AERO MODELLER

JUNE 1957

1/72nd. Drawings and Flying Scale Model of Lindbergh's "Spirit of St. Louis"—Famous Biplane B.P. Overstrand

1'6

BAMBI

The World's smallest production diesel engine. This has been developed for the experienced Modeller and is ideal for small scale models. Complete with metal propeller blank.

Bore—.218"
Stroke—.250"
Capacity—.15 c.c.
—.009 cu. ins.
Weight—¼ oz.
Propeller—4½" dia.

Price £3. 5. 0
P. Tax 12. 6
Total £3.17. 6

DART

Undisputed champion of the 'point fives', it is built like a watch and has a performance that would not disgrace many larger engines.

Bore—.350"
Stroke—.350"
Capacity—.5 c.c.
—.03 cu. in.
Weight—1¼ ozs.
Propeller—C/L 6" x 4"
—F/F 7" x 4"

Price £2.14. 0
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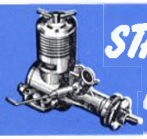

STANDARD MERLIN

For those with a tight budget this is the ideal engine. All the virtues of the Super Merlin, but without the extra fittings. Positive lock needle valve.

Bore—.375"
Stroke—.420"
Capacity—.76 c.c.
—.046 cu. ins.
Weight—1¾ ozs.
Propeller—C/L 6" x 6"
—F/F 7" x 4"

Price £1.16. 9
P. Tax 7. 1
Total £2. 3.10

SUPER MERLIN

Performance is as good as it looks, and it really is easy to start and operate. Complete with propeller, spinner and tommy bar.

Bore—.375"
Stroke—.420"
Capacity—.76 c.c.
—.046 cu. ins.
Weight—1¾ ozs.
Propeller—C/L 6" x 6"
—F/F 7" x 4"

Price £2. 4. 1
P. Tax 8. 6
Total £2.12. 7

SPITFIRE Mk. II

The perfect engine for the beginner. Combines easy starting, flexibility and long life with sparkling performance. A limit stop ensures that the compression setting can be found without difficulty.

Bore—.425"
Stroke—.420"
Capacity—1 c.c.
—.06 cu. ins.
Weight—3 ozs.
Propeller—C/L 7" x 5"
—F/F 8" x 4"

Price £2. 4. 1
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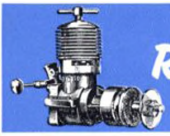
Total £2.12. 7

SABRE

This powerful motor is ideal for the smaller radio control model as well as free-flight and control line. Complete with propeller, spinner, tommy bar and plastic fuel tank.

Bore—.525"
Stroke—.420"
Capacity—1.49 c.c
—.09 cu. ins.
Weight—3½ ozs.
Propeller—C/L 7" x 6"
—F/F 8" x 4"

Price £2. 4. 1
P. Tax 8. 6
Total £2.12. 7



RAPIER

A high performance engine with twin ball races, downdraught carburettor and rear rotary valve. Provision for a two-speed fitting or choke assembly makes it ideal for contest work and radio control.

Bore—.580"
Stroke—.575"
Capacity—2.49 c.c.
—.15 cu. ins.
Weight—5½ ozs.
Propeller—C/L 9" x 6"
—F/F 9" x 4"

Price £3. 7. 0
P. Tax 12.11
Total £3.19.11

MANXMAN

A powerful, rugged motor suitable for the larger model especially for radio control work. Complete with spinner, tommy bar, and integral plastic tank.

Bore—.687"
Stroke—.562"
Capacity—3.5 c.c.
—.21 cu. ins.
Weight—5½ ozs.
Propeller—C/L 9" x 8"
—F/F 10" x 6"

Price £3. 5. 0
P. Tax 12. 6
Total £3.17. 6

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CHAPTER HEADINGS—

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Their thoughts in the sky, their feet on the ground, air-crew blend courage with careful skill.

Per ardua...ad astra. *It is not easy to fly with the R.A.F., to lead others, to shoulder great responsibilities while still young. But in the lasting satisfaction of this immensely worthwhile career...*

great effort
f ds great reward

A YOUNG MAN'S DREAM may dwell on flying — on the exhilarating challenge in the airy spaces of sky. His common sense tends to call him back to earth—to consider the future and the building of a career.

Feet on the ground

In the Royal Air Force today you can satisfy both these demands — and the new appointment of Air Electronics Officers means more can now fly. These highly skilled men are trained to be responsible for all the electronic devices in the new V-bombers. But aircrew are much more than flyers. They are often seconded for other important work in Britain and abroad. Training others, international liaison, aircraft development — these are but some of the jobs that may come your way. And responsibility grows fast. You can be a Group Captain while in your early forties, responsible for perhaps fifteen hundred men and several squadrons of modern aircraft. Beyond that? There is no limit. Quality counts in the R.A.F. and there will always be room at the top for good men.

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You can join the R.A.F. through the Direct Commission Scheme, confident of a permanent career right up to pension age. Or you can choose a twelve year engagement, with the option of leaving after eight. If you leave after 12 years you take back to civilian life a tax-free gratuity of £4,000! Whichever you choose the pay is good. At the new rates, a Flight Lieutenant of 25 for instance, can draw, with full allowances, about £1,500 a year.

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Travel, adventure, opportunity, achievement . . . here is a unique chance to blend them all in the satisfaction of a great career. Are you qualified to grasp it?

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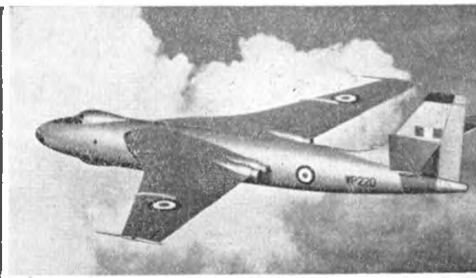
RESPONSIBILITY. To fly with the R.A.F. is to work with the most dependable men in the world, confident and well qualified for each of the many calls on their skill and initiative.

AND RELAXATION. Work over, pleasure begins. Gliding, yachting, winter sports — these and many other privileged pastimes link up with a social life that is full and varied.

The Royal Air Force

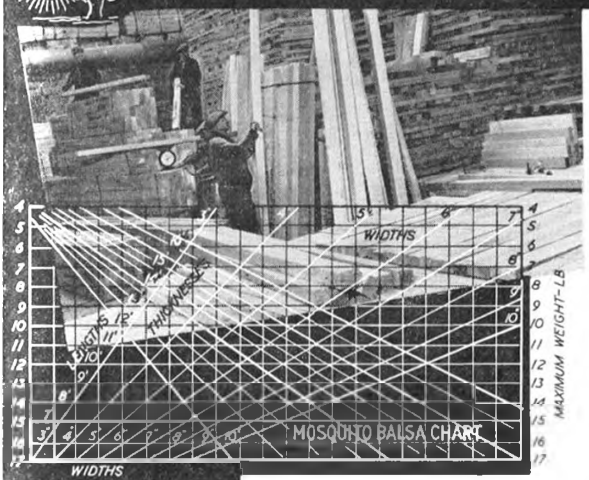
Flying . . . and a career

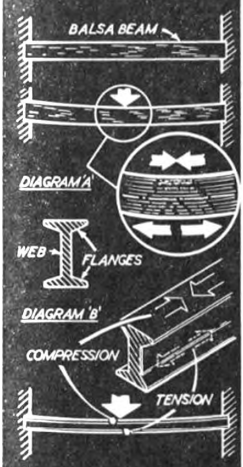


THE SOLARBO BALSA STORY

by JOHN PATERSON
MANAGING DIRECTOR, SOLARBO LTD

(Part 2 of a series of twelve)





LAST MONTH I left off saying that the weight of Balsa Wood for the "Mosquito" was critical and had to be less than 8 lb. per cu. ft.

Now the average piece of plank Balsa is about one-third of a cubic foot in volume, and so a piece this size weighing 3 lb. would not do but one 4-6 ounces lighter would pass.

I am sure you will appreciate that it is impossible to estimate as close as this simply by "trying the weight" by hand with random pieces of Balsa Wood varying in total weight from 1 lb. to 10 lb. The very light wood can be separated from the very heavy without weighing, but something like 40 per cent. of the wood lay in the 7-9 lb. per cu. ft. range and had to be weighed. One of my first jobs, therefore, was to prepare charts so that each piece could be weighed and checked accurately for weight against its measured size. This chart became the standard method of selection and was actually sent across the Atlantic for use there.

When we need a close selection of weight we still use this same system and we are the only Importers of Balsa Wood who break down *every* bundle and measure and grade *each* piece of wood accurately for weight. We guarantee our selection by taking back any wood not suitable, not only for weight but for other qualities—for instance, in the case of the Bristol "Britannia" floor, for the type of fibre as well.

When I am talking to clubs, I try to demonstrate with a piece of wood what happens when you make it carry a load. Think of a plank of wood like a floor joint built into a brick wall at each end—Diagram "A". The floorboards are carried by a series of such joints. Imagine a man standing on the floor immediately over this piece of wood, then you will see that his weight is trying to make it bend downwards.

Now think of this bending downwards carefully. You can see that the wood fibres are trying to pull apart on the underside, and the timber is said to be in "Tension". On the top face the wood is being pushed together or put in "Compression".

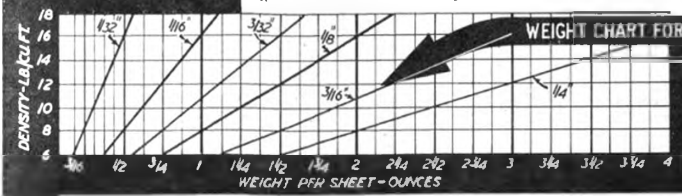
Always when you have a load causing bending you get Tension and Compression, and you get something else as well. This is "Shear", or a force trying to separate the outer faces of the beam which are in Tension and Compression.

If you consider an ordinary steel beam as shown in Diagram "B" you will see that you have two faces with a lot of metal in them called the Flanges (one to take Tension and the other Compression) separated by another piece of metal called the Web. It is, in fact, the two flanges which carry the load and the Web which holds them in position.

The other important thing about a beam is that the farther apart you can keep the flanges—that is, the deeper the beam—the stronger it is for the same amount of metal in the flanges. At the same time, the Shear forces in the Web are greater. Standard steel joists are designed to give an economical balance between the thickness of the flanges and the web.

The objective of a sandwich construction—and I am talking about where you want to carry loads—is to provide a light weight section with great strength and you achieve this, in general, by using a light weight core material with thin, stronger faces on it.

Next month I will tell you about Balsa sandwich construction.



You can use this weight chart for selecting standard sizes of balsa sheet (36 × 3 in.) to any wood density required. Knowing the weight of a sheet, you can check the density and vice versa.

AERO MODELLER

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NUMBER 257
JUNE 1957

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

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Special features

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Regular features

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

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New Rules for Old

JUST AS WE CLOSE for press the following letter arrives, circulated by H. R. Gillman, Director General of the F.A.I.

FEDERATION AERONAUTIQUE INTERNATIONALE

Ref: 2/10. *5th April*, 1957.

To the National Aero Clubs.

Dear Sir,

On the 29th December I sent to your Club a voting paper asking you to vote on four points discussed by the International Committee for Aeromodelling and on which the Committee requested the opinion of all the N.A.C.s not represented at the Meeting of the Committee.

I give below the results of the voting by correspondence added to the votes cast at the Meeting.

QUESTION No. 5. *Weight of rubber in rubber motors models.*
Decision. *The weight of rubber reduced from 80 gr. to 50 gr.*
Results. 18 *votes for*, 9 *votes against*, 1 *abstention.*

QUESTION No. 6. *Weight per cubic centimetre of cylinder capacity in powered models.*
Decision. *To abandon the previously adopted weight of 400 gr. per cubic centimetre and to adopt the formula put forward by Switzerland.*
Result. 21 *votes for*, 4 *votes against*, 4 *abstentions.*

QUESTION No. 9. *Rules for Team-Racing.*
Decision. *To adopt the new formula of constructional characteristics described in the Minutes, as follows:—*
Maximum cylinder capacity ... ... :2.5 cm^3
Total area (wing plus tail unit) ... ... 12 dm^2min.
Minimum dimensions of the fuselage at the "pilot's cockpit":
Height :100 mm. *Maximum total weight* ... ... :700 gr.
Width :50 mm. *Maximum capacity of fuel container* :10 cm^3
Result. 16 *votes for*, 10 *votes against*, 4 *abstentions.*

QUESTION No. 14. *Class of Model for Control Line Speed.*
Decision. *To adopt the formula of constructional characteristics proposed by Czechoslovakia as described in the Minutes*, i.e.:
Maximum cylinder capacity ... ... :2·5 cm.^{3}
Total minimum area ... ... :2 dm.^{2}/cm.^{3} max.
Wing loading for unit of area ... ... :100 gr./dm.^{2}
Result. 20 *votes for*, 4 *votes against*, 4 *abstentions.*

You will notice that there is a substantial majority, in each case, in favour of the decision taken on the proposals made at the Aeromodel Committee Meeting.

A total of twenty-eight Countries voted at the meeting and by correspondence.

