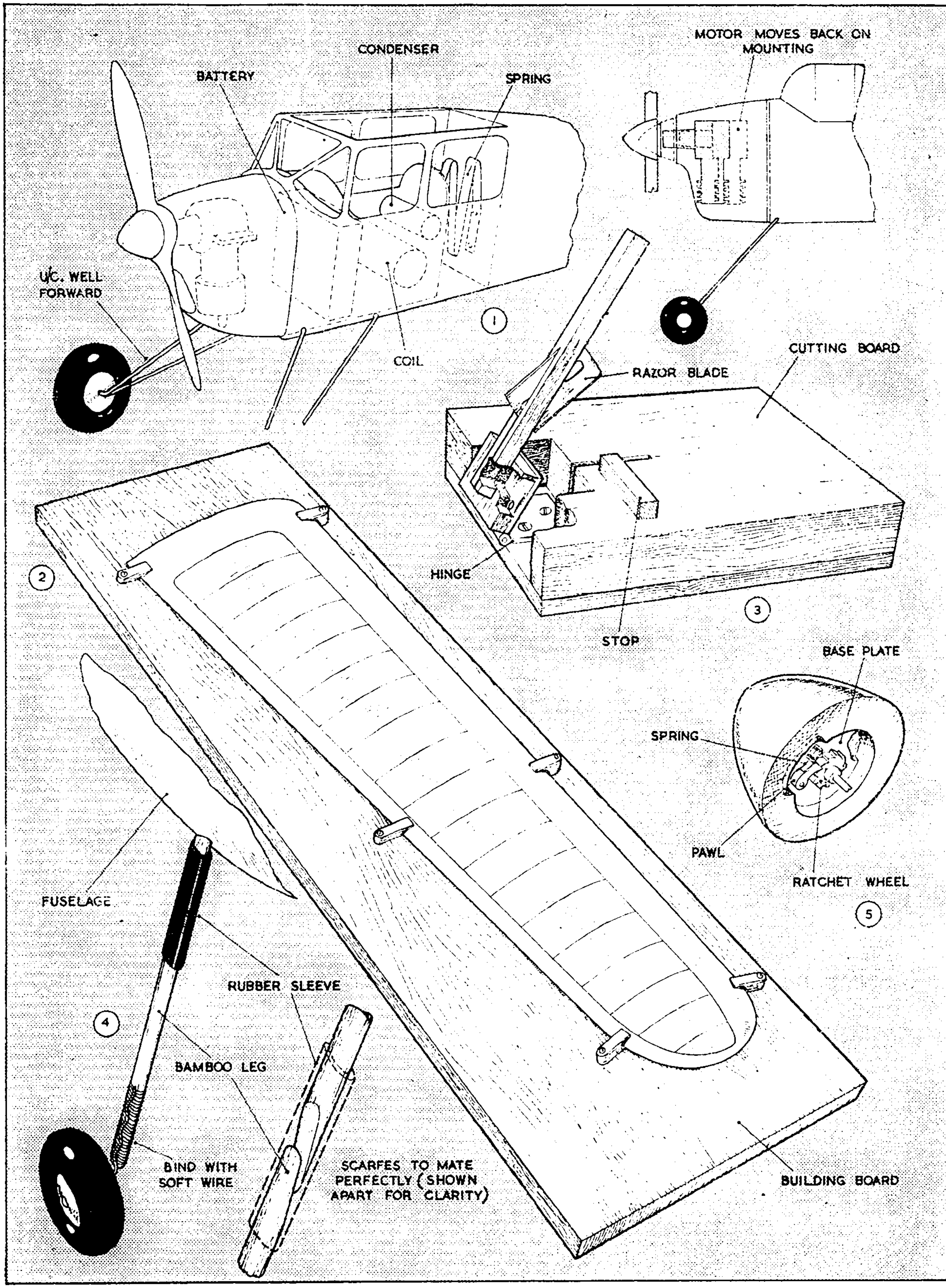
Balsa strippers have found a place in these columns many a time, but here is a variation of considerable practicable use to the modeller who is always striving for perfection in all things. In reality this is not a stripper at all, but a guillotine for cutting strip balsa exactly at right angles to make sure a perfect butt joint is achieved when the strip is butted on to another in the usual manner. As most people know, chopping the strip off with a razor blade practically always results in a lopsided cut and very often a piece too short or too long. With the simple little tool drawn in Fig. 3, designed by D. Stollery of Halifax, strip is quickly and accurately cut to exactly the dimensions required. To use the machine, place the strip to be cut against the stop and hold it there with the index finger of the left hand. Bring the arm carrying the blade down onto the strip with the thumb and index finger of the other hand. The result is a cleanly cut length of strip, cut at a perfect right angle for maximum strength when cemented.

Again a device intended for the petroleer in Fig. 4, this time from D. M. Dent of Esher, who says that he has made use of this system on models of all sizes up to several pounds in weight and has never yet had a breakage. The undercarriage leg, cantilever bamboo, is cut to form a " Scarfe " joint near the top of the leg, and over the unglued joint a piece of rubber tubing is then slipped. The tubing should be of such a diameter that it just grips the two parts of the leg with equal tension. The leg then has forwards and backwards movement, with a slight degree of side movement also. The amount of movement varies according to the angle of the join and the thickness of the tubing. Another idea of Mr. Dent's which he claims works well is to bind the wire axle for the wheel to the bamboo leg with soft iron wire only, when soldering is not necessary. Personally, however, Consus would not care to pin his trust to such a fixing. He would say that plenty of cement is indicated, and that the axle should also be well and truly hammered to make a flat tang which, when bound, would prevent any twisting under stress. However, the scheme's in your hands now and if you use it here's hoping it works.

Another brainwave this month comes from R. Brocklehurst of Didcot, who provides the novel freewheel illustrated in Fig. 5. To make this it is necessary to burgle the family alarm clock for sundry of its entrails, or obtain the remains of any other old timepiece of similar size. By using this method the freewheel may be incorporated right inside the spinner without any ugly excrescences to mar the appearance or efficiency of the fuselage entry. The device consists merely of a pawl and ratchet, the pawl being lightly springloaded on to the ratchet. The ratchet is soldered to the prop-shaft, the pawl pinned to the bearing plate of the spinner. This bearing plate is best made from a piece of sheet brass of suitable gauge for the particular model.

As an alternative to greaseproof paper and to avoid the mutilation of plans, Mr. Tosswill of Winchester puts forward the simple suggestion of rubbing over the plan with a candle stub. Another tip not needing the services of Bagley comes from Mr. West of Snodland. He has been experimenting with finishes for tissue-covered rubber models and sailplanes, and finds that equal parts of dope and amyl acetate with an addition of approximately 20% castor oil has beneficial effects. Firstly it gives a smoother finish and furthermore gives the tissue an elasticity that prevents splitting under shock without destroying the tightening properties of the dope. He emphasises that too much of the castor oil will result in the tissue refusing to dry and remaining tacky.

That is the lot for this month. Consus will return with his usual double helping at Christmas—till then, Happy Landings.


CONDENSER
BATTERY
SPRING
MOTOR MOVES BACK ON MOUNTING
U/C. WELL FORWARD
COIL
1
RAZOR BLADE
CUTTING BOARD
HINGE
3
STOP
2
BASE PLATE
SPRING
PAWL
RATCHET WHEEL
5
FUSELAGE
RUBBER SLEEVE
4
BAMBOO LEG
BIND WITH SOFT WIRE
SCARFES TO MATE PERFECTLY (SHOWN APART FOR CLARITY)
BUILDING BOARD

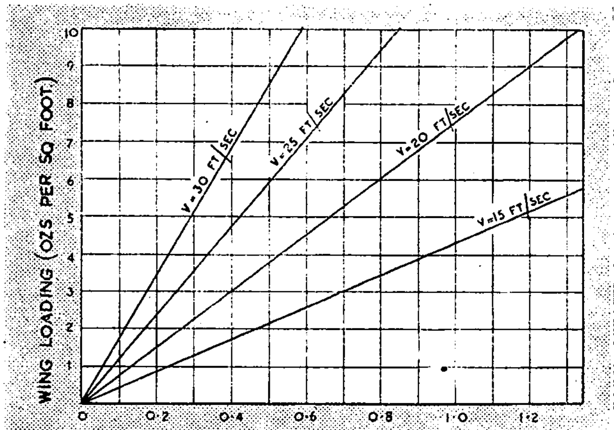


FIG 1

AERODYNAMIC DESIGN PART XII

By JOHN HALIFAX

So far in this series, we have dealt with motors, cowlings, climbing flight, and a number of other important design features without seriously attempting to fit them into the general picture. While this is sufficient for experienced modellers, many comparative newcomers must be feeling the need for an organised collation of the whole untidy mass, and others some guidance on where to fit in the new design methods. Thus this month I propose to give a straightforward description of a modern design system; a system which is both flexible and reliable.

Starting from scratch, it is decided to design and build, say, a diesel-powered model, and since we must have some idea of its size, the first step is to decide the wing area. For a small model it is probably unwise to go below 200 square inches; a large machine may be anything up to 1,000 square inches.

Next decide upon the flying speed: except for the rule that a small model should have a comparatively high flying speed (say 25–30 ft/sec.) and vice versa, this is quite an arbitrary decision.

The third and last decision is the choice of a suitable wing section. Table I gives a small selection, and of these N.60 is the only really suitable one for an orthodox power model. Notice that the aerofoil characteristics for optimum performance are given in the table: this saves an enormous amount of time when comparing aerofoils, and also obviates the need for "Critical VL" graphs (See Fig. 1, Part X, Aug. 1947 issue) in many cases. But more of this anon.

We now come to what may be called the "derived section". Whilst very simple to use, we will take it in steps for clarity

1. Having obtained the C_L from the Table (Fig. 2) and knowing the flying speed, obtain the wing loading from Fig. 1. To obtain the total weight of the model, multiply this by the expression:

$$\frac{\text{Wing area}}{144}$$

In other words:

$$\text{Total weight} = \frac{\text{Wing loading} \times \text{area}}{144}$$

when wing area is in square inches.

2. Obtain the wing Aspect Ratio from the Nomogram given in Part 10 of this series (August, 1947) or from the equation:

$$\text{Aspect Ratio } \frac{W}{\cdot 019\ C_L\ VL^2}$$

—where W = total weight of model in ounces

Both given in Table I $\begin{cases} C_L = \text{coefficient of lift} \\ VL = \text{Critical VL} \end{cases}$

3. Obtain the induced angle of attack of the wing, either from Nomogram No. 6 in Warring's "Nomographs for the Aeromodeller" (Harborough 2/-) or from the equation:

$$\text{Induced angle} = \frac{18{\cdot}2\ C_L}{AR}$$

—where AR = wing Aspect Ratio and C_L is as above.

The values in Table I are for infinite AR, so by adding the angle of attack given to the induced angle just obtained we have the angle at which the wing must be built into the fuselage. Makes the C_L $1{\cdot}5/C_{DT}$ method look a bit old-fashioned!

4. A manufacturer's airscrew converts about a third of an engine's power into useful thrust, and Fig. 3 is drawn on this assumption. This gives the *engine* horsepower required for optimum performance (vide Part 9, July issue) plotted against all up weight of a machine for various speeds. There are no unknowns, and the power

Fig. 2. (N.B.—Ordinates for these sections will be given next month.)

Aerofoil Section	Optimum C_L	Profile Drag Coefficient	Angle of Attack (AR = Infinity)	Critical VL	C.P. Position from Wing Nose	Remarks
N 60	0·7	·028	1°	13·3	13·5%	Good general purpose section.
N 60 R	0·5	·03	3·3°	13·3	19·4%	N 60 with a reflexed trailing edge.
GOTTINGEN 625	0·5	·03	3°	20	4·2%	May be used on extremely large models.
CURVED PLATE 417a	0·8	·025	3°	6	12·9%	Very good for small models.
FLAT PLATE	0·4	·04	4°	6	25·8%	Very stable.

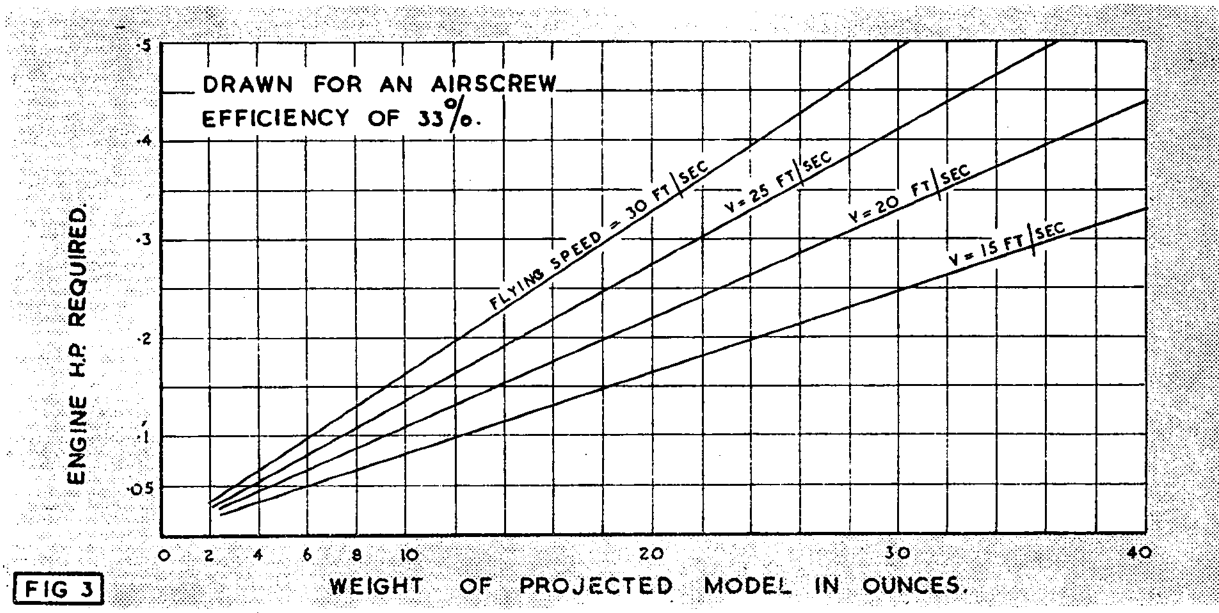


FIG 3

required for any particular machine may be instantly obtained.

Remember that *power* is the important thing when choosing an engine to fit your model's requirements. The higher the r.p.m., the smaller must be the airscrew diameter, with a consequent loss of efficiency.

If an airscrew is designed specifically for a model, then the H.P. required is given by the equation

$$\text{Engine H.P.} = \frac{\cdot 018\ W\ V}{\eta}$$

where W = total weight of model in ounces

V—flying speed (ft./sec.)

η—airscrew efficiency as a percentage.

5. Calculate the angle of incidence of the tailplane. Before this can be done its area and Aspect Ratio must first be decided, and while this can be done theoretically the work involved is tedious, and by no means essential. It is sufficient to remember that a high tailplane A.R., coupled with an area about one third that of the wing area, and a reasonably long moment arm will result in a model which is very stable longitudinally, whilst the converse—low A.R., small area, and/or short moment arm—will result in a better performance in still air conditions, but inadequate stability for normal flight.

Bearing this in mind, *the tailplane angle of incidence measured from the angle for zero lift* is given by the formula:

$$\theta = \frac{20\ C_L\ S_W l}{A_T\ S_T\ y} + \frac{35\ C_L}{A_W}$$

where A_W = Aspect Ratio of wing

A_T = Aspect Ratio of tailplane

S_W = Wing area in sq. inches

S_T = Tailplane area in square inches

C_L = C_L of wing

l = distance between the centre of Pressure of the Wing and the CG.

= CP. C — 0·25 C + z

where CP = CP Position as per cent of chord (given in Table I)

C chord in inches

z distance of the CG. from the wing leading edge in inches.

The CG. should be only a small distance behind the CP—say not more than 20% of the chord.

y = Distance in inches between the CG. and a point one third of the chord back from the leading edge of the tailplane. (Fig. 4.)

All these quantities are known, and thus the equation presents no difficulties. There is, however, one weakness: for stability the tailplane C_L should be less than the wing C_L, and the total moment have a negative slope as explained in Part 5 of " Elementary Aerodynamic Design " (June, 1946, issue of the AEROMODELLER) and no really rapid method of assessing this exists at the moment. For orthodox models, where the CG. is well forward, such a check is not essential, of course, but for border line cases and unorthodox models it is.

At a later date I hope to introduce a Nomogram which will give a quick solution to this all important subject.

The work given this month contains everything necessary for the preliminary design of an orthodox power model, with the exception of wing dihedral and the size and location of fin(s). These two things are very closely connected with one another, and I propose to leave them until the results of recent investigations by the Low Speed Aerodynamics Association are published. Next month, I intend to deal with some simple methods of checking a model's stability.

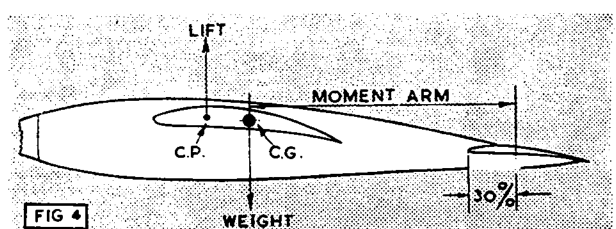
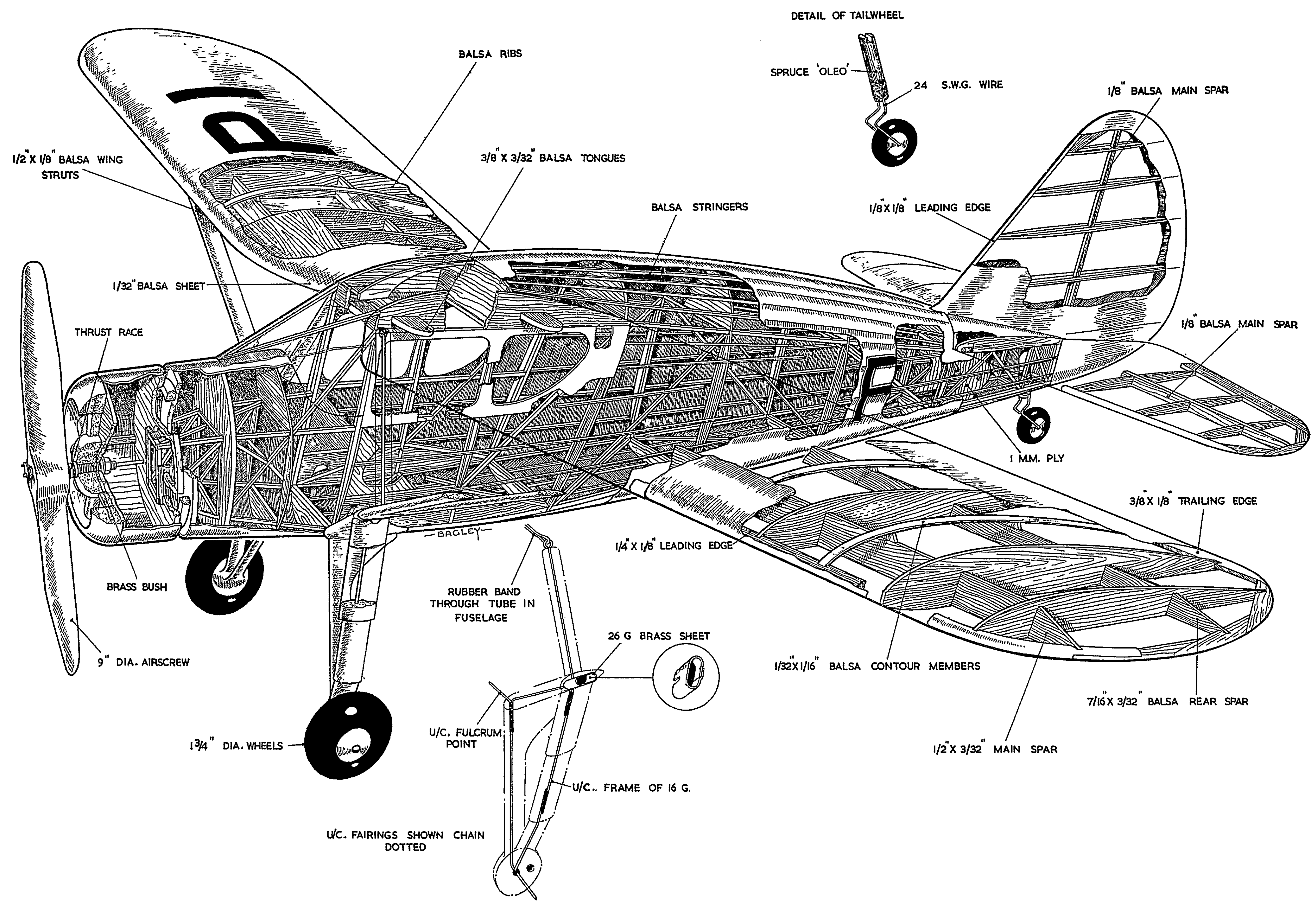
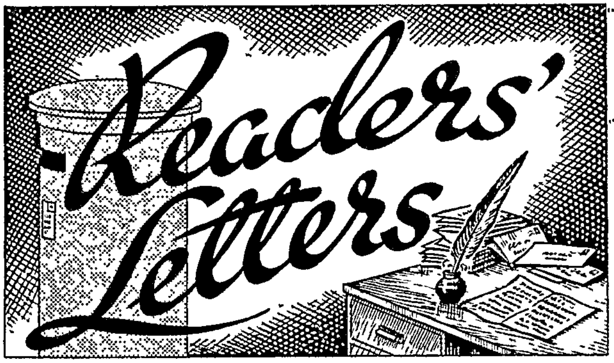


FIG 4


DETAIL OF TAILWHEEL
SPRUCE 'OLEO'
24 S.W.G. WIRE
BALSA RIBS
1/8" BALSA MAIN SPAR
1/2" X 1/8" BALSA WING STRUTS
3/8" X 3/32" BALSA TONGUES
BALSA STRINGERS
1/8" X 1/8" LEADING EDGE
1/32" BALSA SHEET
THRUST RACE
1/8" BALSA MAIN SPAR
1 M.M. PLY
3/8" X 1/8" TRAILING EDGE
BAGLEY
1/4" X 1/8" LEADING EDGE
BRASS BUSH
RUBBER BAND THROUGH TUBE IN FUSELAGE
26 G BRASS SHEET
9" DIA. AIRSCREW
1/32" X 1/16" BALSA CONTOUR MEMBERS
7/16" X 3/32" BALSA REAR SPAR
U/C. FULCRUM POINT
1 3/4" DIA. WHEELS
1/2" X 3/32" MAIN SPAR
U/C. FRAME OF 16 G.
U/C. FAIRINGS SHOWN CHAIN DOTTED



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,

I should like to point out a small printing error in my letter to you which is published in your current issue. You print $L\ C_L = \frac{1}{2}\rho\ SV^2$ whereas of course this should read $L = \frac{1}{2}\ C_L\rho\ SV^2$.

I should be obliged if you could correct this in your future issue as the present equation does not make sense.

Whilst writing I should like to express my appreciation of the continued excellence of your journal, it is seldom that one does not find a good deal of interesting material among your well-balanced contents. Personally I should like to see a few more articles on sailplanes—but perhaps that would not please everybody.

Upminster. D. E. CHANDLER.

DEAR SIR,

The data you have so far published on the new low-speed sections does not mention a most important point—namely, at what R.N. do the new sections cease to be more efficient than conventional airfoils ?

In this connection the following data obtained by flight tests on two similar heavyweight gliders may be useful.

Model No. 1 : Wing area, 2 sq. ft. ; weight, 20 oz. ; section, Gottingen 398 ; aspect ratio, 8 ; speed, 20 m.p.h. ; R.N., 100,000 ; glide 10–11 : 1. (The last three figures are, of course, approximate.)

Model No. 2 : Same weight and area but section changed to LDC3M and aspect ratio increased to 10. Performance : Very much inferior to No. 1; so much so that extended trials were not made and the wing was scrapped in favour of a new wing, using the Gott 398 but retaining an aspect ratio of 10. With this wing No. 2 flew much better but was still slightly inferior to No. 1.

Conclusions : The LDC3M is unsuitable for heavyweights. It may be that as the R.N. increases a very accurate airfoil is needed to preserve the laminar flow, but if this is so the section is of no practical use since balsa is not a material in which one can work with super accuracy. All these wings were planked with sheet balsa and there was no sag, but I doubt if the contours were accurate to within 1/50 of an inch.

These results confirm the distrust I feel for the theoretical articles of the AEROMODELLER, whose present policy seems to be to encourage any new and novel idea before its drawbacks have been thoroughly investigated. The recent article on ornithopters is a case in point. The author had to admit that he had no reliable design to offer his readers, so surely the article was premature ?

Blackburn. J. GABBUTT.

Thanks for airfoil section data, Mr. Gabbutt. We are quite unrepentant on the subject of new ideas which set our readers thinking, with good results all round. Our diesel articles were the first in the field when the whole idea was virtually unknown in this country—and look at them now ! (ED.)

DEAR SIR,

Although plans and kits of control line models have been available for some time now, very few of these models have been flying this year. After chatting with other modellers, I have come to the conclusion that this is mainly due to the fact that most " first attempts " are too big, too complicated and TOO FAST. After spending many weeks on a model, a bad crash on the initial flight may well kill a modeller's interest in control line.

From experience gained by members of the Zombies Club it appears that the ideal trainer is a small diesel-powered model of 20 in.–24 in. span. All sheet construction can be used and building time is only a few evenings. A small diesel of the Mills or E.D. type, will give a speed of about 30–40 m.p.h.—which is just right for a trainer. Lines should be light fishing twine, 25 ft. long. Essential features of this type of model are : (1) C.G. at 25% of root chord (level or slightly forward of the front line) ; (2) Offset rudder or engine sidethrust for line tension ; (3) Wing loading of 25–30 oz./sq. ft. The average builder can learn to fly one of these without any flying instruction.

Basic control line flying is quite easy to pick up. Bill Bibichkow, of Comet Kits in America, confirms this view in a recent letter. He says that the tremendous popularity of control line in the U.S.A. is largely due to its being easier than free flight.

As to control line being fun or not, the only way to find out is to get in the centre of the circle yourself. Provided you get started on the right lines, you'll probably get quite a thrill out of it. Criticism should be saved until you have actually tried control line. Most of the critics seem to belong to two groups—" those who haven't tried it " and " those who can't do it."

Thornton Heath. BILL DEAN.

DEAR SIR,

Mr. Chandler has made a new discovery in his letter, August, 1947, AEROMODELLER, a discovery that will shatter most designers of full-sized racing boats and high-speed aircraft. He states, after " proving " his statement by a series of figures, etc., " I therefore argue that surface finish cannot affect the forward speed of the model." He accuses me of having fallen into the trap of saying that bad surface finish slows up a model—I repeat that it does ! !