These results will be submitted to the Aeromodel Committee and to the General Conference for confirmation, but there can be no question of reversing these decision because vote by correspondence was taken on the instructions of the General Conference in Vienna.

I would add that of eleven Countries which did not vote, several never reply to any letters from the F.A.I. and some of the others are not in a position to express an opinion.

Yours faithfully,
H. R. GILLMAN,
Director General.

P.S.—Of course, the voting paper was not sent to the Aero Clubs which were represented at the Meeting of the Model Committee and which voted on the questions.

We are frankly amazed at the wide acceptance of these changes, which were, apart from the Power proposal, rejected out of hand by British modellers, and can only assume that we British are completely out of step with the rest of the modelling world ?

Priding ourselves on our democratic principles, and trusting that the votes recorded were the true opinions of the aeromodellers in the countries concerned and not merely those of paid officials, we can only suggest that the resultant decisions be accepted with good grace however unpalatable they may be.

On the cover . . .

NO FILM ACTOR could be more suitable to play the part of Captain Charles A. Lindbergh in the magnificent Warner Brothers production, "Spirit of St. Louis", than James Stewart. Posed in the same type of combination suit as used by the famous Trans-Atlantic flier, Jimmy Stewart is standing in front of one of the three replica aircraft specially built for the Warnercolour film shortly to be released in this country to mark the 30th anniversary of the first non-stop flight from New York to Paris. Detailed description of the aircraft and plan of a flying scale model appear on pages 296-300.

Heard at the HANGAR DOORS

Spirit of St. Louis

We make no apology for the extensive coverage of Lindbergh's "Spirit of St. Louis" in this issue which includes a really accurate 1/72nd scale drawing of the original machine and plans of a ·5 c.c. free flying scale model by our Assistant Editor Ron Moulton. A vast amount of research has gone into ensuring the accuracy of these drawings which should delight the heart of all scale enthusiasts.

Our long-standing enthusiasm for this historic aircraft was renewed afresh by the new Warner Brothers' film, "The Spirit of St. Louis", which opens in the Warner Theatre on May 23rd, just two days after the 30th anniversary of Charles Lindbergh's epic non-stop flight that ended so triumphantly at Le Bourget field, Paris.

James Stewart, himself an aviation enthusiast, plays the part of Lindbergh and is depicted in the early scenes flying a decrepit D.H.4 U.S. Mail plane, the actual replica of which we show on this page.

The film without doubt is one of the finest aviation pictures we have seen, and surprisingly enough for Hollywood, closely follows the original story contained in Lindbergh's own book of the same title.

Three replicas of the "Spirit" were built for the film, two by Paul Mantz, pioneer film pilot, and the third by James Stewart and friends. The scenes in the film which is in Cinemascope and Warner Colour, showing the construction of the aircraft, presumably taken in Mantz's workshop during the building of the replicas, will fascinate the average aeromodeller. Also the colourful shots of Lindbergh's barnstorming days when he and a fellow "Jenny" pilot are entertaining the crowd with red, white and blue smoke trails and aerobatics. Wing walking, parachute dropping and all the other delights of a barnstormer's Air Circus provide a vivid and colourful scene that we shall long remember.

The incredible enthusiasm of the young and persistent Lindbergh to find not only financial backers but also the right kind of aeroplane to conform to his ideas for an Atlantic crossing are admirably conveyed by Jimmy Stewart, and the take-off scene in the cold grey early morning light at Roosevelt Field was gripping in its realism. The overloaded "Spirit" lurches across the muddy field held down by mud and slush, to clear by inches the telephone wires and trees at the end of the runway. Brilliant camera work actually shows the tailskid hook a telephone wire which the original "Spirit" did in fact clear. A point of realism about which we would not quibble! Then follows Lindbergh's battle of will power to stay awake during his 33½ hours flight over the Atlantic. He had not in fact slept for the 40 hours prior to take-off!

The flying scenes of the aircraft over Long Island, Cape Cod, Newfoundland, and later Ireland and Plymouth are really beautiful. Exceeded only by the approach over Paris in the dusk, with a myriad of lights and the Eiffel Tower to guide a satisfied but weary Lindbergh to Le Bourget where a tumultous welcome awaited the first man to make the crossing alone and in a single-engine aircraft.

Flying enthusiasts the world over will thoroughly enjoy the accuracy and authenticity of this aviation epic which is due for general release at the end of August, 1957. The "AEROMODELLER" prototype of the flying scale model will be on display in the Warner Theatre from May 23rd onwards and we trust that other builders of the model will co-operate with cinema managers in the way of foyer displays to spread the cause of aeromodelling.

26 year old Margaret Sheffield from Coventry was selected as British representative in the International "Miss Spirit of St. Louis" contest to find the World's Ideal Air Stewardess held at New York. Contest is linked with the Warner Bros. film mentioned above and Miss Sheffield is seen with a Lindberg plastic kit model display at the Warner Theatre Leicester Square

Film Cameramen Wanted!

Rumour has it that the drone of diesel motors from the rear of a certain Holloway Road premises is shortly to be replaced by the whirr of cine cameras and the snip of the Film Editor's scissors as that world famous

producer of aviation epics, "Darryl Zanuck Nicholls", goes into action at the British Nationals! We do, however, reproduce in all seriousness a genuine request from "Henry J." which we hope will receive a good response from keen and knowledgable cine enthusiasts.

Dear Sir,

At the last meeting of the S.M.A.E. Council, the making of a film to cover the British Nationals, 1957, *was authorised.*

In order to cover this subject adequately, a team of at least five cameramen will be required, and I should be glad if any modellers with an 8 mm. cine-camera who will be at the Nationals and free for at least one whole day out of two will send their names and addresses, together with full details of their equipment including type of camera, lenses, tripod if any, and lightmeter to me at S.M.A.E., Park Lane, W.1.

Yours faithfully,
HENRY J. NICHOLLS,
Tech. Secretary.

"Funk-Fernsteuerung" für den modellbauer

Which is the title of a new German edition of our Editor's "Simple Radio Control", written in conjunction with Helmut Bruss, well-known German R/C expert, with translation carried out by our indefatigable correspondent, Hans Pfeil. In addition to the basic material contained in the original title the book also includes a transistorised version of the "Aeromodeller Receiver" with full building instructions.

A.P.S. in U.S. Nats.

We were congratulating Bruce Lynn of Texas for his fine Westland Widgeon built from A.P.S. plans and chosen as our Model of the Month, in March issue, for Bruce won first place in open scale at the huge Dallas meeting. Now that fully detailed results with model data have been published in "*Air Trails* 1957 *edition Model Annual*" (Street & Smith Publications, $1), we are pleased to see that it was an A.P.S. *Altair*, flown by Donald Gurnett of Fairfax, Iowa, who placed first in Senior class A/2 with 14 : 28, while a *Swiss Miss* by J. R. Hayden Jr. of San Antonio, Texas, was first in Open class free flight "A". These achievements among the stiffest competition illustrate the merits of two fine British model designs which have, of course, already established a great reputation in the hands of their respective designers.

Incidentally, Plans Service customers will have noted our recent introduction of a new super grade thin dye-line paper which permits "opposite" wing views to be seen through the back surface, thus doing away with the previous need for tracing. The new paper also has three other fine attributes. Its surface is less adhesive to excess cement areas, and makes construction cleaner, its weight permits cheaper airmail service to overseas countries, and it is less prone to distortion during the printing process.

The Fox Moth

Some very interesting notes have been sent in to us by K. Rickard of Potters Bar concerning colour details for the De Havilland 83 Fox Moth as presented in our April issue, where we published B. Barton's 30-inch span free-flight scale model. The original lettering G-ABVK struck a chord in Mr. Rickard's memory for he flew in this very aircraft at Clacton-on-Sea during August, 1932, for his very first flight. Hillmans Airways colour scheme for that was as follows, states Mr. Rickard.

Lower part of fuselage, c/section struts and undercarriage, darkish blue. Fuselage top and interplane struts, white. All flying surfaces and fuel tank aluminium. Registration letters, darkish blue on wings. On fuselage, blue above, and white below the colour division line. "Hillmans Airways" appeared in white on the nose, and the name "Hillman" in large white letters on the fuselage under-surface, the letters one beneath the other.

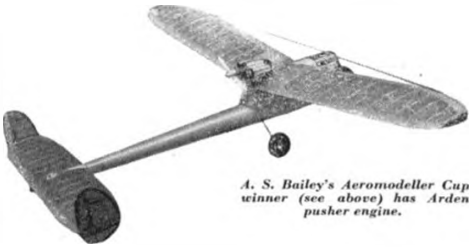
Mr. Rickard is interested in the model work by John Stringfellow in the 1840's, and has made a small glider to the plans of his monoplane of 1848 shown in the book "Henson and Stringfellow", published by the Science Museum, South Kensington. This model glides well in still air and he is encouraged to build a larger rubber-driven model, but would be interested to know if any reader of AEROMODELLER knows of any similar model having been built in recent years. Some doubt appears to exist regarding the airworthiness, or otherwise, of this machine, and he feels that this question could be resolved by construction and test of models of this very first, at least partially successful aeroplane. We will gladly forward any correspondence.

Northern Models Exhibition

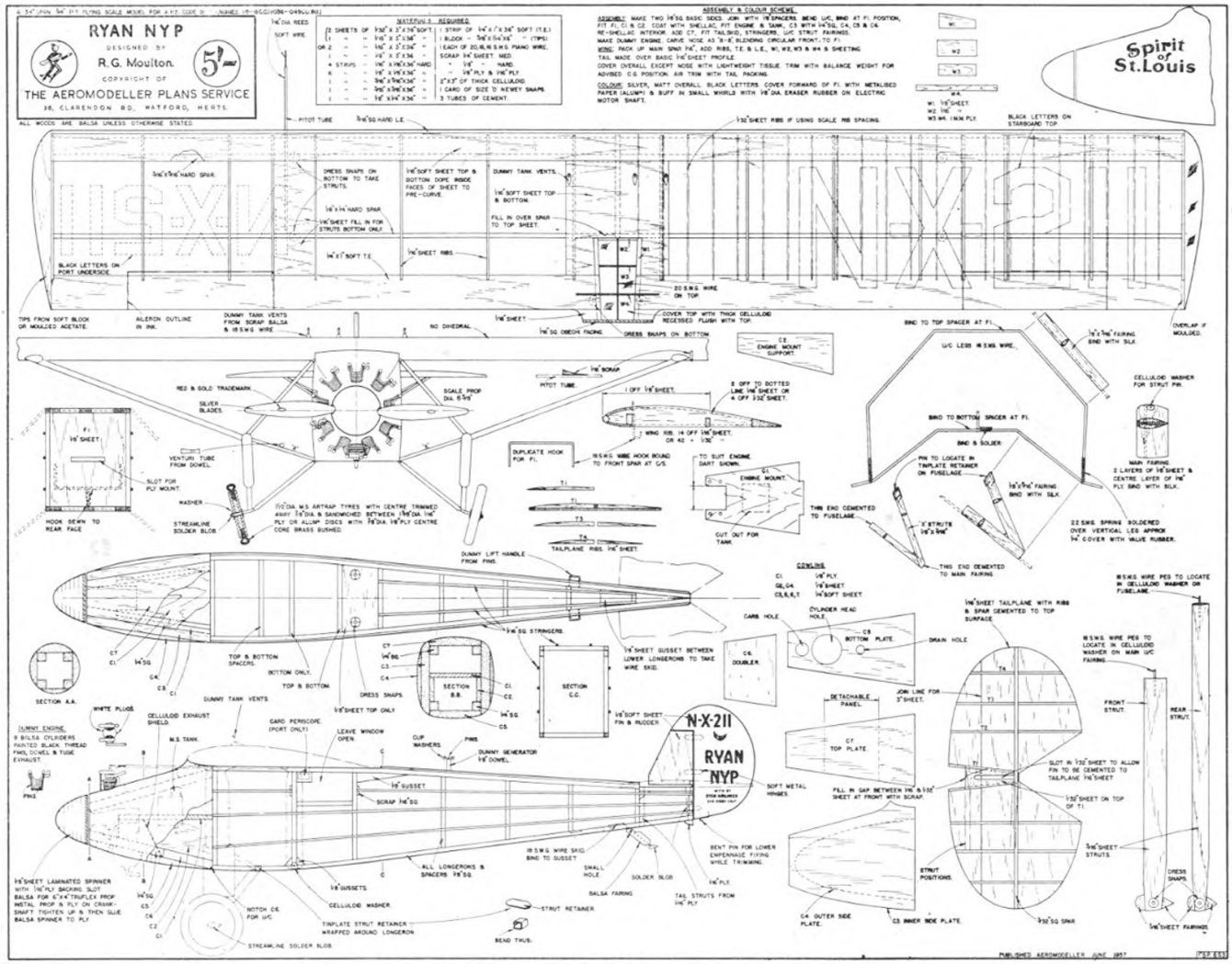
Aircraft models at the 9th Northern Models Exhibition, staged at the end of March in Manchester, showed a general all-round improvement in quality, though numbers were again down in comparison with earlier years.