There is no need to introduce equations, formulas, etc. A little practical pondering will dispel Mr. Chandler's curious argument. Why do the latest jet-engined super speed craft go to enormous trouble to get a " tremendous " finish on their fuselages and wings ? Because any bad finish will not permit these aircraft to fly near the speed of sound ! Has Mr. Chandler examined the D.H. Tailless jet " Swallow " or the latest " Supermarine " jet fighter—if not, he should do so, and then he will not suggest that finish has no effect upon speed.

I happen to have a second hobby other than model aeroplanes—I go in for full-sized keel boat racing in a one design class. The greatest care is lavished on the hull bottoms of our boats because we know from *hard experience* that as our boats are all of one shape, if we allow our boat bottoms to become even slightly dirty and not really shiny and smooth we just drop hopelessly behind in any race with our fellow boats.

No!—surface friction due to a poor or rough finish definitely does reduce speed of objects flying through the air or passing through the denser medium of water and no amount of calculation will even remotely convince practical designers otherwise. I fear I did not even attempt the labour of reading Mr. Chandler's figures.

Bournemouth. C. E. BOWDEN.

DEAR SIR,

In July, 1946, the A.B.A. Gala Day was held at Eaton Bray, during the course of which W/O Lamb of R.A.F. Mildenhall won the Elite Trophy in the Sailplane and Glider Competition.

It is now time for this trophy to be returned to the A.B.A., and efforts to trace W/O Lamb have been unsuccessful. I would therefore be grateful to have this letter published in the hopes that should W/O Lamb read it, he will return the trophy to me. If anyone seeing this letter can give me the service number and present whereabouts of W/O Lamb, I shall be most grateful to hear from them.

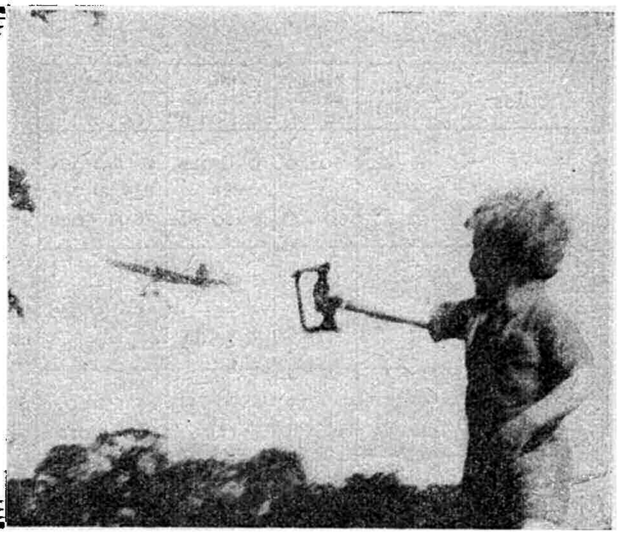
MISS M. KEYWORTH
(Secretary).

The Association of British Aeromodellers,
70, London Road,
Leicester.

RON WARRING WRITES SOME

CONTROL-LINE *Notes*

AS GUEST CONTROL-LINE EXPERT



There's nothing like getting them young. Just to prove how easy it all is here is Ron Warring Junior—age nearly three !—competently flying his father's Mills powered trainer without parental aid other than benevolent supervision.

FOR the sheer sport of flying a petrol model, controllining is going to be difficult to beat, with the very special advantage that it needs only limited space, and you do not have to hike miles to bring the model back after each flight.

Now according to reports and rumours it would appear that a lot of people in this country have done control line flying, but when it comes to really finding out what they *have* done, it is quite a different story. It would appear that whilst quite a number of modellers have made some attempt at it, the majority have had little or no success.

Having started right from the beginning—after reading all about it in American model magazines for the past six years—the writer can understand why—and sympathise. In fact, until very recently nothing which really dealt with the fundamental problem from the beginner's angle had appeared in print. Most of the American beginners graduated through the teaching of someone who could fly a control line model—a very different matter from teaching yourself as you go along.

Quite the commonest fault—and the one producing a most demoralising effect on the flier—is for the model, on its first test flight to take off, climb at a terrific rate with the line slackening off, over in an arc to hurtle down to earth with a most impressive crash. That, at least, was my own first U-control flight over a year ago . . . and the second. And nothing in the American magazines told me what was wrong !

There is one primary rule for control line flying which must always be observed, namely—*the centre of the gravity must be well forward,* i.e. *somewhere between 25 per cent. of the chord and the leading edge of the wing.* A model with the C. G. near the leading edge is pretty safe. It will trim nose heavy, but never attempt to climb if the lines slacken. It is the ideal trim to start you controlline flying with.

A nose-heavy model will also tend to pull outwards all the time and keep the lines taut. To assist this the rudder may also be offset against the direction of circle. This is not always necessary, but it is a wise precaution for beginners and when a new model is undergoing its first flights.

Torque has little effect. The thrust line should line up with the centre line of the model. Sidethrust *with* the direction of circle must be avoided as the model will tend to come in and slacken the lines at the top of a wing-over. Sidethrust against the direction of turn is unnecessary and, if excessive, may stall the model on top of a wing-over. It is immaterial whether the model circles with torque or against torque. An anti-clockwise circuit is generally more convenient to handle for a right-handed person.

A second consideration is power. A *lot* of power is required for successful control line flying, allied with a fairly high wing loading. Most diesels show up badly, for they lack that excess of power so necessary for manœuvres other than simple dives and zooms. This is less obvious if the loading is reduced, but a lightly loaded model (below 10 ounces per 100 sq. inches) tends to soar when turning into even the slightest wind and is difficult to control. Lightly loaded models, too, will only handle very light lines of short or moderate length. The optimum loading is about 15 ounces per 100 sq. inches.

A different propeller is generally required to that specified for the particular motor. One of smaller diameter and greater pitch is needed since the flying speed of the model is considerably greater than that for free flight. Knowing the speed of the motor, the pro-

TABLE I.

APPROX. STRENGTH OF STEEL WIRES.

S.W.G.	NOMINAL DIAM. (INS)	BREAKING STRAIN. (LBS)
22	·028	150
24	·022	90
26	·018	60
28	·014	38
30	·012	26
33	·010	18

TABLE II

CLASS.	SPAN (INS.)	WING AREA. (SQ INS.)	WING LOADING. (OZS/100 □")	POWER LOADING. (C.C./OZ.)
I MOTORS UP TO 2·5 CC CAPACITY.	16-22 20-25	50-70 60-100	10-12 OZS PER 100 SQ INS.	AT LEAST 1CC PER 10 OZS TOTAL WEIGHT
II MOTORS 2·5-5 CC CAPACITY.	26-34	100-150	12-15 OZS PER 100 SQ INS.	1·5 PER 10 OZS. TOTAL WEIGHT.
III MOTORS 5-10 CC CAPACITY.	36-44	140-180	15-20 OZS PER. 100 SQ INS.	1·5 TO 2 CC PER 10 OZS. TOTAL WEIGHT.

NOTE. CLASSIFICATION FOR DIESEL & PETROL MOTORS.

AMERICAN CONTROL LINE CLASSES.

CLASS I	MOTORS UP TO ·10 CU. INS. DISPLACEMENT.	
" II	MOTORS ·10 CU. INS. TO ·20 CU. INS.	"
" III	" ·20 CU. INS. TO ·30 CU. INS.	"
" IV	" ·30 CU. INS. TO ·40 CU. INS.	"
" V	" ·40 CU. INS. TO ·50 CU. INS.	"
" VI	" ·50 CU. INS. TO ·70 CU. INS.	"

peller can be checked by timing the model over a number of circuits and finding its actual flying speed. Elementary mathematics will then give the required rate of advance per revolution of the propeller. Adding about 40 per cent. of this on will give the geometric pitch required. If more speed is required, the propeller pitch must be increased, or the motor speed increased, or both. One can design a propeller for a control line model far more accurately than for a free flight model.

As yet there are no classes for control-line models recognised by the S.M.A.E., nor has any ruling been given on strength and length of lines, etc., but some form of standardisation is needed *in the initial stages of the movement* and since a mile length has a definite significance as regards speed and distance flown it would seem logical to arrange line length so that each flight circuit is a definite fraction of one mile. Also experience has shown that there are maximum optimum lengths of line for particular sizes of models. A line length in excess of this optimum leads to a tapering off of control, or, carried to extremes, the model is eventually "free-flying" with one line partially taut and the other quite slack.

TABLE III

CLASS	LENGTH OF LINE	
	STUNT FLYING.	MAX. CONSISTENT WITH FULL CONTROL.
I	25-30 FT.	40-45 FT.
II	35-40 FT.	60 FT.
III	50-60 FT.	80 FT.

Line strength is a matter of some importance from the safety point of view and reaches particular importance in speed models. The normal maximum pull on the lines in steady horizontal circling flight is given by

$$\text{Pull (in lbs.)} = \frac{\text{Weight} \times (\text{speed})^2}{500 \times \text{Radius of circle}}$$

Where weight is in *ounces*

Speed is in ft. per sec.

Radius of circle = distance (in feet) from handle to centre line of model.

Provided the model is flying with equal tension on both lines, each line is carrying half this load, but there are frequently times when one line may be carrying all the load.

For sport flying a safety factor of 6 is recommended for small and medium models, increasing to 10 for large, powerful models. On speed models it is recommended that these values be again doubled.

Ordinary fishing line is generally quite suitable for small and medium models, but large models should be flown exclusively on steel lines. But do not make the mistake of flying on heavy gauge steel lines—this only adds unnecessary weight and drag.

To get the best results I would recommend that the modeller works out the pull on the lines from the formula above, multiplies by the required safety factor and then selects his lines. Fishing line is readily available with a breaking strain of various figures up to 25 lbs. (Above that the lines tend to become rather heavy and offer large drag.) Comparative strength data for good quality steel wire is given in the table.

For those modellers who have no idea of how fast their model flies (or will fly) I would recommend that they use the following values :—

Class 1	30 m.p.h.	—	44 feet per second
Class 11	45 m.p.h.	—	66 " " "
Class III	55 m.p.h.	—	81 " " "

(These values are high average figures for "sport" models.)

The desirable characteristics of a control line model proportions are set out in Table II relating power and model size.

Maximum optimum line length for these classes is given in Table III.

For a convenient standard I would recommend that lines be detachable from the model end, the attachment points being a fixed distance from the centre line of the model in all cases. This should be varied with each class to keep attachment points near the wing guide plate to eliminate snagging. Table IV gives suitable line lengths.

As to proportions of the tail surfaces, I would here recommend full scale practice, which works out very well on most models. For a beginning a small elevator area is desirable, but stunt flying demands up to 50 per cent. of the total tail area.

In general, more "up" than "down" movement will be required, the farther forward the C. G. the more noticeable this becomes.

As to range of elevator movement, models will generally fall into two distinct classes. The low-powered jobs with C. G. well forward—a very safe start for beginners—will trim for level flight with slight elevator up. They will normally fly with more tension in the "up" line than the "down" line. A high-powered fast-moving model must be flown with equal tension in each line for quick, positive response to control handle movement. It will therefore be appreciated that the latter model may easily be over-controlled by a relative beginner.

Finally, a word as to the handling of the control handle. The *safest* way of doing this is as shown in Fig. 1, in which the whole arm is moved up and down with no wrist action. This eliminates any tendency to over-control. (This method is advocated for all control-line work by Ron Moulton of the Zombies and one of the few control-line experts in this country.)

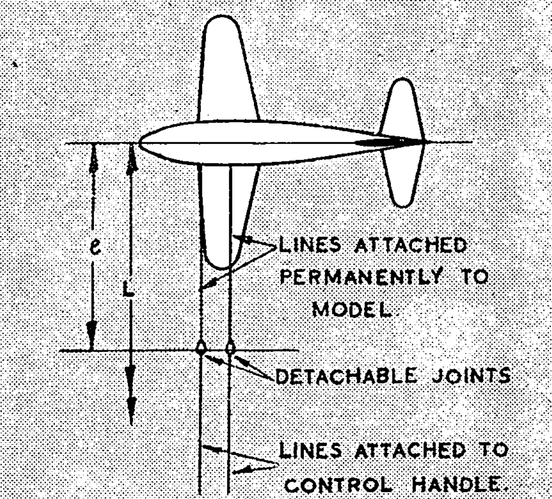
Once familiar with the handling of the model and its response to control movement, forearm action may be employed—finally a combination of wrist and forearm action. The latter produces instantaneous response on many models and may easily result in over-control—often leading to loss of control ! So approach it steadily, starting with full-arm action only.

If you find that you are getting giddy during a control line flight it is because you are not concentrating your sight *entirely on the model.* A close background is particularly distracting, but if you concentrate *entirely* on the model any sensation of getting giddy will disappear. This effect, I have found, is most marked when flying in poor light—*e.g.* late evening, nearly dark—when the model tends to merge into the background.

Control line flying is relatively easy—once the basic trim and principle of control has been correctly established. Even with a fast model the operator (or "pilot") has plenty of time to think and judge the best position for any manœuvre. The spectator gets a far more impressive view of the flight than the pilot, for an onlooker sees the real speed of the model (to the pilot the speed of flight appears fairly slow for he is turning round with the model all the time) and hears a definite change in engine noise as the model continually approaches him and recedes from him (the pilot hears only a constant motor note, being always equidistant from the model). And control-line models can be flown in gusty winds with success.

TABLE IV.

RECOMMENDED LINE LENGTHS.



CLASS I ℓ = 14'. CLASS II ℓ = 18'. CLASS III ℓ = 24'.

CLASS.	LINE LENGTH (L) (TO ℄ OF MODEL.) ACTUAL LENGTH $RQ^{D} = L-\ell$	LAPS PER MILE.
I	35 FT.	24
II	52·5 FT.	16
III	70 FT.	12

CONTROL-LINE NOTES — APPENDIX

WING LOADING

Stunt Models. For a reasonable range of aerobatics the model must be quite light—recommended figures being 8 to 10 ounces per 100 sq. ins. wing area. Reasonable power is required, but light wing loading is more important than high power loading.

Looping radius is determined primarily by wing loading the lighter the loading the smaller the radius of loop. With heavily loaded models the length of line necessary to accommodate the radius of loop may be prohibitive.

Speed Models. Recommended wing loading is 20 ounces per 100 sq. ins. The greater the power then used the greater the potential speed.

Sports Models: These may be generally classified as speed model types—loading 16-20 ounces per 100 sq. ins.—with moderate power loading.

ASPECT RATIO

Sports models—6:1. Speed models—5:1. Stunt models—8:1.

AEROFOIL SECTION

Bi-convex section, or section with flat undersurface generally recommended. Speed and sport models have thin wings. Stunt models require sections with a thickness/chord ratio of approximately 12% minimum. A symmetrical section is good; also such sections as M-6.

TAIL MOMENT

Speed models – long tail moment – approx. equal to span. Stunt models – short tail moment – 1½ to 2 times wing chord.

TAILPLANE AND ELEVATOR AREA

Total area of horizontal surfaces approximately 25% of the wing area. Elevator area – speed models – 15% total ; sport models – 25 to 40% total ; stunt models – 40 to 50% total.

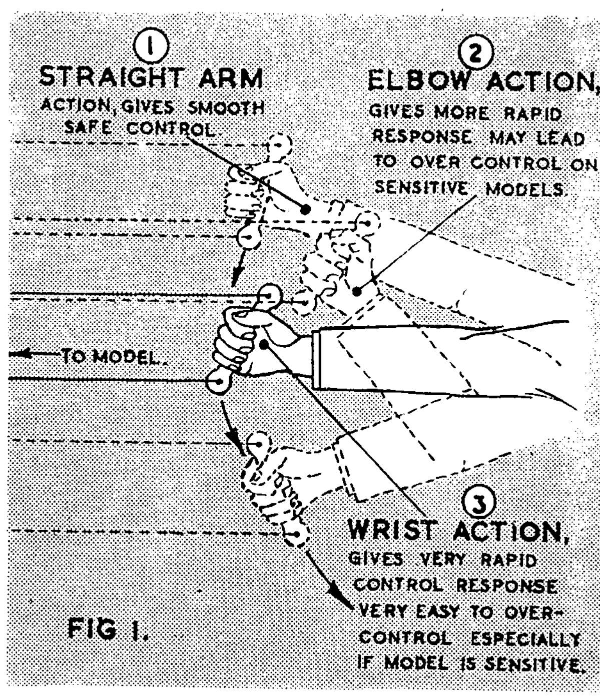


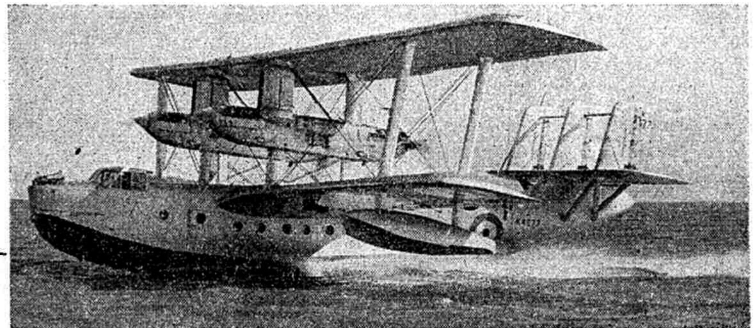
FIG 1.

AIRCRAFT IN MINIATURE

By W. O. DOYLEND

PART VI

HULLS & FLOATS



Flight Photo.

A fine action picture of the Short Singapore III, discussed by the author as a suitable model prototype.

FLYING boats and seaplanes possess a certain fascination that is entirely their own and scale models of practically any types of such aircraft are most pleasing in appearance and make excellent show pieces.

Unfortunately this type of craft introduces many difficulties for the modeller and therefore it is advisable to leave them severely alone until sufficient experience has been obtained on landplane types both small and large.

When the modeller feels confident that he can tackle a flying boat model, he should choose a simple type and one having as few unusual characteristics as possible. The Saro " Cloud " is a good type to commence on, although, being an amphibian, the wheel undercarriage may present difficulties. If several large landplane models have already been built, the Saro " Lerwick " should provide a good starting point.

Hulls.

The main difference and also difficulties will lay in the shaping of the hulls of these models. But here again, if the modeller works to a definite sequence of shaping, these difficulties will be minimised to a large extent.

To begin with, a block of wood is cut slightly larger than the overall dimensions of the hull and then planed down to the exact width of the widest part.

The side elevation is then plotted on both sides of the block, using, as in all models, some suitable datum line from which to take all measurements.

The first operation is to carve the side elevation. In the case of landplanes we have found that this can easily be done by planing or chiselling off the surplus wood. But when we are concerned with flying boats, which have in most cases raised sterns with concave as well as convex curves, some other method must be used.

Let us take as an example, the hull of the Short " Singapore III " flying boat and follow the sequence of shaping through step by step.

This type is a particularly difficult one from a modelling point of view and a discussion of its construction should cover the majority of problems one might ever come up against in flying boat work.

Having plotted the outline of the side elevation on our block, we find that there is a large amount of surplus wood under the bow and stern. This is first cut off with a saw.

Vertical saw cuts are made with a tenon saw at short intervals in the wood to be removed. The cuts should extend to within a fraction of an inch of the hull outline. The wood can then be removed, section by section, using a chisel and mallet as illustrated in Fig. 1. This will leave a small margin of surplus wood around the hull outline, which must now be removed until the required shape has been obtained. For this operation a spoke-shave will be most useful for scraping out the " inside " or concave curves just ahead of the raised stern on the top surface and just aft of the rear step on the under surface, the final cleaning down being carried out by means of a half round file and sandpaper. A sanding block utilising a circular piece of wood is useful for the final cleaning down.

The " outside " or convex curves under the stern and the forward planing bottom can be shaped in the normal way using a small plane or broad chisel. Our block now appears as in Fig. 2.

In this illustration the pilots' cabin has been left on the block as it would be for a solid cabin, but if it is intended to hollow out this part and build up the cabin with celluloid windscreens, the top line of the hull should be taken right through and the projection cut off.

The plan is now plotted on both upper and lower surfaces making use of a centre line for all measurements.

In shaping the plan form we come up against our biggest difficulty, which is the representation of the flared sides or " chines " as they are termed. A glance at Fig. 4 which shows a cross section of the " Singapore III " hull will illustate this.

When we have marked out the plan on our block, the outlines will be as shown in Fig. 3. To clarify this illustration the side elevation has been included so that the positions of the various lines may be fixed and the following explanation will help to simplify the rather complicated mass of lines.

Top surface. The lines on each side nearest the centre line are those of the top of the hull in the cross section taken at AA and illustrated in Fig. 4. The next pair of lines indicate the approximate position of the flare in Fig. 4. This line can only be approximate since it denotes the curve of the flare. The outer pair of lines extending to the edges of the block are the extremities of the chines, in Fig. 4.

Under surface. The lines on the forward portion of the block are the edges of the chines. The inner pair of lines aft of the front step show the edges of the rear planing bottom, and the outer pair, the sides of the after part of the hull proper. It will be noticed that aft of the main step, the planing bottom is narrower than the actual hull. Fig. 5, which is a cross section taken at BB illustrates this clearly in Fig. 3.

To proceed with the shaping. The plan form is now carved out of the block. That is, all the surplus wood outside the outermost lines of the top surface plan is removed, keeping the sides of the hull at right angles to the top and bottom. For much of this work a plane can be used, but a chisel and file will be needed for the point where the chines join the after part of the hull. Here again the " section " cutting method may be employed. This process will reduce the hull to the " cubist " form shown in Fig. 6.

The next stage of the work consists of the shaping of the top surface in which is included the sides down to the line of the chines.

Reference to Fig. 4 will show that most of the work will consist of removing wood to form the sloping sides and the flare out to the edges of the chines. In this part of the work the importance of obtaining the correct cross section will be realised and the use of templates to check the section will be necessary. If the drawings do not give cross sections it will be a fairly simple matter for the advanced modeller to draw these sections himself.

Commence this stage by carefully paring the wood from the upper portion of the hull sides until they slope inwards from the chine line to the line of the top of the hull. This will give an exaggerated slope to the hull sides as shown in Fig. 7. Owing to the curve of the line of the chines in side elevation, this work will have to be carried out with a chisel or file and care must be taken to leave this chine line clearly marked in. The next process is to further reduce the slope of the hull side to obtain the curved flare as shown by the inner lines in Fig. 7. For this a chisel can be used on the upper portion of the hull side, but for the actual flares themselves a gouge will have to be used. The direction of all cuts with the chisel or gouge must, as always, be from the widest towards the narrowest portion. Never make chisel cuts from the top of the hull downwards.

The upper surface of the portion of the hull aft of the main step should be rounded to shape down to about the half way point, the curve in to the rear planing bottom being left until the shaping of the under surface is carried out. The rounding of the top surface can be carried up to the tail plane seating of the raised stern.

At this stage the hollowing out of cockpits and cabins should be done. By doing the job before the shaping of the under surface, there is no danger of damaging the keel or planing bottom in the process. In the case of the " Singapore III," the cockpits to be cut are the bow, midships and stern gun positions and the pilots' cabin if this is to be of the built up variety. Care is needed in cutting the bow and stern gun positions as these come close to the sides of the hull.

We may now turn our attention to the shaping of the under surface and our first operation will be the cutting of the two steps.

With most flying boat types it will be found that the main step will be V-shaped with the point of the V lying on the centre line and the arms raked forward as shown in the underside drawing in Fig. 3.

The step is plainly marked on the block and then saw cuts made along the arms with a tenon saw. The cut should be shallowest at the keel and gradually deepened towards the sides of the hull where it meets the line of the chines of the rear planing bottom. Reference to the side elevation in Fig. 3 will make this clear.

The rear step is usually a straight line running athwartships, and here again the saw cut should be made shallow at the keel and deep at each outside end. In some types, as on the " Sunderland," the aft planing bottom is curved in sharply in plan and the rear step then becomes a vertical knife edge.

The final stage of shaping the planing bottom can now be carried out. For this work, two or three gouges of different sizes will be required and the hull should be held upside down in a vice for working. The forward planing bottom, that is the portion between the main step and the bows should be shaped first, preferably working from the step towards the bows. For the broadest part of the planing bottom select a fairly broad gouge, reducing the gouge sizes as the shaping nears the bows. Care must be taken not to cut into the keel line which should be plainly marked with a fairly thick pencil line. The curve of the planing bottom extends from the keel outwards to the line of the chines which should also be plainly marked. This curve should be fairly shallow and the keel itself is a blunt point rather than a thin sharp edge.

The rear planing bottom comes next, but before shaping the V-bottom, the lower portion of the hull sides should be shaped in to the narrower chines, a small gouge being used. See Fig. 5.

The planing bottom should be shaped with forward strokes of the gouge, and a " clean " junction with the main step must be obtained. The curve of this rear planing bottom is even more shallow than the forward one, and the keel line must again be preserved undamaged. Finally, the under surface of the hull aft of the rear step is finished off. Here the keel disappears and the section is roughly circular tapering up to the point of the stern.

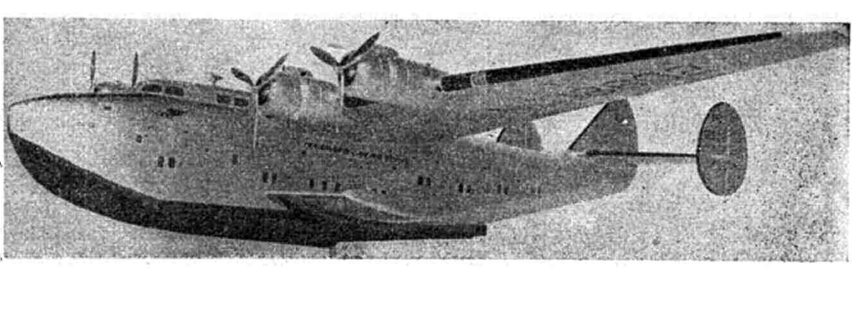
The hull is now complete and all surfaces should be smoothed off with a fine grade sandpaper, still taking care not to damage or alter the chines or keel line in the process. The usual method of wrapping a sheet of sandpaper round a piece of wood of circular section will be found invaluable here.

Subsequent working on the model, such as the fitting of main planes and tail plane may easily result in damage to the keel and chines, and it is advisable, when the hull has been completed, to make a cradle on which it can stand and which will protect the vulnerable portions of the hull.

A suitable cradle can easily be made from a few odd scraps of wood in the form shown in Fig. 8. The two Vees are cut approximately to the shape of the planing bottom and are then spaced by a strip cut to the desired length and fixed with small panel pins. When the hull is placed on the cradle, padding, such as a small piece of rag or strip of rubber can be inserted between the hull and cradle to further minimise any possible damage.

Incidentally, an elaborated form of such a cradle serves as an excellent stand for the completed model.

The correct shaping of the bows often causes a few headaches, although there is little in it to cause concern. The main source of trouble lies in the junction of the hull bows with the chines and planing bottom. The exact form of this junction will, of course, depend upon the



Another of Mons. Anton Huber's precision models. This Boeing 314 " Atlanticlipper " provides a modern contrast to the old timer heading the article.