Surprisingly good was the entry of N. Davies of Heywood, whose scale Focke-Wolfe took first prize in the junior section, and would indeed have placed high in competition with the seniors. A big surprise was the sparse entry in the formerly well supported flying scale section, where Ian Cameron's model of a little known American light plane was an outstanding example of excellent workmanship without frills. An organisational mix-up with the ticketing of entries brought criticism of the judging, but the judges can hardly expect to be clairvoyant, or expected to revise their decisions after the closing of the exhibition!

Whilst not judged by the aeromodelling adjudicators in its section, A. S. Bailey's outstanding model was awarded the "Aeromodeller Cup" as the best model aircraft in the exhibition, and, as the photo shows, was an outstanding example of fine workmanship and original design.



A. S. Bailey's Aeromodeller Cup winner (see above) has Arden pusher engine.


RYAN NYP
DESIGNED BY
R.G. Moulton.
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THE AEROMODELLER PLANS SERVICE
38, CLARENDON RD., WATFORD, HERTS.
5½"
Spirit of St.Louis
MATERIALS REQUIRED
ASSEMBLY & COLOUR SCHEME
ASSEMBLY: MAKE TWO ⅛"SQ. BASIC SIDES. JOIN WITH ⅛"SPACERS. BEND U/C. BIND AT F1. POSITION, FIT F1, C1 & C2. COAT WITH SHELLAC. FIT ENGINE & TANK, C3 WITH 14"SQ. C4, C5 & C6. RE-SHELLAC INTERIOR. ADD C7. FIT TAIL SKID, STRINGERS, U/C STRUT FAIRINGS. MAKE DUMMY ENGINE. CARVE NOSE AS ⅜"-R BLENDING CIRCULAR FRONT TO F1.
WING: PACK UP MAIN SPAR 1¼", ADD RIBS, T.E. & L.E., W1, W2, W3 & W4 & SHEETING. TAIL MADE OVER BASIC ⅛"SHEET PROFILE.
COVER OVERALL EXCEPT NOSE WITH LIGHTWEIGHT TISSUE. TRIM WITH BALANCE WEIGHT FOR ADVISED C.G. POSITION. AIR TRIM WITH TAIL PACKING.
COLOUR: SILVER, MATT OVERALL. BLACK LETTERS. COVER FORWARD OF F1 WITH METALISED PAPER (ALUMA) & BUFF IN SMALL WHIRLS WITH ⅛"DIA. ERASER RUBBER ON ELECTRIC MOTOR SHAFT.
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.
PITOT TUBE
⅛"SQ. HARD L.E.
⅛"SHEET RIBS IF USING SCALE RIB SPACING
BLACK LETTERS ON STARBOARD TOP
BLACK LETTERS ON PORT UNDERSIDE
⅛"x⅜" HARD SPAR.
DRESS SNAPS ON BOTTOM TO TAKE STRUTS.
⅛"SOFT SHEET TOP & BOTTOM. DOPE INSIDE FACES OF SHEET TO PRE-CURVE.
DUMMY TANK VENTS.
⅛"SOFT SHEET TOP & BOTTOM.
FILL IN OVER SPAR TO TOP SHEET.
⅛"x¼" HARD SPAR.
¼"SHEET FILL IN FOR STRUTS BOTTOM ONLY
¼"x1" SOFT T.E.
¼"SHEET RIBS.
20 S.W.G. WIRE ON TOP
COVER TOP WITH THICK CELLULOID RECESSED FLUSH WITH TOP.
TIPS FROM SOFT BLOCK OR MOULDED ACETATE.
AILERON OUTLINE IN INK.
DUMMY TANK VENTS FROM SCRAP BALSA & 18 S.W.G. WIRE
NO DIHEDRAL
⅛"SHEET
⅛"SQ. OBECHI FACING.
DRESS SNAPS ON BOTTOM
C2 ENGINE MOUNT SUPPORT
BIND TO TOP SPACER AT F1.
U/C LEGS 16 S.W.G. WIRE.
OVERLAP IF MOULDED.
RED & GOLD TRADEMARK.
SILVER BLADES.
SCALE PROP DIA. 6"PS
PITOT TUBE.
⅛"BORAP
1 OFF ⅛"SHEET.
2 OFF TO BOTTED LINE ⅛"SHEET OR 4 OFF 1/32" SHEET.
WING RIB. 14 OFF SHEET. OR 42 + 1/32"
CELLULOID WASHER FOR STRUT PIN.
BIND & SOLDER.
BIND TO BOTTOM SPACER AT F1.
F1 ⅛"SHEET.
VENTURI TUBE FROM DOWEL.
SLOT FOR PLY MOUNT.
WASHER
STREAMLINE SOLDER BLOB.
HOOK DOWN TO REAR FACE
DUPLICATE HOOK FOR F1.
18 S.W.G. WIRE HOOK BOUND TO FRONT SPAR AT G/S.
TO SUIT ENGINE DART SHOWN.
C1 ENGINE MOUNT.
PIN TO LOCATE IN TIMPLATE RETAINER ON FUSELAGE
BIND & SOLDER.
MAIN FAIRING 2 LAYERS OF ⅛"SHEET & CENTRE LAYER OF ⅛" PLY BIND WITH SILK.
⅛"x⅜" FAIRING BIND WITH SILK
2" STRUTS ⅛"x⅜"
22 SWG. SPRING SOLDERED OVER VERTICAL LEG APPROX ¼" COVER WITH VALVE RUBBER.
THIN END CEMENTED TO FUSELAGE.
THIS END CEMENTED TO MAIN FAIRING
CUT OUT FOR TANK
T1
T2
T3
T4
TAILPLANE RIBS ⅛"SHEET.
DUMMY LIFT HANDLE FROM PINS.
⅛"SQ. STRINGERS.
⅛"SHEET GUSSET BETWEEN LOWER LONGERONS TO TAKE WIRE SKID.
C6 DOUBLER.
CYLINDER HEAD HOLE.
C3 BOTTOM PLATE.
DRAIN HOLE
⅛"SHEET TAILPLANE WITH RIBS & SPAR CEMENTED TO TOP SURFACE.
18 S.W.G. WIRE PEG TO LOCATE IN CELLULOID WASHER ON MAIN U/C FAIRING.
FRONT STRUT.
REAR STRUT.
SECTION A.A.
SECTION B.B.
SECTION C.C.
TOP & BOTTOM SPACERS.
BOTTOM ONLY.
TOP & BOTTOM
DRESS SNAPS.
DETACHABLE PANEL.
JOIN LINE FOR ⅛"SHEET.
C7 TOP PLATE.
SOFT METAL HINGES.
FILL IN GAP BETWEEN FIN & 1/32" SHEET AT FRONT WITH SCRAP.
SLOT IN 1/32" SHEET TO ALLOW FIN TO BE CEMENTED TO TAILPLANE ⅛"SHEET
1/32" SHEET ON TOP OF T1.
⅛"SHEET STRUTS.
STRUT POSITIONS.
DRESS SNAPS.
⅛"SHEET FAIRINGS.
C4 OUTER SIDE PLATE.
C5 INNER SIDE PLATE.
1/32"SQ SPAR.
WHITE PLUGS.
CELLULOID EXHAUST SHIELD.
DUMMY ENGINE. 9 BALSA CYLINDERS PAINTED BLACK. THREAD FINS, DOWEL & TUBE EXHAUST.
M.S. TANK.
CARD PERISCOPE. (PORT ONLY)
LEAVE WINDOW OPEN.
CUP WASHERS.
PINS
DUMMY GENERATOR ⅛" DOWEL.
N-X-211
RYAN NYP
⅛"SQ.
⅛"GUSSET
SCRAP ⅛"SQ.
⅛"SHEET LAMINATED SPINNER WITH 1/16" PLY BACKING SLOT BALSA FOR 6"x4" TRUFLEX PROP INSTALL PROP & PLY ON CRANK-SHAFT TIGHTEN UP & THEN GLUE BALSA SPINNER TO PLY
⅛"SQ.
⅛"GUSSETS
CELLULOID WASHER.
NOTCH C6 FOR U/C
TIMPLATE STRUT RETAINER WRAPPED AROUND LONGERON
STREAMLINE SOLDER BLOB.
ALL LONGERONS & SPACERS ⅛"SQ.
18 S.W.G. WIRE SKID. BIND TO GUSSET
SMALL HOLE
SOLDER BLOB
⅛"PLY
BALSA FAIRING
TAIL STRUTS FROM ⅛" PLY
STRUT RETAINER.
BEND THUS.
BENT PIN FOR LOWER EMPENNAGE FIXING WHILE TRIMMING.
PUBLISHED AEROMODELLER JUNE 1957

A 34-inch free-flight scale model for small capacity engines of the

RYAN N.Y.P.

Spirit of St. Louis

designed by R. G. Moulton

"IMPOSSIBLE!" stated the critics. Nevertheless we always did like tackling something really difficult and even if the Ryan N.Y.P. did show an alarming lack of dihedral and paltry tail surfaces, it did at least boast a nice simple fuselage construction and, believe it or not, Clark "Y" airfoil section on the full size. Such a flying scale subject is the type of challenge which makes aeromodelling all the more interesting. The "Spirit" has always been a modellers' subject in the U.S.A., but oh! how it has been divested of its true characteristic flat wing and stringered fuselage in so many cases! To satisfy ourselves that a model *could* be made free flight, to *exact* scale, apart from the zero wing incidence of the full size, plans were drawn up more than a year ago and three prototypes made by independent modellers. The dihedral problem was considered seriously and as originally designed, the model had the spacing between the wing struts filled-in with a celluloid plate to provide sesquiplane effect. This point has been eliminated from the drawing.

Flt./Sgt. Bob Collington at R.A.F. Hemswell was the first to get one of the prototypes airborne and he tried it straightaway without the celluloid strut filler. Low power, with a prolonged glide seemed satisfactory so he increased the revs on the Dart driving a Truflex 6 x 4, and to use his own words, "The stability of the model in the air gave the impression that it was held horizontally by a pair of invisible hands on the wing tips"—so much then for our concern over the dihedral!

First power flights have, in all cases, been practically dead straight runs. To obtain a nice climbing turn, Bob Collington found he could deflect the rudder as much as 20 degrees—which just shows how insensitive those diminutive scale surfaces are, and how this design serves to contradict the expectations of the Pundits. Best flight pattern is wide left hand climb, turning to the right on the glide, using slight right rudder.

So much for flight performance. As for the construction, the model is little more than a square box fuselage with a slab of wing superimposed and solid sheet tail surfaces. Anyone with experience will find it a simpleton to make except, perhaps, if you want to make it absolutely dead scale with true rib spacing when you find yourself with forty-eight 1/32 ribs to cut. The most difficult part of the model is the dummy engine, but if treated carefully, it is remarkable how one can reproduce nine balsa cylinders with thread fins wound around a carved balsa dowel, and odd pieces of reed used for the curling exhausts, with pins for push rod covers, etc. The strutting is rather involved, but the method of retention permits easier assembly and a minimum risk of damage in the event of a hard landing. One should remember that the wings do not have to be supported by the struts which are purely ornamental and the wing is in fact, retained by connecting it with tight elastic bands from the wing hook to the inside fuselage hook on F.1. Then slide it forward so that the Newey dress snaps on the trailing edge pop into place to lock the wing and retain the incidence. Leave the tail surfaces loose, held on by elastic bands until you have sorted out a flight trim, then cement firmly into place with tail struts added for scale. Interior details of the "Spirit" can be found with the description of the full size aircraft overleaf and all that remains is for modellers to obtain a realistic finish for this famous aircraft.

A mixture of three parts aluminium dope, one part light grey, thinned, provides perfect colouring. The nose portion can be realistically covered with metal foil or wallpaper and buffed in small whirls. The lettering, which is especially accurate on the drawing, can be applied by home-made transfers as detailed in AEROMODELLER, October, 1955. Use lightweight tissue and try to keep the weight down.

Photos give an impression of convenient size of this model which can be built from full size copies of reduced scale plan opposite, available from AEROMODELLER Plans Service as FSP 663 price 5/-. Why not build one to tie-up with your local cinema release of the "Spirit of St. Louis" film?

Taken before the "Spirit" was fully laden with fuel. Charles A. Lindbergh poses before venturing on the greatest flight of his career
(Topical Press Photo)

Spirit of St.Louis

RYAN NYP

AIRCRAFT DESCRIBED No. 85
by R. G. Moulton

AT THE PRECISE HOUR of 10.22 p.m. on May 21st a number of ardent aviation enthusiasts will be celebrating the 30th anniversary of a great occasion. It marked the end of an arduous solo flight, lasting 33 hours and 30 minutes, and opened an era in American aviation history by popularising the now traditional high wing monoplane and stimulating the birth of an industry now responsible for the bulk of the world's air travel systems.

In true chronology, the Ryan New York-Paris monoplane flight was the 26th attempt to cross the Atlantic by air, and when he landed in the deceptive shadows of Le Bourget before the assembled hordes of cheering Parisians, Capt. Charles A. Lindbergh completed the 13th successful crossing, and 5th non-stop flight. But he was the first to fly solo across the vast expanse of deep and treacherous green water, and being the first to reach Paris from New York non-stop, he collected the $25,000 prize nominated by French hotel proprietor Raymond Orteig in 1919.