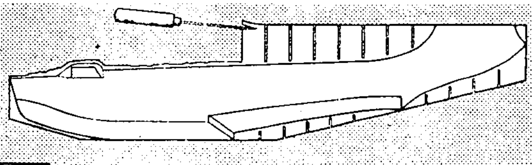


FIG. 1. METHOD OF ROUGH SHAPING A HULL.

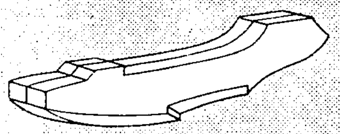


FIG. 2. FIRST STAGE IN HULL SHAPING

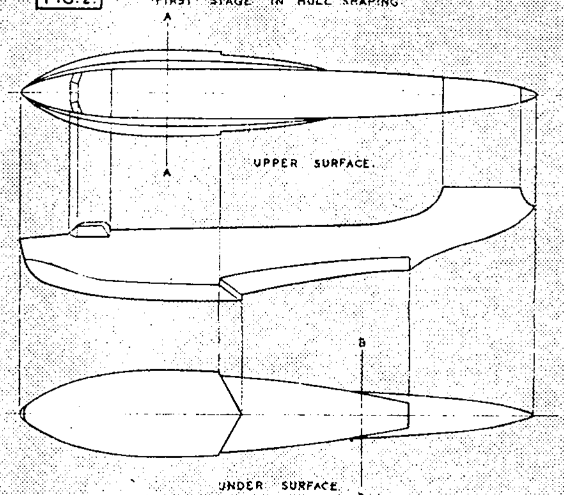


FIG. 3. HULL OF SHORT SINGAPORE III.

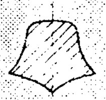


FIG. 4. SECTION A A.

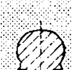


FIG. 5. SECTION B B.

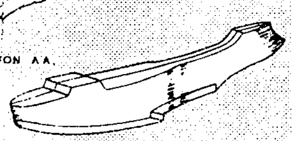


FIG. 6. SECOND STAGE IN HULL SHAPING.

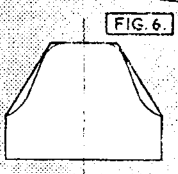


FIG. 7. FIRST STAGE IN SHAPING FLARED CHINES.

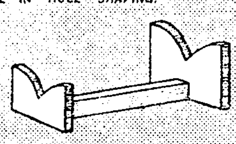


FIG. 8. CRADLE FOR FLYING BOAT HULLS.

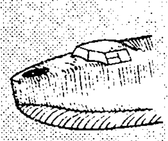


FIG. 9. BOW SHAPING OF HULL.

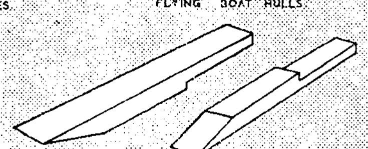


FIG. 10. TYPICAL EARLY TYPE FLOATS

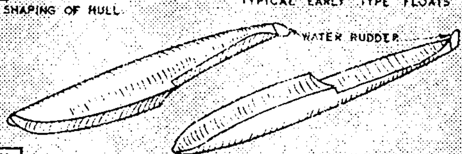


FIG. 11. TYPICAL MODERN TYPE FLOATS.

type of flying boat which is being modelled. In the "Singapore III," the bows above the chines are rounded off in plan to take the gunner's cockpit and the chines and keel sweep up to merge into the curve of the bows as shown in Fig 9.

As has already been mentioned the "Singapore III" hull with its flared chines, forward and after planing bottoms, V-shaped main step and upswept stern is one of the most involved types that the modeller may ever come across. In many cases the hull shape will be much more simple and a type that has no flare, such as the "Sunderland" and "Catalina," will present little greater difficulty than a large fuselage. The carving of a hull will normally take a good deal more time and patience than the shaping of a fuselage of comparable size, but the satisfaction felt when the model is finished will be well worth the additional time and trouble that it has involved.

Floats.

The sequence of shaping a seaplane or wing tip float is exactly the same as for a hull, but the whole job is much more simple to execute. For one thing, flared chines will not be encountered on floats.

In the case of floats for early types of seaplanes, the work is entirely straightforward, since these floats were always of rectangular form having flat planing bottoms with straight steps and no keels or chines and the forward part of the underside was invariably a straight slope up to the top surface, the nose of the float being a horizontal knife edge as shown in Fig. 10.

The modern type of float usually consists of a keel and plain chines, straight step, forward and aft V-planing bottoms, rounded top and bows and a stern tapering to a vertical knife edge, sometimes termed the "heel." See Fig. 11.

The work is commenced by planing a block for each float down to the correct depth and width and then plotting the side elevation and carving to shape. The top and bottom plan is then marked on and all surplus wood again removed, re-marking the lines of the chines after this operation.

The top of the float is then rounded down to the chines and finally the step is cut and the planing bottoms shaped. Notice that the keel of the float run throughout the entire length. The increased depth of the V-bottom towards the heel of the float should be noted and carefully copied.

Some floats are fitted with small water rudders (which are connected to the rudder bar in the pilot's cockpit) to facilitate handling of the seaplane on the water. These are best reproduced by cutting the shapes out of thin metal and fitting them into vertical slots cut into the heel of the float.

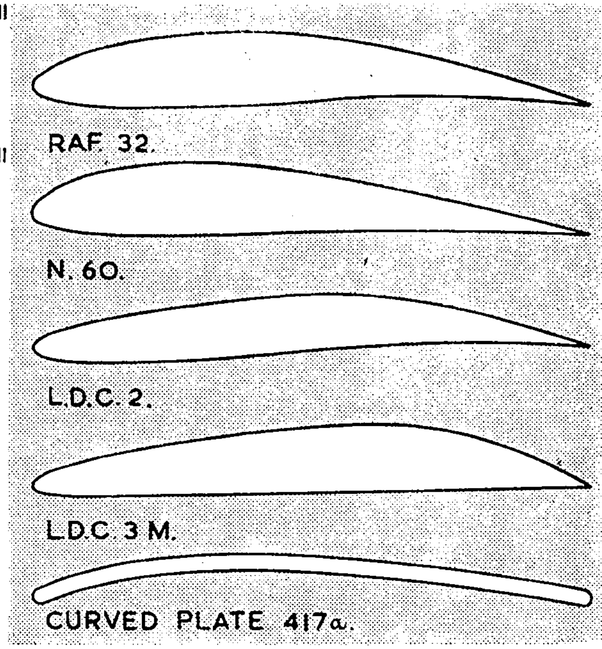
As with the flying boat hull, cradles should be made to support the completed floats. These cradles can be so made that they will hold the floats at the correct track, or distance apart and used as a jig for the assembling of the spreader bars and undercarriage struts.

Wing tip floats for flying boats are made in the same way as seaplane main floats. The only differences being in size and relative proportions, wing tip floats being much shorter and more "tubby" in appearance, but still having V-shaped planing bottoms and a single step.

It is advisable to construct main floats and wing tip floats in pairs, each sequence of shaping being carried out on both floats before proceeding to the next stage. In this way it will be much more easy to produce two identical floats than if one were completely finished before the other is commenced. *(To be continued.)*

FACTUALITIES

PART II BY JOHN HALIFAX



NO " practical " modeller, however much in favour of trial and error he is, will attempt to deny that wing sections are important. Thus I have selected the best sections known to us to-day for use in different classes of models, and I trust they will prove of value to modellers who " design " their machines the " practical " way.

R.A.F. 32. This is one of the most popular sections in use to-day—and deservedly so, for it has a better performance than any of sections in general use before the inauguration of the " laminar flow revolution ". For large models it is excellent.

N.60. Possessing a good all-round performance when used in a large model, this section is beloved by theorists because of the mass of accurate data compiled on it by the German worker F. W. Schmitz.

L.D.C.2. First of the revolutionary " laminar flow " sections developed by the L.S.A.R.A., under the direction of N. K. Walker B.Sc., and R. H. W. Annenburg B.Sc., the performance of L.D.C.2 is remarkable when used on a small or medium sized model. With a power model it should be kept out of the slip-stream as far as possible.

L.D.C.3M. This possesses very obvious structural advantages over L.D.C.2, at the expense of a slight reduction in performance. Of both, three important points should be noted:

1. Both sections may be used on large models, although their general superiority over ordinary sections is not then so marked. The drag is lower, but so unfortunately is the maximum lift.
2. A thin wake of turbulent air is present behind the wing during flight, in which the average air speed is half that of the surrounding air. Thus, the tailplane should be kept well above its upper limit—given approximately by a line drawn from the highest point of the aerofoil, parallel to the airflow.
3. It is essential that the wing be built as accuratley as possible if consistent results are to be obtained. The L.S.A.R.A. recommends that 1/16 in. square riblets be placed under the upper surface with a spacing equal to 15% of the chord, in addition to the normal wing structure.

Curved Plate 417a, This is particularly useful for small machines as it lends itself to easy fabrication from sheet wood. In small and medium sized models its performance is superior to any of the old fashioned " orthodox " sections.

R.A.F. 32.

STATION	0	1·25	2·5	5·0	10	15	20	30	40	50	60	70	80	90	95	100
UPPER	3·42	5·56	6·52	7·84	9·72	11·02	11·92	12·98	13·1	12·46	11·06	9·1	6·56	3·6	1·98	0·12
LOWER	3·42	1·96	1·5	0·88	0·3	0·08	0·0	0·3	0·7	1·1	1·46	1·6	1·46	0·92	0·52	0·12

N. 60.

STATION ...	0	1·25	2·5	5	10	15	20	30	40	50	60	70	80	90	95	100
UPPER	3·4	5·6	6·76	8·24	10·14	11·32	11·98	12·41	12·03	11·06	9·55	7·66	5·5	3·04	1·72	0·4
LOWER	3·4	1·91	1·46	0·96	0·4	0·15	0·04	0·04	0·22	0·48	0·71	0·78	0·64	0·37	0·19	0

L.D.C.2.

STATION	0	2·5	5	10	15	20	25	30	40	50	55	60	70	80	85	90	95	100
UPPER	0	2·2	3·0	4·75	5·5	6·35	7·1	7·65	8·75	9·45	9·5	9·45	8·5	6·4	5·0	3·5	1·8	0
LOWER	0	–2	–2·45	–2·65	–2·7	–2·6	–2·35	–1·9	–1·2	–0·45	+·05	0·2	0·35	1·1	1·05	0·9	0·5	0

L.D.C. 3M.

STATION	0	2·5	5	10	15	20	25	30	40	50	60	70	80	85	90	95	100
UPPER	0	2·7	3·55	4·9	6·0	6·95	7·75	8·65	10·0	11·05	11·45	10·45	9·05	7·45	5·4	2·95	0
LOWER	0	–1·7	–1·9	–1·8	–1·7	–1·6	–1·5	–1·4	–1·2	–1·0	–0·8	–0·6	–0·4	–0·3	–0·2	–0·1	0

CURVED PLATE 417a.

STATION	0	1·25	2·5	5	7·5	10	15	20	30	40	50	60	70	80	90	95	100
UPPER	1·45	3·0	3·65	4·7	5·6	6·3	7·15	7·75	8·6	8·8	8·45	7·89	6·9	5·7	4·25	3·55	1·45
LOWER	1·45	0·05	0·45	1·55	2·5	3·3	4·2	4·85	5·7	5·9	5·55	4·95	4·0	2·8	1·3	0·6	1·45

Purist's Plea

BY STANHOPE KENNY

Illustrating Mr. Kenny's point of view is this Frog 45, built by Mr. P. Hawkings of Christchurch, a near scale and well proportioned model of 45" span. The lower photograph, demonstrating the opposite side of the fence, a pylon of pylons with its owner M. Manka of Czechoslovakia.

THE Contest and Picasso wallahs having had a jolly good innings on the petrol-soaked pitch, may I plead that the Purist is worthy of a place in the team—even if he is only allowed in eighth wicket down ?

The model aeroplane world is littered with extraordinary contraptions of every shape and size which their designers call Aeroplanes. True, they have wings, wheels, and propellers as guides to identification, but there the resemblance to any normal aircraft, living or dead, comes to an end. Many of these models rush through the air with cylinders the size of 9-gallon firkins protruding through the top of the engine cowling ; and if you ask the designer of one of these flying breweries what lies behind the peculiar placing of the engine, he'll tell you he hasn't got the remotest idea.

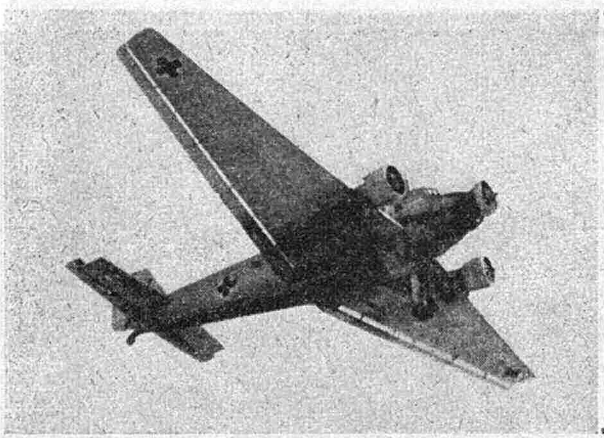
But Time marches on ; and as it goes it waves its hands to Progress, passing rapidly in the reverse direction. One of our brightest designers decided that the time had come to save the wretched pilot from having to peer through the cooling-fins and becoming parboiled in the process. The problem must have been a knotty one, for the method of its solving seems to indicate that the solver has a few half-hitches in his brain. He has inverted the engine, and given the cabin of his monoplane *no front window* ! This solution must have taken years to figure out—it is staggering in its simplicity, and dreadful to behold.