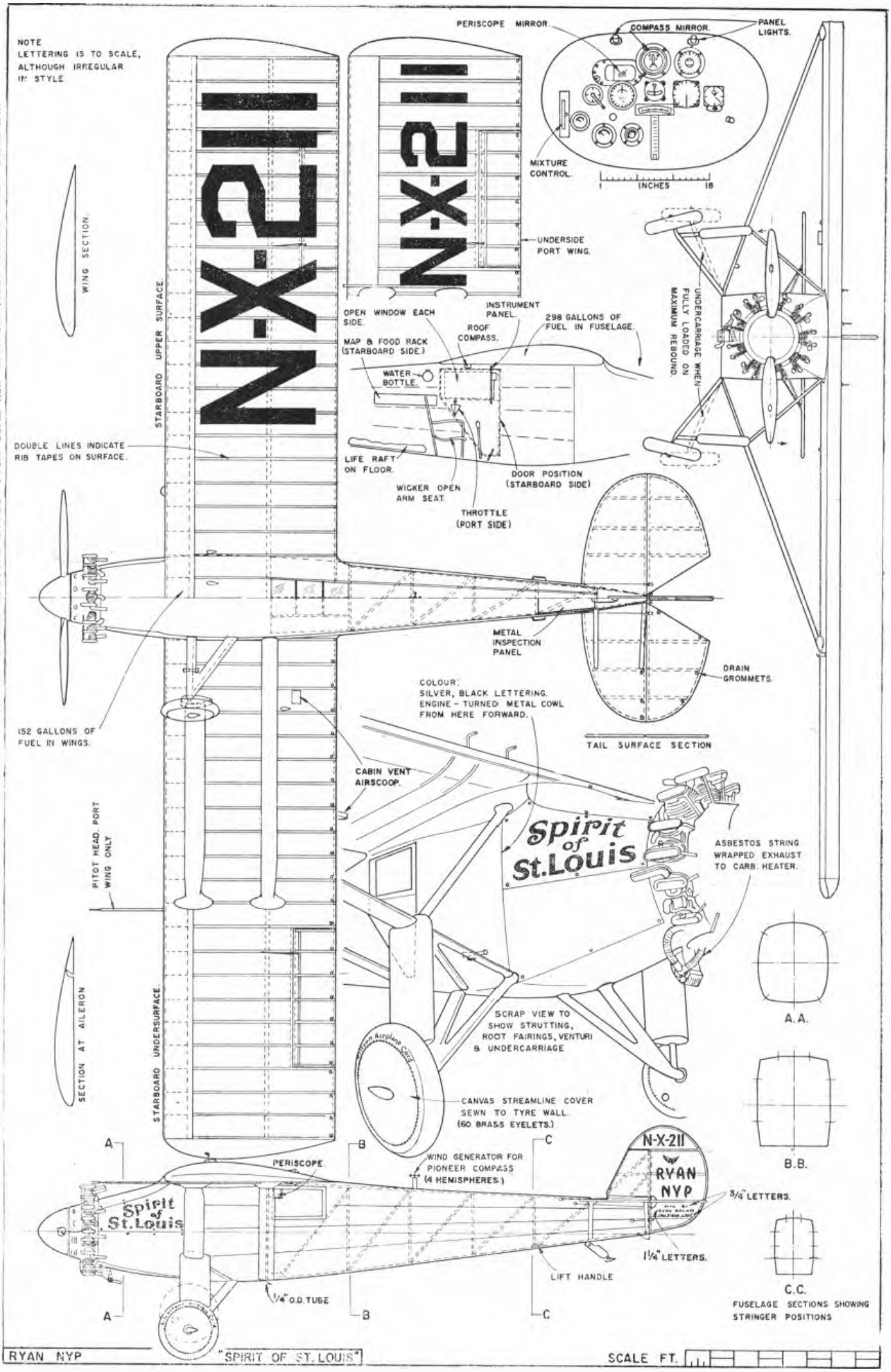
Overnight, Charles A. Lindbergh became a hero. So wide was the acclaim for his courage and daring and so stupendous the number of honours bestowed upon him for his achievement, that few people realise how only two weeks later, the very Bellanca Columbia he originally planned to fly was flown another 300 miles into Germany, also non-stop from New York. If it had not been for a tangle of indecision as to who should crew the Columbia, the wheel of fortune might have favoured its pilot Clarence D. Chamberlin instead of Lindbergh: but that is another story.

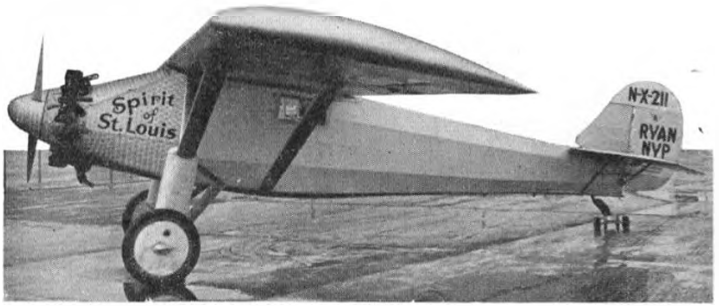
Lindbergh won the NYP race against terrific odds. He was the unknown entrant from a mail service flying out of St. Louis who had planned, convinced and co-opted financial backers that he could make the flight. Guiseppe Bellanca wanted $15,000 for the Columbia out of the stated worth of $25,000, and then Charles A. Levine, Chairman of Columbia Aircraft Corpn. insisted on nominating the pilot. With B. F. Mahoney of Ryan Airlines Inc. in San Diego offering to make a plane complete with instruments and Whirlwind engine for $10,580, delivery within 60 days, one can readily understand why Lindbergh guided the financial spirits of St. Louis city towards the Californian flats.

To design and build such a streamlined load-carrier (it was lifting twice its own weight in disposable usefu load at take-off) in the space of February 25th to test flights on April 28th is to the very great credit of the Chief Engineer Donald A. Hall, Factory Manager Hawley Bowlus of later glider fame, and B. F. Mahoney (it was said that his names were Benjamin Franklin, but nobody dared use them), the Ryan President. They were young and enthusiastic: Mahoney in his late twenties, Lindbergh only 25, and this youthful spirit, backed by the businessmen of St. Louis, obviously infected many important people who contributed to the success of the flight by supplying equipment. A super-inspected 223 b.h.p. Wright J-5C Whirlwind and duralumin Standard Steel Co. propeller were provided. The best navigational aids came from Pioneer Instrument Co., and the Vacuum Oil Co. catered for the huge fuel capacity.

Lindbergh lived with the plane from the time it was conceived as a modification of the standard Ryan M-2, and it was his implicit faith in the proposed flight coupled with an understanding of engineering problems that welded the small factory into one efficient team. To start with, the 36-ft. M-2 wing was enlarged by the

One can capture the air of experiment in this Curtiss Field photo before the great flight. "Slim" Lindbergh confers with Wright engine expert Ed. Mulligan and Ryan Pres. B. F. Mahoney around a spinner-less "Spirit", pristine and clean in its new state. Note the canvas wheel covers laced to the tyres
(Keystone photo)





Film version had a B-1 fuselage and tail assembly with extended wings. Three were made, one with corrected tail contours, and all had detachable nose cowls for windscreens to be fitted for forward vision. Without comparison, the film replicas are hard to detect from real thing as below (Warner photo)

convenient factor of one-third. It became 46-ft., with the same Clark Y wing ribs, but for efficiency the spacing was reduced to 11-in., leading edge wrapped with ply, and airfoil shaped balsa blocks used to fair the tips. The ailerons were reduced by one-fifth from the M-2 size to avoid wing stress, and became diminutive tabs by comparison, though quite effective for lateral control. With the larger wing and need for internal fuel tankage plus a large tank in the fuselage around the c.g., the tail unit had to be shifted back 2 ft. and nose length extended 18 in. to compensate. It is this same difference of 42 in. fuselage length that distinguishes the NYP from the three replicas made for Warner Bros.' film, which were altered B-1 Broughams—the five-seater cabin transport produced for Hisso or Whirlwind after the NYP was completed. Another major requirement was for an extra 2 ft. 9 in. undercarriage track with bungee cord suspension on long travel legs to take the terrific load. But one expected modification was not applied. The tail assembly was left with a minimum of change, and in spite of its area of only 13 per cent. of the enlarged wing, was deemed satisfactory due to the extended tail moment and forward c.g. range (25-31 per cent. root chord). In any case there was no time for a new tail design.

Around these basic features the welded steel tube fuselage and wooden wing with steel tube brace struts were quickly constructed. Fuel tanks were tailored to fit in soft "Ternplate", a steel with minimum leak risk. The fuselage was lined with balsam wool around the cockpit and every attention applied to external streamlining.

Wing struts were covered with balsa fairings, and all strut/component joints sealed with beaten aluminium covers. Most important of all was the blending of the traditional Ryan spinner into the square frame of the main fuselage with machine-turned polished cowlplates. This was only possible through the rearward pilot location, in turn due to the need for bulk fuel tankage near the c.g. and the simple fact that Lindbergh preferred to be aft of the weight mass in the event of a crash. In his own words, taken from the Pulitzer prize-winning personal story of this flight, "There's not much need to see ahead in normal flight . . . all I need is a window on each side to see out through." For emergencies, one of the workmen with submarine experience devised a periscope that jutted out of the port window frame.

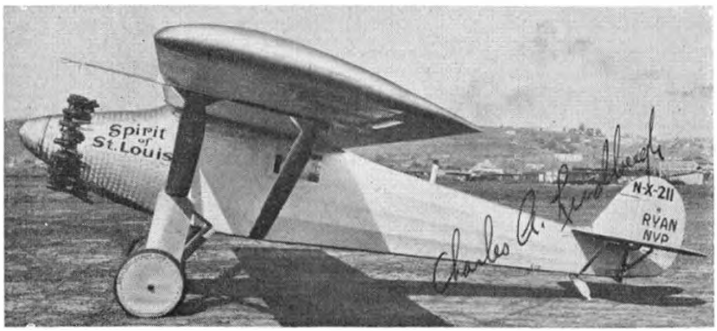
Completed and tested, "Slim" Lindbergh took the matt silver NYP off to St. Louis, Missouri, on May 10th, only 11 days after the very first hop, and with 4 hrs. 20 mins. accumulated handling experience. The flight took an overnight 14 hrs. 25 mins.—in itself a great achievement and one which illustrated a severe need for carburettor heating. By the 12th he was at Curtiss Field, New York, and the tall figure of Slim in grey Bedford cords, golf stockings, tan shoes and loose jacket became the centrepiece for an onslaught of tabloid press activity.

For the next eight days he flew only short test hops carrying (though no one knows how) the engine and instrument experts in turn to check the equipment. Famous names came to see the "Lone Eagle". Charlie Lawrence, President of Wright Aeronautical, René Fonck, Al Williams, Tony Fokker, Grover Loening, Chance Vought, Harry Guggenheim and, of course, the opposition Byrd and Chamberlin. At last, after little sleep and only a total of 27 hrs. 25 mins. flying time on the airframe, just three short months after the plane had been sketched in the San Diego workshop, Lindbergh took off from Roosevelt Field.

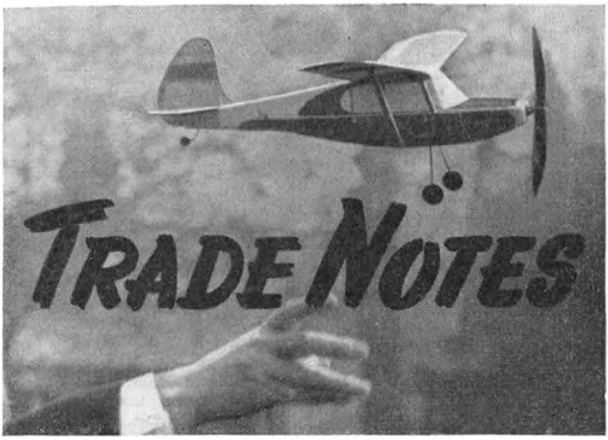
His flight is authentically covered by two brilliant accounts in book and film, under the same name as the plane and not need to be enlarged here.

The St. Louis was shipped on the U.S. Cruiser *Missouri* back to the U.S.A. after dismantling by R.A.F. Gosport. Then came a triumphant tour of the States: a 27½-hour non-stop to Mexico City from Washington, and flights throughout central America. Eventually, after amassing 489 hrs. 28 mins. in 174 flights the faithful "Spirit" was retired to hang in honour at the Smithsonian Institute.

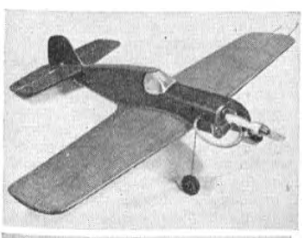
With grateful acknowledgments to the many authorities who have supplied material for the drawing overleaf.



Just made! At San Diego, the original Spirit of St. Louis awaits its axle covers, carb heater and the few hours of flying experience prior to its 33½ hour crossing of the Atlantic. Span 46 ft. Length 27 ft. 8 in. Height 9 ft. 10 in. Chord 7 ft. Incidence 0 degrees. Weight for normal flight 1,700 lb. Weight at take-off 5,250 lb. Ultimate range, 4,110 miles (Erickson photo)



NEW KITS ARE reaching our offices almost daily. Latest is sure to be popular as it fills a vacancy with a design that is right up to the mark, and we refer to **Contest Kits**, "Calypso Major" for 2·5 c.c. to 3·5 c.c. Prefabrication includes some fine die-cutting and pre-shaped components and at 35s. for such a high performance duration design we consider it excellent value and look forward to making the model for test. In the kit we found a neat Contest Kits flying arrow transfer trademark, to be included in all kits. Other new item from Southend is a useful nut and bolt pack,



Yeoman Quickbuild on test in heading flies up to 200 ft. At right top are Yeoman transfers including National insignia, checkers and stripes

either 6 or 8 B.A. threads, complete with spring washers, 5d.

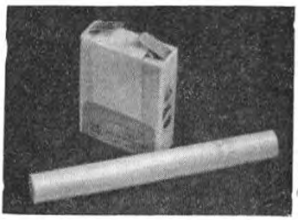
Catalogue to get if you have radio control inclination is **A. T. Sallis's** mail order list, price 2s. from 93 North Road, Brighton, includes a 2s. voucher usable on first purchase. Goods are largely Government surplus and very reasonable in price, typical items are micro-switches, aerial, sockets, etc.

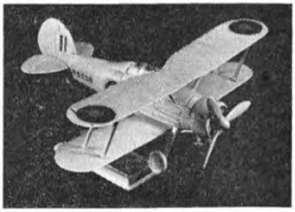
A. A. Hales Ltd. have added two fine new models to their **Yeoman Quickbuild** range at 5s. 11d. each, and both have been thoroughly flight tested by us (see heading). The Piper Pacer and Aeronca Sedan are the new subjects, each in top quality selected die-cut wood with attractive colour printed decoration. We made each in two hours flat, and by deflecting the ailerons upwards as recommended, soon had flights up to 200 ft. long—which is excellent for an all-sheet quickly-built model that can be built by virtually any beginner from around 11 years old upwards. Kits include a semi-scale type black plastic prop, pre-shaped u/c, detailed plan and fool-proof instructions. Also from Hales under the Yeoman trademark is a new extensive range of transfers, and we were most pleased to note that the proportion of the R.A.F. roundels have been carefully adhered to in the post-1948 scheme, using 1/3rd size centre spots. Other nationalities are Polish, U.S.A.F. and German, plus checkers and stripes as in photo, top right.

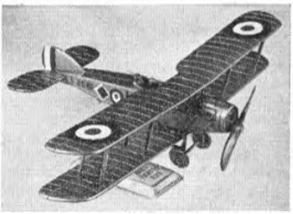
We have now had the opportunity of putting the **Keilkraft** "Joker" through its paces and it seems to be standing up to an awful lot of junior's punishment. Dart powered, it will loop easily, and at 11s. 5d. represents great value. Another item that we appreciate as value for money is the stop watch as illustrated *at left*, supplied for only 55s. as Government surplus from **Charles Frank** in Glasgow. We know one S.M.A.E. Area which ordered six on sight of one sample. Movement is first class, actual value far in excess of price asked. Stop motion is by slide switch on body with winder knob to return hand to zero.

Important note from **Henry J. Nicholls Ltd.** concerns mail order. Henry no longer runs a mail order service but still receives continual orders for remote items which cannot be supplied. Readers should note that if they want to order by mail, they should send their requirements to one of the bona-fide M.O. houses advertising in AEROMODELLER. Latest accessory line from **Mercury** is some beautiful red silk of super light grade which gives a model better visibility range than any other tested colour.

Fascinating new miniature accumulator distributed by **Ripmax Ltd.** deserves attention. It is the Magnatex, 2 volt, measures ¾ x 1⅛ x 1¾ inches and is re-chargeable in 1½ to 2 hours at 50 ma. Tests have shown that it holds current for over a year in storage, but it is important that the voltage should not be allowed to discharge below 1·5 volts. It is necessary to make a pinhole in the plastic case between the two terminals when charging, otherwise the case will emulate a balloon! At 3s. each, these little accumulators are a wonderful bargain and ideal for R/C work.

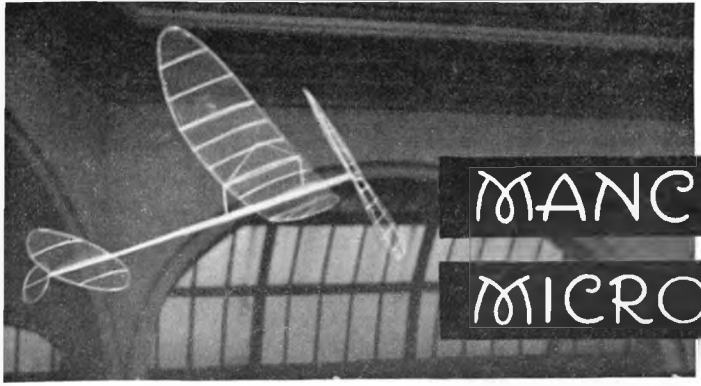






At left: the ex-Admiralty stopwatch as supplied by Chas. Franks of Glasgow, and above, the KK Joker, after many flights

At right: The unique 2v. Magnalux accumulator with cigarette for size, is re-chargeable. Below it are the two Airfix 2s. plastics which take our fancy, are 1/72nd scale, of the Gladiator and Bristol 12½



MANCUNIAN MICROFILMIES

By "Rushy"

INDISPUTABLY, INDOOR flying is the most neglected phase of aeromodelling in this (and other) countries, and the reason is easy to find—lack of suitable facilities. Some advance the theory that the technique of building super-light airframes and the manufacture and application of microfilm is beyond the capabilities of the average modeller, but this fallacy was well and truly exploded at the Corn Exchange, Manchester, on the 13th and 14th April, 1957.

Through the efforts of the North Western Area Committee of the S.M.A.E., ably backed by the Midland Area and the Council, facilities were provided for an enthusiastic band of devotees to indulge in a session of test flying and record attempts, followed by a series of contests that occupied the whole of the second day. Surprisingly, the bulk support came from the Midland Area fellows, though it is well known that the Monks/Read/Poole "combine" has been maintaining interest in the superlightweight model ever since the halcyon days at the Cardington balloon sheds.

The Manchester Corn Exchange is triangular in floor plan, merging into a circular dome some 80 feet above the deck. Certain hazards in the shape of columns set in from the walls and a balcony just below the bottom of the dome were easily overcome by the fliers, but the main "model-trap"—a ledge within the dome which could not be reached—became the resting-place for two or three models, and they were still there when the meeting closed. Despite these minor difficulties, full advantage was taken of the opportunity provided by the generous space, and some extraordinarily good times were set up during the contests.

This meeting clearly demonstrated that indoor activities require "models for places", and the large Cardington type of machine was not able to demonstrate its true capabilities within the limits of the hall. The newly adopted "B" class of microfilm covered model (30-100 sq. ins.) seemed just right for the space available, and competition in this class became quite keen and exciting as the contest proceeded. Surprise of the first day's flying was to find the ubiquitous Johnny O'Donnell performing extremely well with microfilmies, his models being distinguished by bands of red "Dayglow" paint on the stick fuselages. It was John who first succeeded in circling into the dome, only to have his model "ledged" for the rest of the session.

Even more surprising was the entry of M. Grimmett of the West Bromwich Club, well known as a *combat* flier. Flying a very stable delta tailless pusher machine, he raised the existing record by over a minute to 5 min. 14 secs., and this with his *first* indoor model.

Reg Parham of Worcester was there, of course, demonstrating a whole stable of beautiful models, but he was not particularly contest-minded this time and contented himself with testing his assorted collection of machines, notable amongst which was a new ornithopter of extremely simple design, which showed promise for the future. Also present was Alan King of Australia, winner of the Wakefield Cup in 1954, flying undoubtedly the lightest model there, and further proxying for Copland with one of Bob's old hack models.

Parham had a very nice line in twin-rotor helicopters, a novel feature of which was a freely swivelling double-fin on top which stabilised the model and prevented any tendency to topple. Consisting of two semi-circles cemented together in V fashion at about 60 degrees, the fitting worked extremely well. Reg also had on view a new-fashion stick fuselage developed by the Birmingham boys, in which the normal outrigger bracing is carried on the starboard *side* of the stick, and the rubber motor to port. This apparently allows a better siting of the wing mount without the complication of interference from the outrigger fittings.

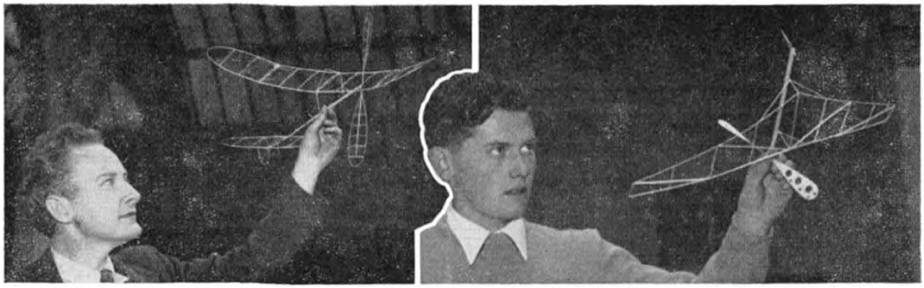
Interesting were the tissue covered models, though here some chaps had the advantage of possessing some very fine material obtained from America. This is condenser tissue of only ½1,000-in. thickness, and it is obviously an expert's job to cover correctly with this superfine material, for one cannot take the liberties allowed even with microfilm.

All three free-flight classes were run concurrently during the day, interspersed with sessions of chuck-glider flying which allowed a little relaxation from the rather quiet, tense atmosphere of the lightweight activities. Whilst the muscle boys made up the largest entry, it was obvious that the majority had only entered for a bit of fun, for with few exceptions models were of the outdoor variety and stood no chance at all against the model produced for the job.

Hughie O'Donnell probably got higher than anyone with his sweptback wing model, his heaving technique being quite outstanding; however, the sinking speed was fairly high, and he could only manage a best flight of 22 seconds to place 4th. Ray Monks led the field for a long time with 26 secs., then Johnny O'D came in with a 27-sec. first effort to place 2nd, but could not reach the top time of 30 seconds put up by J. H. Dixon of Rolls Royce, Barnoldswick, who thus won the first contest for this newly-introduced class.

Lowest entry was for the tissue-covered class, no doubt because this does not figure in the officially recognised classification for record purposes. Dan Poole of Birmingham easily topped this class, his single flight of 6 : 53 placing him well ahead of clubmate Phil Read, who tailed off after a good start and could not improve on 5 : 12. Ray Monks also was content with one flight (4 : 43), and concentrated on the microfilm classes.

Best supported free-flight class was for the new official Class B model, and here competition was keen with interest well maintained throughout the day, the excitement building up to maximum as O'Donnell, Monks and Read battled for first place. Phil Read was ahead for some time with 11 : 16; then John had an admittedly lucky flight when his finely trimmed model



bumped around the edge of the dome without getting lodged. This flight held the rapt attention of the onlookers, for Poole had put his similar class model up a few seconds ahead of O'Donnell, and it circled just under the edge of the dome whilst John's model repeatedly bumped off the side.

Drift, which had been quite troublesome the day before, had become almost negligible by this time, and a call was made for everyone to keep as still as possible while the two models battled it out to see which would have a few seconds edge on the other. With both machines descending at a constant rate it looked touch and go for two or three minutes, then Poole's prop jammed, steepening the glide considerably to a touch-down for 10 : 46. The O'Donnell model meanwhile continued its slow, steady descending circle, and a great round of applause followed the announcement that his time was 12 : 38.

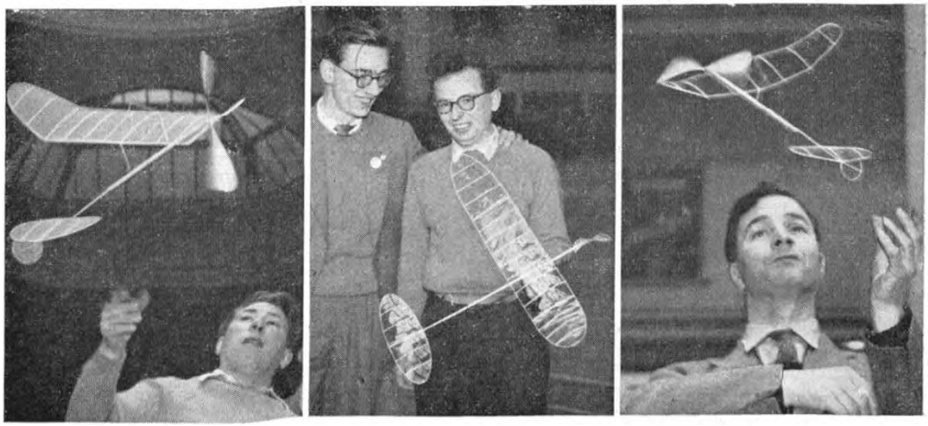
This certainly put the cat amongst the pigeons, and the Birmingham reaction was that this could not be allowed to last, with a "new boy" beating them with all their experience and practice. So, a little later Ray Monks' machine took the air and, safely avoiding the various hazards that made high durations so unpredictable, the model slowly ascended into the dome and settled into the accepted pattern for a high time. All attention was centred on this flight as the minutes ticked off, and good-humoured banter passed between the opposing camps until the model finally touched the floor for a highest-duration-of-the-meeting of 13 : 53. Earlier forecasts were that it would be difficult to reach the ten minute mark within the limits of the hall, and these exceptional durations whetted the appetites of those lucky enough to witness the flying.