In the bad old pre-war days most designers were agreed that three wheels were the normal wear—a concession to normality which stuck in their gullets. But with the resurgence of Picasso tail-wheels went to the wall, and Johnny Zero now does his three-pointers on the unsprung bottom of his stabiliser. Good show ! But the pursuit of the unrealistic goes on apace. Gone is the pilot (he was a damned nuisance anyway), and gone is the cosy little cabin (from which he could never see out). To-day we have an attenuated diesel leaning (just like any G.I. Joe) against a pylon, and a stick brings up the rear ; two wheeled prongs keep the whole from contaminating God's good earth. The next step is regrettably obvious : Remove the diesel, and substitute for the stick an impulse duct motor. Fellow-purists are warned to look out for (or look away from !) it in 1948.

Finally a few words of supplication to the designer who has realistic modelling at heart. There are a few—alas ! too few—really beautiful and life-like models in existence in this country. They are for the most part in the 5-8 feet span category and require 4-10 c.c. engines ; and for these reasons they are expensive to make. Could not a series of 40" span models be designed for the impecunious purists who wish to enter the petrol/ether world, and who long to build and fly something which is true-to-life, cheap, simple to construct, and immensely robust?

The writer, in an endeavour to practise what he preaches, has devised a simple method of building a Piper Cub. It is fully planked-over, spans 44", weighs 1½ lbs., and costs (with dopes and 1·3 Mills diesel) less than £7. It is extremely robust.

Will our leading designers please Go To It ?



MONTHLY MEMORANDA

BY O. G. THETFORD

SWORDS INTO PLOUGHSHARES: A French-manufactured Junkers Ju 52 3 of the French Red Cross bearing the International Red Cross insignia. The aircraft was photographed at Delhi, India, where it is a regular visitor. (Photo: G. A. Cull.)

New Stars for B.S.A.A.C.

Four Avro Tudor IV 32-seater airliners are to join British South American Airways Corporation. The Tudor IV, illustrated opposite, is generally similar to the Tudor I but has a lengthened fuselage to accommodate the additional passengers, though it is not so long as that of the Tudor II. The Tudor IV has the extended inner motor nacelles and the revised fin and rudder now common to the entire Tudor range.

The prototype Tudor IV, registered G-AHNJ, made its first flight on 9th April, 1947, and on joining B.S.A.A.C. will be named "Star Lion". Second and third Tudor IV airliners will be respectively G-AHNK "Star Tiger" and G-AHNP "Star Panther".

Military Newcomers.

In recent months a whole crop of new British military prototypes has made an appearance, including types from Blackburn, Boulton Paul, De Havilland, Saunders-Roe and Westland.

The Blackburn S. 28/43 Firecrest is a single-seat deck-landing strike craft for Naval Aviation. It is generally similar to the Firebrand, but a radically new feature includes a laminar-flow wing in an inverted gull section, similar to that of the American Vought Corsair. The wings fold upwards and are power-operated. The Firecrest is fitted with a Bristol Centaurus 59 radial motor and details of performance are at present restricted. Design work on the Firecrest was commenced in October, 1943, and the first flight took place in March, 1947. The prototype Firecrest has standard Naval camouflage and displays the serial number RT 651 beneath the wings and on the rear fuselage. The prototype "P" appears in yellow just behind the fuselage roundel.

The new Boulton Paul aircraft is the P.108 Balliol designed to Specification T 7/45 as a multi-purpose two-three seat advanced prop-jet trainer for the R.A.F. The Balliol is of all-metal construction with manual-folding outer wings and inwards retracting undercarriage. Span is 39 ft. 4 ins. and length 34 ft. 4 ins. Details of weight and performance are restricted. The ultimate power-plant of the Balliol is to be an Armstrong-Siddeley Mamba or Rolls Royce Dart turbo-prop unit, but for initial flight testing the prototype is at present fitted with a Bristol Mercury 30 radial motor. The first flight was made at Wolverhampton on May 26th, 1947. Painted training yellow, the prototype Balliol is numbered VL 892.

New from De Havillands is the third prototype D.H.-108 Swallow tailless high-speed research aircraft which made its first flight at Hatfield on 24th July, 1947. Numbered VW-120, this aircraft differs from the earlier Swallows, TG-283 and TG-308, in having a revised nose section and cockpit and a slightly modified tail assembly. VW-120 is painted all-silver and is fitted with a boosted D.H. Goblin turbo-jet unit.

First aircraft of its type in the world is the single-seat jet-propelled flying-boat fighter, the SR/A.1, produced by Saunders-Roe Ltd. The SR/A.1 was designed to Specification E. 6/44 and is fitted with two derated Metrovick F. 2/4A axial-flow turbines of 3,300 lb. S.T. each. Two more aircraft of this type are building and will be fitted with two 3,850 lb. S.T. Metrovick Beryl I units. The SR/A.1 is of all metal construction and mounts four 20 mm. cannon in the bows. Span is 46 ft. and length 50 ft. No details of performance are released but the top speed is certainly over 500 m.p.h. The first flight was made at Cowes on 15th July, 1947. The first SR/A.1 has all aluminium finish and standard R.A.F. roundels above and below the wings and on the bows. The serial number TG-263 appears beneath the wings, near the tips, and on the rear of the hull.

The Westland Wyvern is in the same category as the Blackburn Firecrest, but was produced to Specification N.11/44. A single-seat Naval strike fighter, it is fitted with the new 3,500 h.p. Rolls Royce Eagle 22 liquid-cooled 24-cylinder sleeve-valve flat-H motor and a Rotol eight-blade counter rotating airscrew. The Wyvern has a span of 44 ft., a length of 42 ft. 3 ins., a loaded weight of 21,879 lb. and a maximum speed of 456 m.p.h. at 23,000 ft. Four 20 mm. cannon are mounted in the wings and additional armament can include one 20-in. torpedo, a 2,000 lb. bomb or eight 60 lb. rocket-projectiles. One of the purposes of the Wyvern is for the testing of various power-plants suitable for Naval aircraft and it is possible that the new Napier Naiad prop-jet unit will be one of the engines tested in the Wyvern. The prototype Wyvern has a natural metal finish and has the serial number TS-371 beneath the wings and on the rear fuselage. Other markings include the normal roundels, fin flash and prototype "P" on the fuselage.

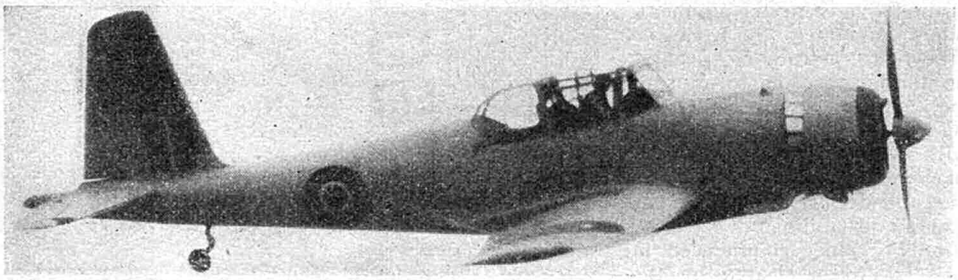
Solent Flying-boats.

Names have now been allocated for the twelve Short Solent (civil Seaford) flying boats building for British Overseas Airways Corporation. The first off the line is *Salisbury*, registered G-AHIL, and the remaining eleven boats will be :— *Sark, Salcombe, Scapa, Scarborough, Stornoway, Severn, Seaforth, Sussex, Solway, Somerset* and *Southsea.*

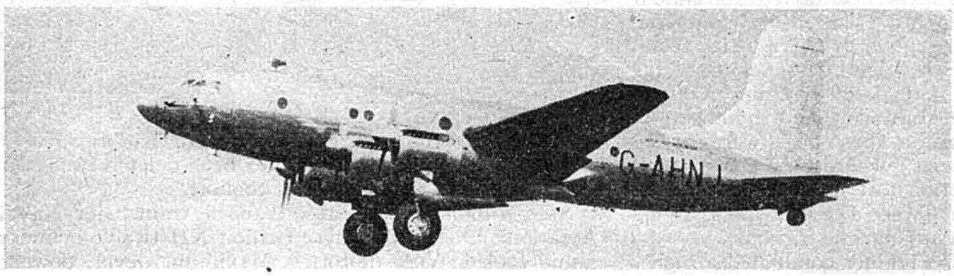
The Solent boats have aluminium finish, the normal registration lettering on wings and hull, the Union Jack across the fin and rudder and the B.O.A.C. "Speedbird" insignia on the bows.

The Miles Merchantman (right) is an all-metal enlarged version of the Aerovan, with double the freight capacity and over three times the power of the earlier machine. Powered by four 250 h.p. Gipsy Queen 30 motors, the M. 71 Merchantman spans 66 ft. 6 ins., has a loaded weight of 13,000 lbs. and a maximum speed of 163 m.p.h. First flight was on August 5.

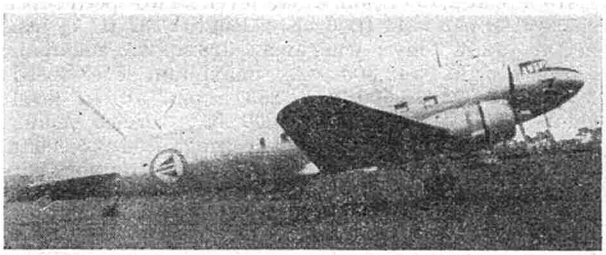
(Below) The Boulton Paul Balliol trainer fitted provisionally with a Bristol Mercury radial.
(*Photo: Central Press*)



(Lower centre): First of four Avro Tudor IV 32-seater airliners for British South American Airways Corporation. The Tudor IV is similar to B.O.A.C.'s Tudor I, but has a fuselage lengthened by six feet. Note the extended inner nacelles, now standard on all Tudors.

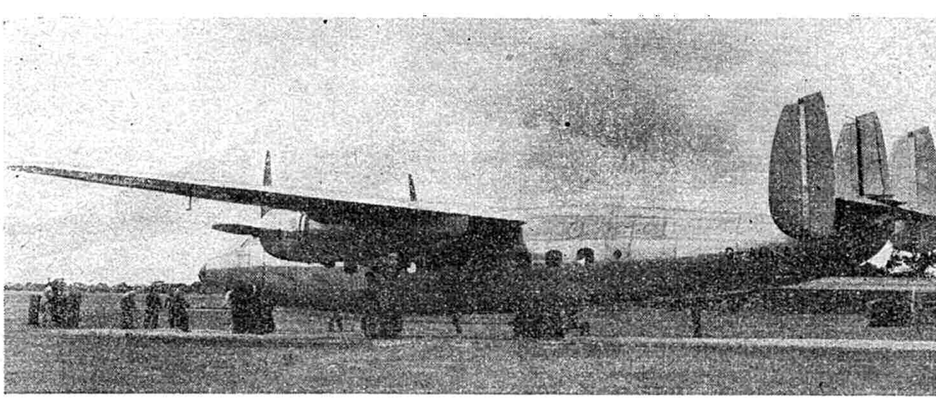


(Below) A Fairey Firefly I bearing the insignia of the Netherlands Navy. Firefly IV aircraft are now also in service and have seen action in the East Indies against the Indonesian forces.



(Above) This quite ordinary photograph of a Douglas Dakota is of special interest because it shows the new Norwegian military insignia on the fuselage. The marking is repeated on the wings.

(Right) The first prototype Airspeed Ambassador, G-AGUA, which made its first flight on 10th July. The Ambassador is all-metal, seats 40 passengers and features a tricycle undercarriage. It is powered by two 2,600 h.p. Bristol Centaurus motors, has a span of 115 ft., a loaded weight of 47,000 lb. and a maximum speed of 355 m.p.h. at 16,500 ft



AEROPLANES DESCRIBED LII
The Fairey
FIREFLY TRAINER

"Flight" Photos.

In much the same category as the Spitfire Trainer, described in the February issue, the new Fairey Firefly Trainer Mk. I is currently in full production for British Naval Aviation at the Stockport factory of Fairey Aviation.

Derived from the war-famous Firefly I two-seat fighter, the Firefly Trainer is designed to provide advanced instruction in operational air tactics peculiar to Naval aviation and deck-flying. It will also serve as a "check-out" aircraft for pilots graduating from primary training aircraft to modern advanced equipment.