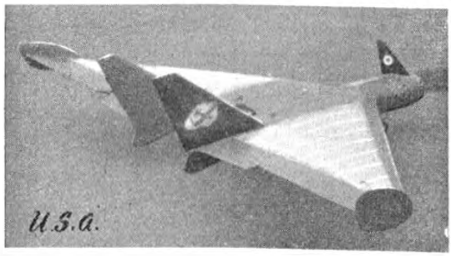
In the Open class (over 100 sq. ins.) models were fewer, but competition just as keen. Three Birmingham chaps placed closely with 8 and 9 minute flights, but these were topped by Alan King, who flew Bob Copland's model for a fine 11 : 46, only to be beaten during the last minutes of the meeting by John O'Donnell's modified "B" job that had been cleverly brought into the higher category. John's larger model had been pranged earlier in the day, so, following his fine flight of 12 : 38 he removed the fin from the unflyable model and added it to the rear centre section of his Class B job, thus bringing the area into the next model category. A couple of trimming flights were sufficient to warrant a contest flight, and the model circled away to set up top time in its class just a scant four seconds ahead of the proxy-flown model.

This saw virtually the end of flying, and the finish of a week-end of enjoyable flying in a category that could well be encouraged. As a distinct change from the hurly-burly of outdoor activities, with no cries of "Mind the lines" and no engines crackling, the easy-going atmosphere connected with this specialised class of flying was welcomed by all who attended. It is clear that many clubs could indulge in at least modest indoor flying providing the right size of model was employed, and the number of new Class A (up to 30 sq. ins.) being tried out augured well for the future. *Results on p. 328*

Top: Aussie Alan King shows off his American influenced super lightweight, while combat-man Grimmett admires his record-breaking tailless model that was one of the surprises of the meeting

Bottom: Monks, Read, O'Donnell, and Parham joined in the great Midland versus North Western battle of the 'soap bubbles'





WE GET USED to surprises at the editorial offices, but when a bronzed Phil Guilmant bowled in fresh from **Mexico City** we really did think we had perhaps had too much with lunch. Phil was over on a brief business trip and stopped long enough to regale us with fascinating tales of the land of Manana. He's been out there for three years now, tells the hard tale of trying to encourage the youngsters with simple gliders, and of people with more pesos than know-how who start an unsuccessful modelling career with the most expensive multi-channel R/C kit that winds up as a matchwood tearjerker. Same story goes for many parts of this modern world we know: but few places can match the terrific sun-parched area of flat desolation that Mexico City modellers can use for flying. The age-hardened silt is over a rock bed, and when a power model takes a nosedive, the warning echo trembles underfoot, just like the creak in a frozen lake. Thermals and downdraughts abound over this super site.

Northwards and to the east across the gulf we have news from **Florida** that the fly-off time for Gerry Ritz's Class A high thrustline power entry in the King Orange Internationals was no less than *twelve minutes*! Gerry uses an Oliver Tiger, and interesting point is that second place was taken by Laurie Conover flying the same *Lucky Lindy* design flown proxy for him to the fly-off at last year's World Championships. His time for the fly-off was a mere 7 : 19 (!) which gives an idea of the conditions around mid-winter (December 30th) in Miami. Meeting was enhanced by international entries from **Cuba** and **Brazil.**

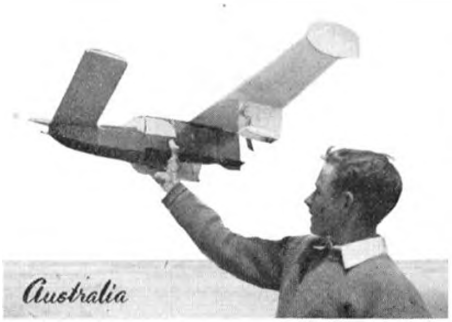
From Bogota in **Colombia** we have news of a Nationals sponsored by the Colombian Air Force which attracted 120 entrants in all classes. Most popular events were controline and the outstanding entry was an *all-aluminium* Douglas DC-3 for two Fox 59's built by Capt. Gabriel Ferro, who won first in the scale event. *See photo.*

Talking of scale, Chuck Wood out in Seattle, Washington, **U.S.A.,** tells us the new A.M.A. rules which are based on how realistically a scale model performs in the air rather than on the duration. In brief they consist of: 100 points for scale fidelity, appearance and finish; 100 points for flying, divided into 40 points for a minimum of 80 secs. in that air or 1 point per 2 secs. under that figure; 30 points for the take-off and climb; and 20 points for the landing and glide approach. So that now duration counts only for 20 per cent. of the possible perfect total.

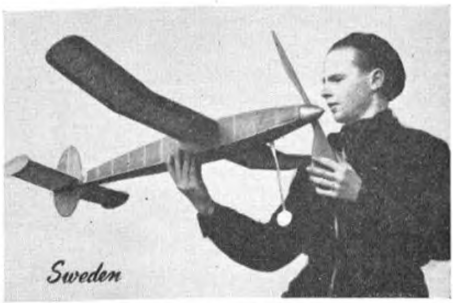
In the U.S. model trade first mass-produced ducted fan kit will soon be coming on the market for the ·8 c.c. glow engines. It is to be a small (25-inch) Douglas Skyray by Berkeley Models with special metal fan.

Some nice model designs have been reproduced in the Montreal M.F.C. Bulletin, illustrating trends in **Canada** toward the short nose, long tail moment with 30 per cent. t/p for power design. Jerry McGlashan's F.A.I. design is shown here and is advised for rolling climb trim, using sidethrust to obtain a turn, and opposite wing warps to create a roll opposing the turn. May 19th is the date for a postal international with clubs in Holland and the Isle of Wight, for rubber and glider. In Hamilton, down on Lake Ontario, the aeromodelling association has a novel scheme for evening classes.

Magnificent permanent CIL site in Barcelona SPAIN is scene of team elims for the Criterium d'Europe. From COLOMBIA is an all-metal DC-3 with two Fox 59's resplendent in National Airforce colours, by Captain Gabriel Ferro. Delta is Ron Smith's variation on A.P.S. Fulton with 642 sq. in. wing. Frog 149, proportional control on noscvane, seen on runway in Washington State, U.S.A. Also under R/C is George Curmi's 72-in. Cessna 170 with E.D. radio and D.C. Manxman 3.5 c.c. diesel, from MALTA, G.C. Watch next month for A.P.S. plans of same size Cessna 17



Max Fyfe with his canard flying boat "Paddleduck", designed by Jim Fullarton. Note floats under wings and stepped hull



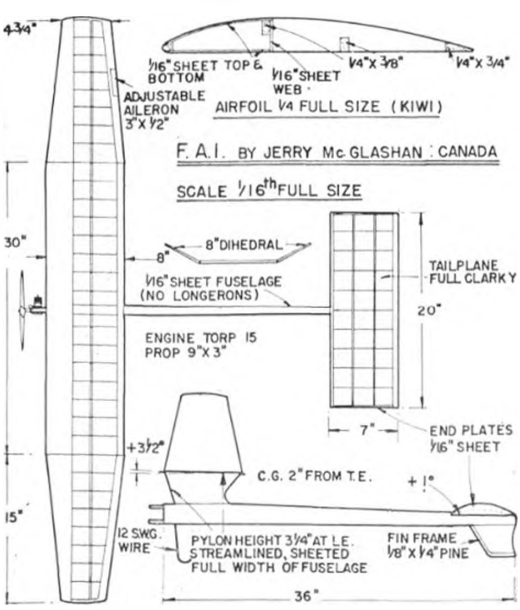
Lars Gunnar Larsson was winner of winter contest for rubber models in SWEDEN. Nifty colour scheme in red and white is on a pylon wing R/C model by Capt. Mike McGuinn of Fort Eustis, Virginia, U.S.A. Wing is from a Sterling "Mambo" kit, has rudder, elevator and motor control, Citizenship receiver, Babcock escapements

Members go along for instruction on how to make their own R/C receiver with instruction by one Roger Blunt. Cost to the pupil is ten dollars, and he keeps the Rx for himself. Judging by this club's list of scale floatplanes and flying boats, they enjoy the lakeside facilities for flying.

Over to Europe, and the temperature drops to minus eight degrees Centigrade for the winter contest at Hango in **Finland** on March 17. Ninety-five entries were made for the over-ice flying, and for those who cannot believe that there are lots of strong thermals at this temperature over frozen water, let them take heed that five models disappeared upwards, some with d/t operating. There were 57 max's recorded out of 250 flights. Winners' times were A/1, I. Haahtela, 12 : 26; A/2, B. Werner, 13 : 32; Power, B. Hisinger, 14 : 36; and Chuck Glider, O. Ginstrom, 2 : 16.

Hans Justus Meier, for a long time the kingpin of aeromodelling organisation in **Germany**, has had to resign his post as M.F.K. Chairman because of ill health. We wish Herr Meier a speedy recovery and know that modellers on the Continent join us in thanking him for his great efforts in the past. German Free-Flight Championships are to be held in Kassel-Waldau from August 1st to 4th.

Delayed publication of the modelling magazine in **Hungary** is understandable, and the first issue to reach us this year contains much of the news concerning activity before last October. Team racing is established, the times for 10 kilometres hovering around the six-minute mark, using East Zone Schlosser and Zeiss engines. George Benedek has developed some attractive new airfoils for A/1, A/2 and Wakefield, which we hope to reproduce in a future issue. They have of course been tried most successfully by the leading Hungarian flyers, Benedek and Bedo Sandor.



Canadian power design at right is a useful subject for enlargement. Original by Jerry McGlashan had Torpedo 15 driving a 9 x 3 prop

A 42" SPAN SPORT MODEL FOR ¼ A 5 GROUP B.C.G. ENGINES | B - CC |

COURIER

DESIGNED BY

B.G.Cracknell

THE AEROMODELLER PLANS SERVICE

38, CLARENDON RD., WATFORD, HERTS.

4/-

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

MATERIALS REQUIRED	
3 SHEETS OF 1/16" x 4" x 36"	18" OF ¼" x ⅜"
1 SHEET " 3/32" x 3" x 36"	12" " ¼" SQ. BEECH
1 " " ⅛" x 3" x 36"	8" x 7" OF 3/32" PLY
4 STRIPS " ¼" x ⅛" x 36"	8" x 1" " ⅛" "
4 " " ⅛" SQ. x 36"	4" OF ⅛" DOWEL
2 " " ⅛" x ⅛" x 36"	36" OF 14 S.W.G. PIANO WIRE
3 - 1½" WHEELS, 1 - 1½" SPINNER	6" x 6" OF CELLULOID

W1 W2 W3 W4 W5 W6 W7 W8

F2 A

⅛" SHEET

COVER WHOLE MODEL WITH HEAVYWEIGHT MODELSPAN AND GIVE WING 2 OR 3 COATS OF CLEAR DOPE. FINISH FUSELAGE & TAIL SURFACES WITH 3 COATS SANDING SEALER PLUS COLOUR DOPE.

RIBS
F1 : 3 OFF ; 3/32" SHEET
F2 : 4 " " "
F5 TO F8 : 2 EACH " "

STRAKE CEMENTED TO FUSELAGE

⅛" SHEET STRAKE

⅛" SHEET FIN

1/16" PLY DIHEDRAL BRACE 4 OFF

1/16" PLY PLATFORM

⅛" SHEET SPINE

FIN CEMENTED TO TAILPLANE

PIN FOR TAIL RETAINING RUBBER BAND

SECTION THRO' TAILPLANE

POSITION OF FIN

⅛" SHEET TAILPLANE

TEMPLATE FOR WINDSCREEN

SEE SIDE V. FOR FORWARD BENDS (RAKE)

RUBBER BAND

CELLULOID WINDSCREEN

COWL HATCH

⅛" SHEET CABIN TOP

⅛" DOWELS

⅛" SHEET GUSSETS

CUT OUT AFTER PLANKING & GLAZE WITH CELLULOID

¼" SQ. BEECH BEARERS

⅛" x ¼" CRUTCH

1½" DIA SPINNER

¼" SHEET COWL PLANKING

¼" x ¼" OVER CRUTCH

PAPER TUBES FOR JET EFFECT (EXHAUST EXTRACTION)

PLANK WHOLE FUSELAGE AFT OF F2 WITH SOFT 1/16" SHEET

ALTERNATIVE METHOD OF SHEETING BLISTERS WITH SEPARATE PANELS BETWEEN FORMER BAYS

CUT HATCH AFTER PLANKING

1½" WHEELS

⅛" SHEET SEATING

REMOVE THIS SPACER AFTER FIXING F8

CABIN TOP

C.G.