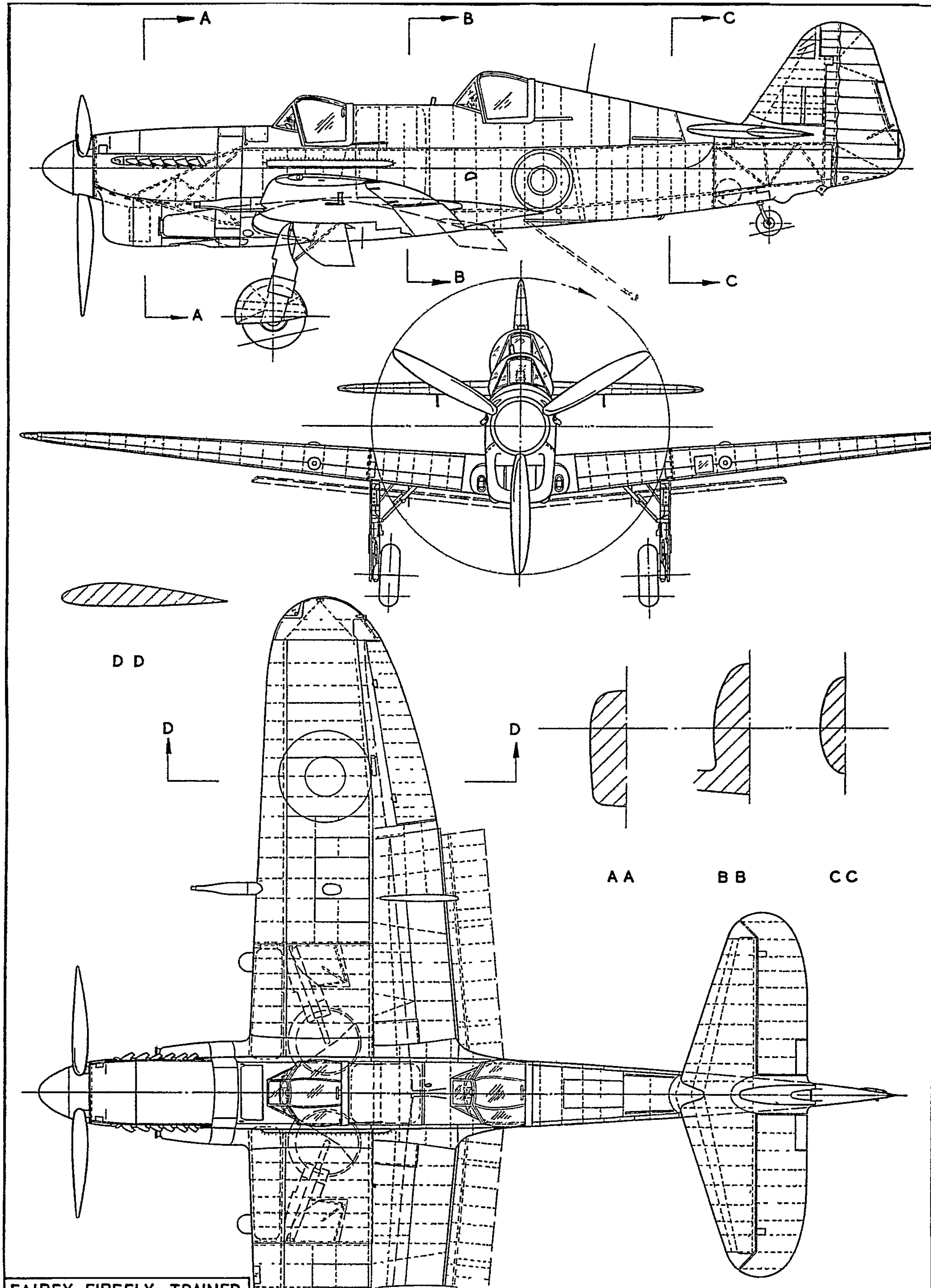
The Firefly Trainer differs fundamentally from the Mk. I fighter in having the rear (instructor's) cockpit raised 12 inches above the normal position, to improve forward vision for landing, and in having only two 20 mm. cannon in the wings instead of four. Naturally, the Trainer is equipped with full dual control, and it is capable of carrying rocket-projectiles or bombs, in addition to which it retains full deck-flying equipment for practice carrier approaches and landings.

Development of the Firefly Trainer commenced in 1946, and early in 1947 it had been cleared by the Aeroplane and Armament Experimental Establishment at Boscombe Down. Further trials were conducted at the Admiralty Flying School, R.N.A.S. Hinstock; the Operational Flying School at Lossiemouth; the Deck-Landing Training and Deck-Landing Control Officer Training Station at Milltown; and the School of Naval Warfare at St. Merryn. These trials were carried out by Mr. Duncan Menzies, of Fairey's Service and Liaison Division. Production test piloting has been in the hands of Lieut. Peter Twiss, D.S.C., who is flying the aircraft in the accompanying illustrations.

Early in 1947, the Firefly Trainer conducted a highly successful tour on the Continent, where it was flown by French test pilots at Les Mureaux, and in Holland by Netherlands Navy pilots at Valkenborg.

When the Firefly Trainer first made its appearance in September, 1946, it was finished aluminium all over, with a black decking along the fuselage from nose to tail. The Fairey experimental number "F.1" appeared in black on the fuselage sides just aft of the rear cockpit. After final acceptance, full Service markings were applied, including roundels and the serial number MB 750. An interesting point is that the familiar fin flash is not carried and in its place is the Fairey insignia. The original prototype carried a mast just forward of the rear cockpit but this has now been deleted in favour of a whip aerial aft of the rear cockpit.

Specification.—Two-seat advanced trainer for Naval Aviation. One Rolls-Royce Griffon XII twelve-cylinder liquid-cooled Vee motor. Maximum level power: 1,815 h.p. at 2,750 r.p.m. at sea level. Two-speed supercharger. Span: 44 ft. 6 ins.; length: 37 ft. 7¼ ins.; height: 13 ft. 7 ins.; wing area: 328 sq. ft.; maximum loaded weight: 12,300 lbs.; maximum level speed: 305 m.p.h. at 16,500 ft.; 283 m.p.h. at sea level; climb: 5.75 minutes to 10,000 ft.; service ceiling: 28,000 ft.; range: 805 miles at cruising speed at 5,000 ft.; take-off run: 116 yards. All-metal construction, with Fairey-Youngman flaps and manual-folding wings. Armament: twin fixed 20 mm. Hispano cannon and provision for rocket-projectiles and/or bombs beneath the wings.



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S. & U.

Club News — By Clubman

Mr. Hall of the North Kent M.A.S. getting his winning boat away at the recent Waterplane Contest at Eaton Bray.

HAVING just returned from a fortnight's holiday away from all things aeronautical, I return to the fray with renewed vigour, and a newly-sharpened blue pencil! So beware, those of you who are verbose and longwinded in thy reports—for they shall be cut so that no man shall recognise them. (Who said they never can ?)

An amusing repercussion from last month's News is the fact that to date no less than three persons have disclaimed being the " well known aeromodeller " pilloried on page 607. It would appear that a certain hat fits more than one head, which makes one think and amuses—or does it ?

I am pleased to note from the current S.M.A.E. News Sheet (August) that the assistance of the Areas is to be co-opted for future British Nationals, and until such time as the ideal venue is found, the ground will be changed each year. This is a good move, as we all know the heartburning created over the selection of Gravesend for the 1947 shindig, and will at any rate give the Areas a chance to air their viewpoints. Whether said Areas will be willing/able/interested/indifferent (cross out whichever you please !) remains to be seen, but I personally know of a number of very fine grounds that could be obtained for such an important occasion. In fact I would go so far as to say that full co-operation could be obtained from the R.A.F. if it was tackled in the right manner, and it does not take much imagination to visualise the advantages of operating from an " inhabited " aerodrome. However, that's a hint for those who like to follow it up, but I can definitely state that the R.A.F. is interested in aeromodelling as a means of recreation for its peacetime personnel, and I have had very sympathetic hearing from the one or two " scrambled eggs " I have talked to.

Congratulations to M. Rainer and Jimmy Wingate on creating new British records. Rainer (of North Kent) secured a flight of 1 : 09 with his model flying boat R.O.W., while the Streatham lad's flight of 31 : 32·2 has been accepted as a new record in the Open Rubber class. A claim for a world's record for distance in a straight line (18·3 miles) has been passed to the F.A.I. for consideration. Time we went after some more world's records—we figure very poorly on the list at present!

Once again the National waterplare events were a (near) farce, with entries of six, eight and twenty-one for the White Cup, Short Cup and Lady Shelley events respectively. With only two exceptions, the first two events were entirely North Kent affairs, and with all due respect for this club's prowess (and facilities) I state here in print what I said at a meeting last year—it is high time these events were dropped from the National calendar until popular demand is such that it is worth while running them. There are many more events of a wider national appeal that deserve consideration in an already well filled programme.

The Bowden Contest, backed up by a full bus load from Eaton Bray's foreign contingent, proved interesting, and congrats. go to quiet but consistent Buffery on his win, and to old timers Blunt and Wreford who proved that the pre-war standards are still good enough to win a contest where more than a hectic vertical climb and floating glide are required to win a contest.

Excitement ran high in the **SOUTH WALES AREA** contest for the E. Thomas Cup. Teams of four flew gliders, and in the final round the Cardiff " B " man put up : 46 to pip Newport by 14·5 secs. The Bridgend man Davies then clocked : 50 to beat them both, and gain first place and a well deserved win. Bridgend take the cup from Cardiff.

The interesting (if somewhat Americanised) **LONDON AREA** News Sheet gives word of an event well worth considering by other Areas. This is Juniors' Day, with all contests open, and in my opinion should do much to bring along the young end, who may feel contest shy when competing against the shining lights of modeldom. Croydon took top place in the Challenge Cup contest, beating Zombies in a close finish, only some twenty points separating the warriors.

S.M.A.E. CONTEST DURATION
BOWDEN INTERNATIONAL CONTEST

			Lost
1	C. T. Buffery	(Northern Heights)	24 points
2	J. Blunt	(S.M.A.E.)	33·75
3	J. Wreford	(Essex Power)	42
4	C. A. Rippon	(Southgate)	45·33
5	E. Bates	(Essex Power)	48
6	H. R. Turner	(Northern Heights)	60·75
7	E. Fillon	(France)	61
6	E. Warmington	(Bushy Park)	79·5
9	K. F. Marsh	(West Essex)	103
10	W. A. v d. Linden	(Holland)	112
11	A. H. Wilson	(Hayes)	114
12	H. de Kat	(Holland)	115

WHITE CUP

1	F. N. Chiffey	(North Kent)	34·465
2	H. Sayers	"	26·715
3	A. D. Hall	"	24·6
4	M. Rainer	"	21·215
*5	T. Hall	"	20
*6	A. R. Parker	"	20

(*appearance points only)

SHORT CUP

1	A. D. Hall	(North Kent)	21·75
2	M. Wickens	"	16·41
3	D. J. Dudley	(Blackheath)	140
4	J. Rumley	(North Kent)	95·5
5	W. Bishop	(Blackheath)	87·4
6	M. Rainer	(North Kent)	70·8
7	A. R. Parker	"	20
8	D. Cole	"	

LADY SHELLEY CUP

1	R. H. Parham	(Worcester)	92·18
2	T. J. Patrick	(S. E. Birmingham	24·58
3	H. R. Jeffs	(P.M.A.L.)	23·46
4	I. C. Lucas	(Brighton)	201·4
5	H. Laight	(S.E. Birmingham)	201
6	W. Bishop	(Blackheath)	198·2

(21 entries)

Just before holidaying I had the pleasure of revisiting the scene of my early aeromodelling days, the occasion being the "DAILY DISPATCH" RALLY staged by the NORTHERN AREA. Held at Woodford Aerodrome (I would never have recognised the old ground!) the lay-out was perfect, though unfortunately the wind veered slightly, and full advantage could not be taken of the spacious field. Ideal weather brought along a large crowd and some good flying was witnessed. Unfortunately the competitors were allowed to get somewhat out of hand, and things reached something of an anti-climax when the official prize-giving was delayed unduly waiting for one or two laggards to complete their flights. (As a helpful suggestion, I would point out to the organisers that it is fatal to disperse control at such a meeting, and the Information Centre should be able to dispense that commodity!!) However, I am sure that all who attended had as good a time as I had, and it was very pleasant to renew many old friendships and feel once more the warmth of a Northern gathering. Full results were:

Concours	**Flying Scale**	**H. Parrish**	**Ashton**
	Rubber Powered	**R. Shingler**	**Sale**
	Gliders	**I. S. Cameron**	**Liverpool**
	Power	**I. Harrison**	**Cheadle**
Open Glider (Senior)	**P. S. Phillips**	**(Wallasey)**	**14:19**
	J. S. Baguley	**"**	**8:15**
	N. Wakefield	**(Whitefield)**	**7:59**
(Junior)	**J. O'Donnel**	**(Whitefield)**	**10:24**
	R. Dobson	**(Bolton)**	**5:50**
	G. Thorne	**(Whitefield)**	**5:46**
Open Rubber (Senior)	**F. D. Ward**	**(Ashton)**	**11:12**
	S. Eckersley	**(Bradford)**	**8:42**
	M. Hetherington	**(Doncaster)**	**5:31**
(Junior)	**I. Harrison**	**(Cheadle)**	**1:25**
	J. Hurst	**(Preston)**	**1:11**
	R. Smith	**(Ashton)**	**1:08**
Open Power	**N. Lees**	**(Bradford)**	**3:44**
	S. Lanfranchi	**(Bradford)**	**3:43**
	A. Bailey	**(Cheadle)**	**3:30**
Tailless	**C. M. Holden**	**(Farnworth)**	**5:09**

Best flight of the day was put up by P. S. Phillips of Wallasey in the Glider event, his one flight of 14:19 giving him first place. In the same event, J. O'Donnell made best junior time with a fine flight of 9:15. C. J. Davey of Blackpool, though not placing amongst the high time winners, was consistent enough throughout the contests to carry off the prize for Champion of the Rally.

The HUMBERSIDE GUILD RALLY, held at Hedon on the 10th August, resulted as follows:

Concours	**J. Hessle**	**(York)**	
	P. Hollis	**(Sheffield)**	
Open Rubber	**P. Mainprize**	**(Hull)**	**6:04**
	P. Hollis	**(Sheffield)**	**5.51**
Open Glider	**F. Warren**	**(Goole)**	**4:49**
	J. Hessle	**(York)**	**4:44**
Power	**H. Bethell**	**(Rise)**	**3:07**
	P. Hollis	**(Sheffield)**	**2:04**

The ERDINGTON D.M.A.C. membership has now passed the century mark, and with the acquisition of the local school hall for meetings, things are going with a swing. The club glider record now stands at 4:25 o.o.s., the rubber figure being well in the rear with only 1:08.