MILLS .75 SHOWN

⅛" SHEET COVERING

FORMERS
F1 : 3/32" PLY FACED WITH ⅛" SHEET
F2, 3, 6 & 7 : ⅛" PLY
F2A : ⅛" SHEET
ALL OTHERS 3/32" SHEET

SEW U/C TO FORMERS WITH THREAD

REMOVE THIS SPACER AFTER PLANKING

⅛" DOWELS

FIT TUBES BEFORE PLANKING

BEARERS NOTCHED OVER F1.

DIHEDRAL BREAK

2 3/4" DIHEDRAL UNDER EACH WINGTIP

STARBOARD WING DOTTED

DRILL HOLES IN F8 AFTER FITTING IN CRUTCH

⅛" SHEET GUSSETS

⅛" x ½" T.E.

¼" x ⅛" CAP STRIPS TOP AND BOTTOM

DIHEDRAL BRACES

CENTRE SECTION FLAT

⅛" SQ. TOP & BOTTOM

1/16" SHEET TOP & BOTTOM

⅛" SHEET TIP

1/16" SHEET TOP COVERING TO TIP

⅛" x ¼" L.E.

MAIN

14 S.W.G. WIRE U/C LEGS

FRONT

⅛" SHEET FACING

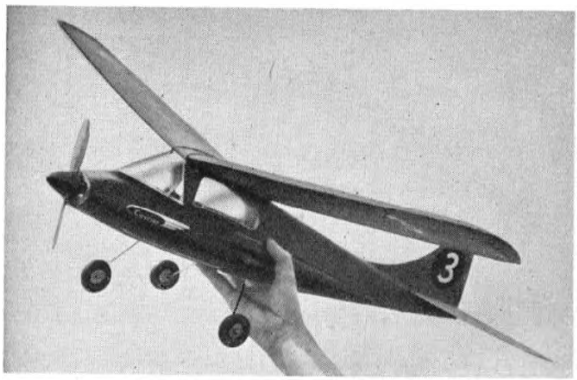
PUBLISHED AEROMODELLER : MAY, 1957

PET 602

A new look in free-flight sports model design with turbo-prop lines and jet exhausts on an elegant tricycle u/c fuselage of . . .

Brian Cracknell's

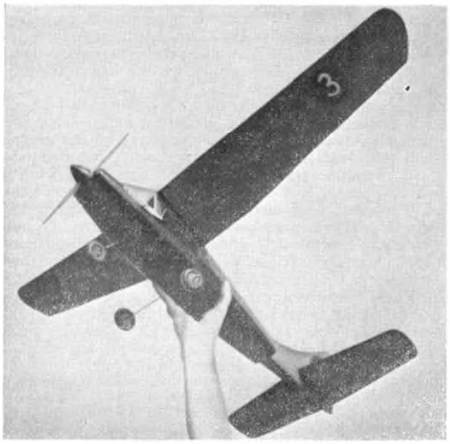
Courier



THIS MODEL is one of the most emphatic answers to the query "What can there be new in the shape of a sports model?" Jet lines are brought to a fine streamlined fuselage with chubby cheeks and very neat nose cowl. Though Courier may appear to be difficult to construct for the beginner, the bulkheads with their close spacing offer no problems, and when located over paper tubes for "Jet" exhausts and $\frac{1}{8}$ $\frac{1}{4}$ in. main crutch members, planking is simplicity itself. The result is a novel fuselage cross section which appeals not only for its ingenious shape, but also for its high resistance to punishment. In fact the prototype model dates right back to December, 1951, when the first model flew under the spectacular name of "Assassin".

Development models with modifications including the mock gas turbine layout have all shown high resistance to warps and can be left in the rain, sun, under the bed or stowed in the attic for a couple of months, then flown without qualms.

The fuselage is made by constructing the main crutch over the plan view, having cross braces of the same $\frac{1}{4} \times \frac{1}{4}$ in. materials. The undercarriage members are bound to F3, F5, and all formers fitted in place. Then the spine is added from F5 to F8 which in turn carries F9 and F10 on the extensions. The under-belly which is flat, is now covered in one piece and care should be taken to see that the tail end remains true to the centre line of the fuselage. The twin exhaust tubes are now threaded through their appropriate holes in the formers after forming them by wrapping brown or stiff paper around the suitable dowel. The rounded portion of the fuselage is now planked, followed by the flatter upper sides and lastly, the top curve, and engine cowling. Finally, all accessories are added, such as wing dowels and cabin glazing, tail platform and fin strake.



Being all sheet and immensely strong, the tail surfaces need no explanation, except perhaps that care should be taken to see that the grain of the wood is even and not diagonal, which is rather prone to warps.

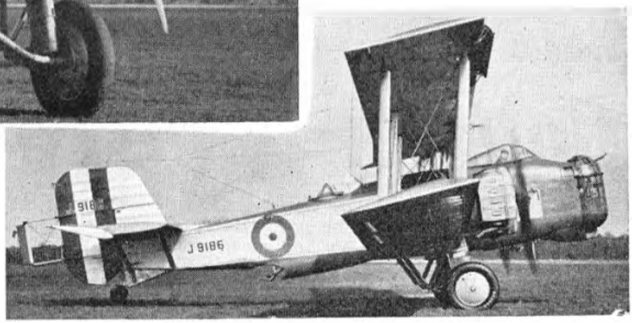
For the experienced modellers, the mainplane is also very simple, but beginners will find assembly best followed by pinning down the leading and trailing edge, bottom spar, then cementing ribs in place, followed by top spar and gussets, making the wing in two separate pieces to be joined together by the dihedral braces in the centre section. Make wing panels from the dihedral break outwards and fill-in the two flat centre section bays when each tip is supported $2\frac{3}{4}$ in. above the building board and clothes pegs used to clamp the $\frac{1}{16}$th ply dihedral braces against the relative spar, leading and trailing edge faces.

Cover the entire model with heavyweight Modelspan and give wings two or three coats of clear dope using sanding sealer and colour on the fuselage. A Mills ·75 was used on the prototype, but this design caters for a wide range of engines and is extremely easy to fly, preferring wide left hand circles which it performs with grand realism after fine take-offs using the tricycle undercarriage.

FAMOUS BIPLANES No. 9

Boulton Paul OVERSTRAND

by G. A. G. COX



Nose of K4555, code letter Y reveals cowl and turret detail for modelling (Chas. Brown photo). Side view is of prototype showing rudder stripes and green decking (Boulton Paul photo)

IN 1932 THE Martin company of America produced a low wing twin-engined bomber of advanced design. This aircraft had a retracting undercart and its maximum speed was 207 m.p.h. During the next year deliveries were made to the U.S. Army Air Corps under the designation YB10 and as development progressed the speed rose to 230 m.p.h. It is interesting to compare the Martin B10 with its nearest British equivalent, the Boulton Paul "Overstrand", known affectionately in the R.A.F. as the "Bandstand".

The Overstrand's ancestry can be traced back to the Boulton Paul P7 Bourges of 1918, which was a very clean, fast twin-engined bomber—one of the first aerobatic multi-engined aircraft. At the Hendon display in 1923 the Bourges was looped, rolled and spun in mock battle with Nighthawk fighters. In 1924 there came from the Norwich factory an improved machine called the Bugle (Maker's designation P25). This aeroplane was of predominantly steel construction, using a patented Boulton and Paul process, and like the Bourges was fully aerobatic. It underwent squadron trials but was not produced in numbers.

Three years later there appeared the P29 Sidestrand* which was an outstanding aeroplane for its time. The results of several years' research into aerodynamic forms had gone into the design of this machine which was then the cleanest twin-engined bomber ever built. The fuselage was an exceptionally smooth combination of curves combined with, incongruously, square-cut flying surfaces. Because of stringent financial economies then prevailing, only 18 machines were ordered which went to 101 squadron, then stationed at Bircham Newton in Norfolk. These, with modified ailerons and a servo rudder were designated Sidestrand II and followed tradition in that they could be rolled, looped and spun with impunity, and could even climb on one engine with full load. Progressively re-engined, they became Sidestrand IIIs, and a testimony to their efficiency was the fact that 101 squadron soon broke all records for bombing accuracy. With the increased speed of the Sidestrand, however, came an attendant drawback. The gunners found that the slipstreams made it difficult to sight and track their guns accurately, and it was with this problem foremost in their minds that the Boulton Paul designers produced an improved version which they named Sidestrand V (Factory designation P75).

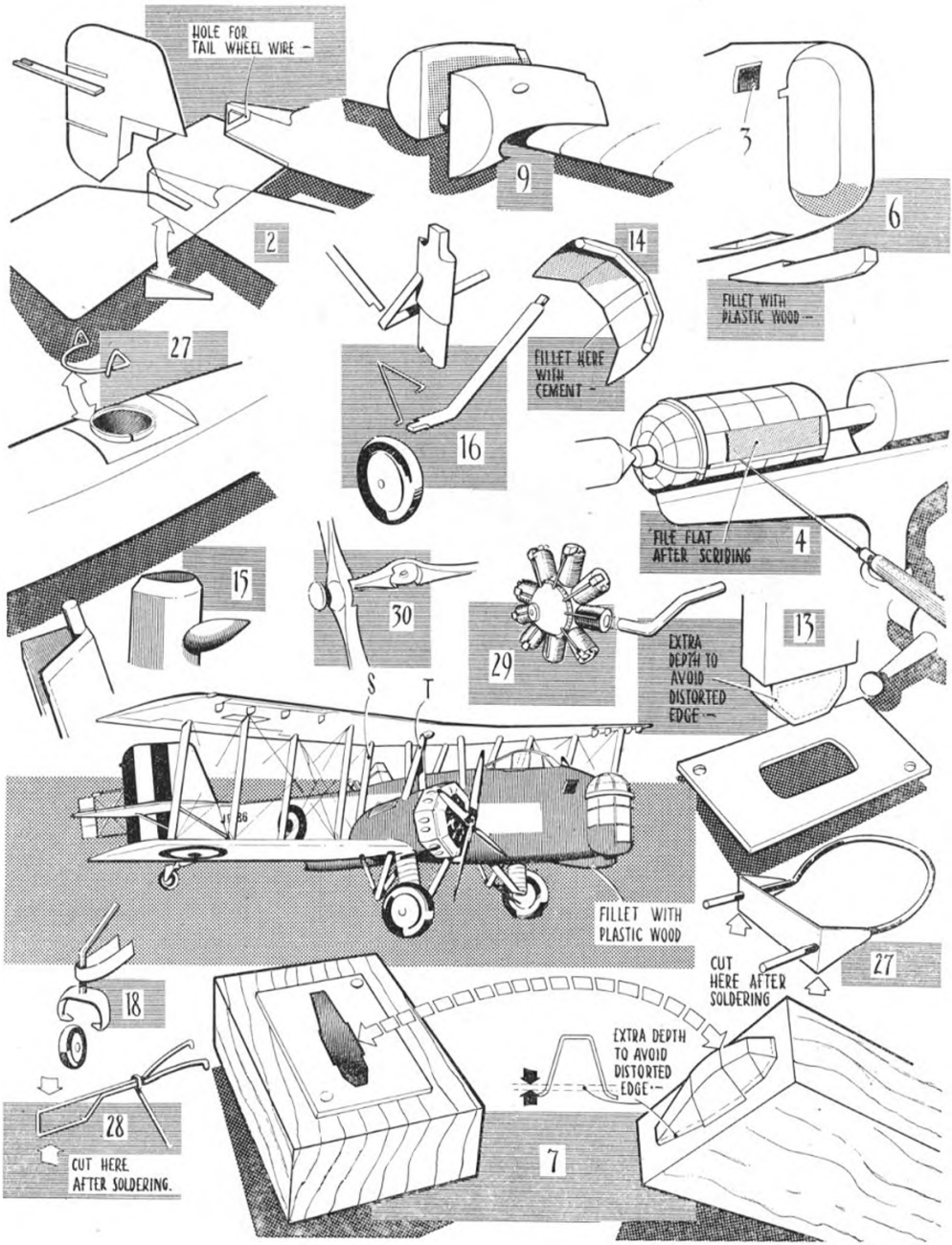
* Sidestrand and Overstrand are villages near Cromer, in Norfolk.

The same wings and tail were utilised on the new machine, but the forward fuselage was completely redesigned around an enclosed power-operated gun turret worked by compressed air fed by engine-driven compressors through storage bottles. The pilot was given an enclosed, heated cockpit and the rear gunner was protected by a large windscreen. An automatic pilot was standard equipment, and the airframe was strengthened to permit a greater all-up weight including an increased bomb load of 1,500 lb. A Sidestrand, J9186, was converted to the new design and whereas Townend rings gave cooling troubles on the Sidestrand, a polygonal type was successfully fitted to the Pegasus engines on this machine. (It was not unique in this respect—the Saro London of 1934 had the same shape of cowling.) The prototype flew in 1933, and in the following year work started on a production batch of 24 machines with the new name of Overstrand; the last was delivered at the end of 1936. Again, 101 squadron was chosen to receive the new Boulton and Paul bomber and when it was delivered to their new station at Bicester it was an immediate success in that the accuracy of the gunners was increased from 15 to 85 per cent., but compared with contemporary fighters the Overstrand was painfully slow. The Gloster Gauntlet had a maximum speed of 230 m.p.h., the Overstrand's was 177 m.p.h. In 1937 the Overstrands were replaced by Blenheims, although they still gave useful service as gunnery trainers until 1941. A refined version, with a retracting undercarriage, which was to be named Superstrand, was never built.