A corner of the country not often in the news is Lincolnshire, but word comes this month from the LINCOLN & D.M.A.S. and I am pleased to learn that efforts are being made to get an Area established in that section. Inter-club activities are spreading, a recent three-cornered affair went to the Grantham lads with some very consistent flying. Best times of the day were set up by the Lincoln chaps, and the club H.L. duration record was raised by A. T. Roberts, whose own design job clocked 4:48 o.o.s.

News of three competitions comes from the BOURNEMOUTH M.A.S., the first being the Junior Cup event won this year by A. R. Flew, whose model went for good after a flip of 5:10·5. A. Arnold won the "Bailey Trophy" with 4:44 o.o.s., second place going to Mr. Palmer, 3:27 o.o.s. The "Heap" Seaplane contest attracted five entries, P. L. Smith averaging 1:02 to win from B. E. D. Beckett, who averaged 0:26·25. Whilst making a flight after the contest, Smith's model flew out of the ground and landed on the sea, being retrieved by the owner after a swim of several hundred yards! Information is given of a successful attempt at raising the Power Flying Boat record by Col. Bowden, the new figure being 1:12 (subject to official confirmation). The flight was made from Poole Harbour.

SOUTH-EAST BIRMINGHAM M.A.C. won the special Trophy for the best group entry at a recent exhibition held at Lewis's Store, whilst the Senior Championship went to T. Bryant, Junior top man being E. M. Godfrey. Class winners were as follows:

Solid Scale	**T. Bryant (S)**	**Rubber Models**	**W. Binnersley (S)**
	T. J. Patrick (J)		**P. F. Ashen (J)**
Power Models	**E. R Jones (S)**	**Gliders**	**(S) No award**
	J. A. Nicklin (J)		**T. J. Patrick**
Flying Scale	**G. B. Willett (S)**		
	E. M. Godfrey (J)		

The newly formed IPSWICH M.A.C. is having good fun, and putting up some useful times. Use is made of Ipswich Airport, where the club glider record of 10:41 was set up by junior E. Harwood, flying a "Mick F. Lightweight". J. Cross's King Falcon is putting up consistent non-thermal flights of around the two minute mark, and Hon. Sec. J. A. Barr lost his "Fillon Wakefield-cum-Glider" after a flip of over 20 minutes.

Members of the ROTHERHAM & D.M.F.C. had a good day out on the Herringthorpe field recently, when J. Jackson made best time of the day with a flight of 8:40 o.o.s., winning the H. L. duration event when so doing. Next highest time was by G. L. Beal, who clocked 2:14 when cleaning up the R.O.G. class.

Two members of the GLOUCESTER & D.M.A.C. had bad luck, losing their models before the start of an inter-club scramble. V. Tennant's diesel powered job flew into the clouds after being kept in sight for over 20 minutes, and at the same time A. G. Bishop's rubber powered model disappeared after 18 minutes. Mr. Beard aggregated 5:02 to win the glider event, and Mr. Wiggall totalled 7:37·5 on two flights to win the power event with his 1·3 c.c. diesel "Slicker".

Records have had a bashing at the LANCASTER M.A.C., E. Sykes pushing the open rubber class up to 2:16 with his "Raff V". Other good flights unfortunately unofficially timed were 5:15 by E. Tyson, and an open glider flight of 9:36 by Sykes, who also clocked 2:45 with his "Frog". (Perlease chaps—don't write about "unofficial records"..... there ain't no such bird. If it's not official, then it's not a record—compree?)

YORK M.A.S. had pouring rain for their Rally on August 4th, but odd spots of dryness in the afternoon enabled the poor officials to get the majority of flights timed. Making the last flight of the day, M. Hetherington of Doncaster put up a grand time of 15:15, this placing a large margin between himself and the runner up. Results:

Gliders	**G. L. Beale**	**(Mexboro)**	**9:17·6**
	D. Dickenson	**(York)**	**9:08·7**
	J. Piercy	**(York)**	**7:02·5**
Rubber	**M. Hetherington**	**(Doncaster)**	**18:07**
	— Eckersley	**(Bradford)**	**6:41**
Power	**R. Calvert**	**(Bradford)**	**3:30·4**
	C. Wilkinson	**(Bradford)**	**2:55**

Perfect weather has seen records raised in the ENFIELD & D.M.A.C. R. Cooper lost his "Mick Sailplane" after 15:00 o.o.s. (retrieved from over 20 miles away), whilst R. A. Parker made three very consistent flights of 3:52·3, 3:52·4 and 3:01 all o.o.s. Safely retrieved the model again flew away a week later after setting up a new club record for h.l. rubber class of 8:36.

The LEEDS M.F.C. believe they have created a new record—not one thermal flight having been recorded to date. Their ground is on the lee ward slope of a hill, and turbulence is rife. Small diesel jobs are outnumbering the rubber driven models these days, the latest trick being to take an old Wakefield, cut the nose just forward of the wing, and fill the gaping hole with plywood, and bolting an undercart and diesel engine on front. Some crafty fin surgery was required to correct the side area, but the resulting creation has a glide like a brick compared with its original status ! !

The National Gliding folk seem to have left a healthy crop of thermals behind at Bramcote aerodrome, the **COVENTRY M.A.C.** collecting plenty in recent weeks. A. J. Barr put up the club open rubber figure to 6 : 28·2, and a fortnight later junior B. Roberts raised this class to 11 : 56. On the same day G. Coombes did 9 : 46·4 with his " Dabchick " to establish a glider record. Barr won the President's Trophy for Wakefield models, his aggregate bting 4 : 17, followed by R. Rose, 2 : 33·75, and J. Carpenter 1 :03·6.

After a period of comparative hibernation, the **SALFORD M.A.C.** has come out in the open with two new records. Flying a diesel powered job of his own design, E. Wainwright clocked 17 : 40 (engine run unstated) and T. Dobson raised the h.l. rubber figure to 18 : 20 with his lightweight.

In a recent junior contest with the Aberdeen club, **BUCKSBURN A.C.** took first three placings through A. Mackenzie (5 : 05), R. Bowie (2 : 50·9) and C. Christie (2 : 25·6). In another event Mackenzie again won with an aggregate of 3 : 02·6.

After losing some precious minutes before deciding to time the model, M. J. Richards of the **SOUTHAMPTON M.A.C.** set up a new club record with his " Sunnanvind " of 14: 58·2, the model being lost. This club has been conducting some very interesting "decentralised" contests with American and overseas R.A.F. groups, the results being wins for the away teams. However, on the home ground, Southampton put it across Portsmouth & D.M.C. by 32 points. to 6 in all-types series. Again my congratulations go to this club for the production of what I think is about the best club mag. in circulation—full of meat, and well written.

The **MANCHESTER M.A.C.** would be obliged if the holder of ticket No. 6, purchased at the Northern Rally, would get in touch with the secretary, when a Mills engine will be duly forwarded.

SOUTHERN CROSS A.C. won the Club Championship cup at the M.E. Exhibition, the chaps concerned being T. J. Rendle (two models) and L. R. Willard. Rendle later won the club open glider event with a time of 9 : 05·8, J. A. Lynton clocking 4 : 05 to win the rubber event. The thermals proved too much for comp. sec. R Honeycombe, who repaired to the clubroom and proceeded to double the indoor r.t.p. duration record, the new time being 2 : 39·4.

The Second Annual Rally staged by the **DARLINGTON M.A.C.** was blessed by almost perfect weather, apart from a slight breeze that took many models out of sight. Ten clubs took part in the three contests, over a hundred competitors having a really good time. Results :

Open Rubber	J. D. Wallis	(York)	6 : 18·5
	J. H. Bell	(Blaydon)	3 : 20
	M. Bertram	(York)	2 : 52·5
Open Glider	I. Snaith	(Darlington)	9 : 24·7
	A. Warrie	(York)	6 : 28
	C. J. Applegarth	(Durham)	4 : 43
Power	A. D. Pearson	(Darlington)	13·7 ratio
	K. D. Coates	(Darlington)	10·36 „
	J. T. Fisher	(Newcastle)	6·76 „

An even bigger affair was the Gala Day held by the **DONCASTER & D.M.F.C.** on August 3rd. Some 25 clubs were represented, and over 330 entries were received for the five events. Again weather was perfect though slightly overcast (no grumbles from timekeepers in this respect !) and over 2,000 spectators witnessed some excellent flying. Full results are :

Open Glider	F. C. Anderson	(Leeds)	10 : 49
	G. L. Beal	(Rotherham)	8 : 41
	G. Beal (Jnr.)	(Rotherham)	5 : 10
Open Rubber	H. Tubbs	(Leeds)	6 : 53
	W. J. Denison	(Wakefield)	6 : 10
	D. J. Lees	(Bradford)	5 : 51
Junior "All-in"	G. Beal	(Rotherham)	2 : 31
	W. Boothman	(Doncaster)	2 : 26·8
	T. Bootland	(Scunthorpe)	2 : 26
Power	R. Calvert	(Bradford)	5 : 28
	N. Lees	„	2 : 30
	A. Collinson	„	1 : 18
Nomination	P. Mitchell	(Lincoln)	·4 secs. error
Champion	G. Beal	(Rotherham)	

Longest flight of the day was by Anderson of Leeds, who clocked 7 : 04 on one flight.

M. Garnett of the **BRISTOL & WEST M.A.C.** aggregated 1 : 40 for three flights to win the club flying scale contest with his " Fokker D.VIII," with A. V. Coles placing second with his " Aeronca ", total time 1 : 28·6. The Cardiff M.A.C. carried off the Bartlett Trophy, while C. S. Wilkins' modified " King Falcon " turned in a nice flight of 5 : 15 o.o.s., being retrieved from Durdham Downs. Mr. Wilkins won the West of England Championship Cup, his rubber driven model piling up an aggregate of 3 : 53·8 for two flights.

BLACKPOOL & FYLDE M.A.S. are naturally very " chuff " over the success of Cliff Davey in collaring the Championship at the "Daily Dispatch" Rally. This chap seems to be having it all his own way at the moment, winning both the glider and rubber events at a recent club do with times of 4 : 03·8 and 9 : 49·6 respectively. During the day the club Wakefield record was raised to 1 : 44·2 by J. Owen.

A good list of records is sent in by the **LEICESTER M.A.C.**, all over top time being held by junior K. Laverick with a time of 17 : 38 in the open glider class. M/s Shaw and Marsh have been co-operating on a rocket job, and set up records of : 25 h.l. and : 13·4 r.o.g.

To end on a somewhat unusual note, I have word that the Glanmor Guild of Aeromodellers has been disbanded owing to lack of accommodation. In these days of rapidly increasing numbers of clubs, it is strange to find groups closing down. Let's hope the Glanmor boys will be able to remedy the matter soon.

And so, let us hope that the fine weather continues, though after nearly five weeks of it I'm afraid I'm being too optimistic. We haven't had a spell for aeromodelling like this since Noah sent the dove out H.L. from the Ark—and I trust all clubs have taken full advantage of it. We still have a few weeks left to use up what petrol we've got, so the remaining Rallies should do well ! ! ! See you next month.

THE CLUBMAN.

NEW CLUBS

HORNETS M.A.C. (formerly Hastings A.M.C.)
L. Breach, Jnr., 6, The Croft, Hastings, Sussex.
HEREFORD CITY M.A.C.
E. B. Lewis, Tupsley Vicarage, Hereford.
BRIXTON D.F.C.
D. E. Drew, 25, Wingmore Road, Herne Hill, S.E.24.
FOLKESTONE & D.M.A.C.
G. Jones, 15, East Cliff Gardens, Folkestone.
ROYAL PARK & E.C.
D. Pilling, 9, Longmead Drive, Sidcup, Kent.
IPSWICH M.A.C.
J. A. Bear, 120 Richmond Road, Ipswich, Suffolk.

SECRETARIAL CHANGES

WREXHAM M.A.C.
I. S. Taylor " Lynden ", Glyndwr Road, Wrexham, N. Wales.
MORDEN & D.M.F.C.
V. R. Dietz, 168, Bordesley Road, Morden, Surrey.
STOCKTON & D.M.F.C.
W. K. Herbert, 9, Lancefield Road, Norton, Stockton-on-Tees.
ROTHERHAM & D.M.F.C.
D. M. Walker, 20, Warden Street, Canklow Road, Rotherham, Yorks.
BRENTFORD & CHISWICK M.F.C.
W. E. D. Wilson, 18, Almond Grove, South Ealing, W. 5.

[*Continued overleaf*

Three 1 c.c. Kemp Diesels complete, for sale. Excellent condition. £4 10s. 0d. each—Box No. 86.

"A.F.P." Vols. I to V. Condition as new. Price £5 complete.—R. Elvidge, 13, Red Post Hill, Herne Hill, S.E. 24. Phone BRI.5089.

"Owat" 5 c.c. diesel engine, perfect condition, specially fitted tank, complete with "Snip" dethermaliser, can be seen running. £8 or offers—Box. No. 88.

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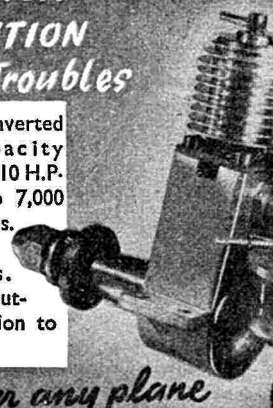

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