Photo Reference.—Readers wishing to build a model of the Overstrand will find clear photographs an invaluable aid. The following photographic prints supplied by Messrs. Real Photographs Ltd. are especially recommended for their clarity and detail:

No. 47. Sidestrand J9181, three-quarter front, on ground.
No. 386. Overstrand J9186, three-quarter front, on ground.
No. 735. Overstrand J9770, side view, on ground.

Turn to page 312 *for model details.*


HOLE FOR TAIL WHEEL WIRE
2
9
3
6
14
FILLET WITH PLASTIC WOOD
27
FILLET HERE WITH CEMENT
16
FILE FLAT AFTER SCRIBING
4
15
30
29
EXTRA DEPTH TO AVOID DISTORTED EDGE
13
S
T
FILLET WITH PLASTIC WOOD
CUT HERE AFTER SOLDERING
27
18
EXTRA DEPTH TO AVOID DISTORTED EDGE
28
CUT HERE AFTER SOLDERING.
7

BOULTON PAUL 'OVERSTRAND' PROTOTYPE AND PRODUCTION MACHINES

FT.

DRAWN BY G.A.D. COE

PROTOTYPE J 9186 ILLUSTRATED

YELLOW SQUADRON NO. OUTLINED IN BLACK ON K 4546, FIRST PROD'N MACHINE

FUSELAGE SIDES BETWEEN THE LINES X FABRIC COVERED

K 4546

J9186

BLUE / WHITE / RED } J 9186 ONLY

BLACK 'W' ON K 4546 ONLY

WHEEL DISCS YELLOW (FLIGHT COLOUR) ON K 4546 ONLY

PROD'N ONLY

OIL COOLER AIR INTAKE SHORTER ON K 4546

ST'B'D ONLY PROD'N MACHINES

1. 35. GALLON TANK
2. 68 GALLON TANK
3. 157 GALLON TANK
4. AUTO PILOT
5. THROTTLE & MIXTURE CONTROLS
6. AUTO PILOT CONTROLS
7. FRONT GUNNERS PARACHUTE
8. FIRE EXTINGUISHER
9. TAIL TRIMMING WHEEL
10. BATTERY
11. FOUR 20 LB. BOMBS
12. TWO 500 LB. BOMBS
13. OXYGEN BOTTLES
14. FOLDING SEAT (ST'B'D SIDE)
15. RADIO (TR 1154-1155)
16. COMPRESSED AIR BOTTLES
17. WINDOW (BOTH SIDES)

18. EXHAUST PORT
19. INLET PIPE
20. VALVE PUSHROD HOUSING
21. VALVE SPRINGS
22. H.T. LEAD

J 9186

K 4546

CONTROL COLUMN DETAIL

DISCONTINUITY OF ENGINE COWLING

ROUNDEL ON PROD'N MACHINES

DIAGONAL BRACING AT O AND P

WIRES LM AND N DOUBLE, ALL OTHERS SINGLE

COLOURING

ALL PRODUCTION MACHINES (K-4546 K-4565 & K-8173 K-8177) SILVER OVERALL EXCEPT FOR WHEEL DISCS & SQUADRON NO. WHICH WERE IN THE FLIGHT COLOURS, RED, BLUE OR YELLOW.

THE PROTOTYPE J 9186, ALL SILVER EXCEPT FOR ENGINE NACELLES AFT OF COWLINGS, UNDERCARRIAGE, AND FUSELAGE OUTSIDE THE LINES 'X'. THESE AREAS WERE LIGHT GREEN.

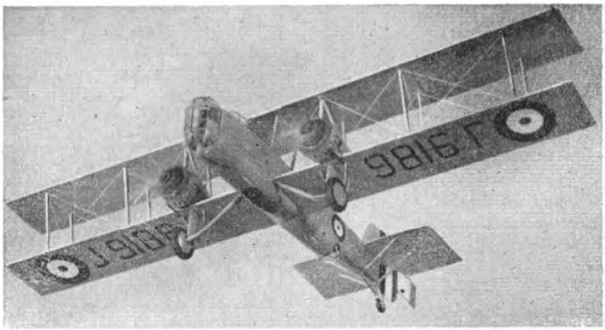
METAL COVERING

BRISTOL 'PEGASUS' ENGINE 580 H.P.

PRODUCTION MACHINES

UNDERSIDE.

FABRIC COVERING



Two photos on this page show yet another magnificent solid model by George Cox, who chose the prototype version for its colourful decoration. Who could tell the "flying" view at left from the full-size?

Building the Model

To avoid repetition of description, dates are quoted for various hints from earlier "Famous Biplanes".

1. Make the wings from hardwood (February, 1957).

2.* Shape the tail surfaces from fibre, and make fretsaw cuts across the rudder to take the servo arms. Make these arms quite wide until the razor saw cuts have been made to take the servo rigging and rudder. Finally, glue the arms to the rudder and thin down as much as possible.

3.* Make the fuselage from two halves (February, 1957) omitting the chin turret mounting. Carve out the bomb bay (two on the production version). Make recesses for the front window *before* removing the front spare block, otherwise the wood around the window may crumble. Drill the strut holes and cut away the underside to take the lower wing.

4.* Although the writer does not favour the use of solid Perspex for cockpit covers because of its lens effect and because it prevents the addition of interior details, this method was used for the Overstrand turret because it offers a new technique for the reader to try. The turret may be shaped from Perspex rod with a file, or, if a lathe is available it may be turned, using a narrow chisel to remove very fine shavings. The flat surface is then made with a smooth file. To polish, dip a damp cloth in dry scouring powder and apply to the spinning Perspex. Fifteen seconds are enough to produce a brilliant shine; metal polish may be used afterwards, but is really unnecessary. Scribe the framework while still on the lathe, or mount the turret on a vee block to do it, then cover the turret with cellulose tape and cut away the areas where paint is required. To make the painted areas opaque it is necessary to give the Perspex a preliminary coat of silver dope before painting green.

5. Gouge out the nose to take the turret, but don't fit into place until the model is painted.

6.* Add the chin fairing as shown.

7.* Make a hardwood former to mould the cockpit cover, and sand dead smooth. Notice that the former is made a little deeper than required to avoid the curved edge of the moulding. The hole in the metal plate should be larger than the former by the thickness of the moulding material. Pin a 4-in. square of 0·01 in. acetate sheet over the hole in the plate which in turn is screwed over a large hole in the end of a 1-in. thick board about 18 in. long. Hold the board about 4-5 in. from the element of an electric fire until the acetate gives off a vapour quite freely, then *quickly* place the board on the floor or bench and push the former into position. Only three mistakes can mar the finished product:—

(*a*) Former not smooth enough.

(*b*) Gap between former and plate too large or too small.

(*c*) Material insufficiently heated.

Trim off the surplus acetate and sand the edges of the cover to fit the fuselage.

8. Make Perspex windows to fit the holes in the fuselage, but don't fit into position until after the model is painted.

9.* Make each nacelle from two halves; drill holes for the struts T, make grooves for S and fit to the wing (February, 1957).

10. Assemble fuselage, lower wing, tail and nacelles. Add oil coolers, fillet the tailplane to the fuselage with plastic wood.

11. Fill the grain and drill all strut holes. The holes in the *upper* wing, except those to take S and T should be drilled right through the wing. Drill holes to take the bracing threads.

12. Make the engines (August, 1956). Note that one cylinder should be drilled to take the exhaust pipe.

13.* Make four cowling mouldings from acetate sheet with the former shown. Leave the moulding on the former while cutting round its front and rear edges, then remove one flat surface from one moulding and lightly cement it to another, giving nine faces. Be very sparing with the cement lest it distorts the acetate.

14.* Fit short lengths of $\frac{1}{8}$-in. balsa dowel inside the front edges to form a collector ring, fillet with cement.

15.* Use thin brass to make the stamping tool for the cowl blisters. When pressed through smooth paper on a hardwood surface it produces a perfect blister which is convex in shape and ready to glue to the cowling.

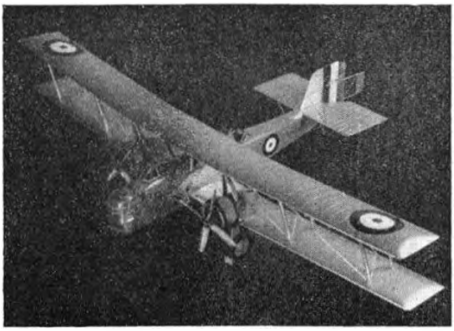
16.* Build up the undercart from brass and wire.

17. Turn wheels and drill three holes on their inside faces for attaching to the model.

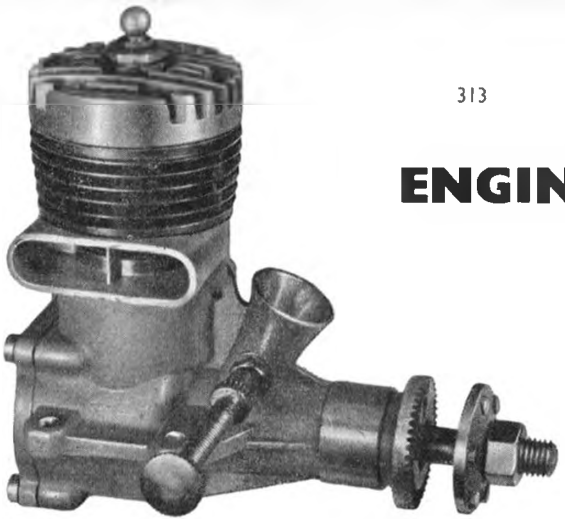
18.* Add a tailwheel assembly.

19.* Make and fit the struts S and T. (It is these struts, and not those attached to the fuselage, which hold the wing firmly in place during the assembly stage.)

Continued on page 327



* *Asterisks refer to illustrated stages on page 309.*



ENGINE ANALYSIS

NUMBER 36

Outstanding plain-bearing glowplug 5 c.c. from Japan

OS 29

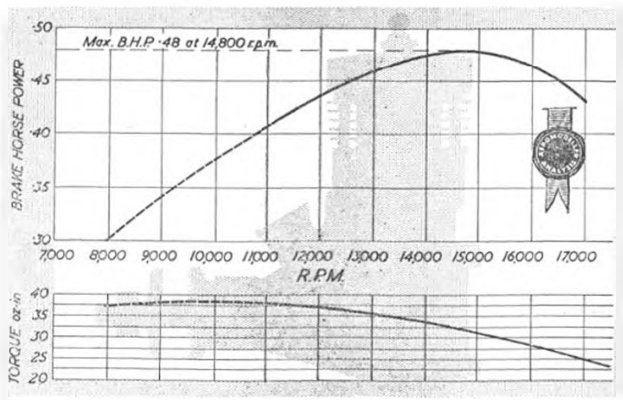
reviewed by *R. H. Warring*

AFTER A RUN of the smaller sizes of engines, to come up against a really potent 5 c.c. job for test can be a little shattering, and in this category the O.S. "29" rates with the best—both for power and noise output. Frankly it would be invidious to attempt criticism of design, workmanship or performance. It is a first class engine in every respect, even if a bit of a brute to handle.

Mainly these latter remarks are concerned with starting characteristics. The test engine needed flooding through the exhaust port to get any signs of life, and a sharp flick-over even on the larger sizes of propellers. The kick-back is really vicious and the compression ratio and compression seal good enough for any diesel. As regards piston-cylinder fit, in fact, it puts many a contemporary American glow motor to shame. The Japs, somewhere along the line, have acquired a lot of "know how" on model engine design and construction and whilst following American general technique, have added a few ideas of their own to good effect.

For what main purpose the O.S. "29" is designed we were not told—presumably control-line stunt work? It is a high-revving engine producing its peak power in the region of 15,000 r.p.m. which should give wonderful results in free flight power duration, if people do get around to building models that size again. Frankly, though, we would be tempted to "detune" it somewhat if we were using it in a stunt model with a smaller diameter propeller, by decreasing the compression ratio with an additional gasket under the head. We noticed, too, that the engine submitted for test had an inserted venturi throat section (located by the spray bar) which is made to be interchangeable for other throat diameters. A smaller throat diameter coupled with reduced compression ratio would undoubtedly tame the O.S. "29" down somewhat as regards starting. But perhaps we were a little put off when our initial attempts at starting produced a backfire and the ejection of solid fuel back out of the intake straight into our face!

Running tests were conducted between a range of 11,000 and 18,000 r.p.m., smooth two-stroking being obtained readily by adjustment of the needle valve after starting very rich in each case. Nothing smaller than an 8-inch diameter propeller was used for hand starting. The engine inevitably "died"



SPECIFICATION:

Displacement: 4·857 c.c. (·2963 cu. in.).
Bore: ·739 in.
Stroke: ·691 in.
Bore/stroke ratio: 1·06
Bare weight: 6¼ ounces
Max. B.H.P.: ·48 at 14,800 r.p.m.
Max. torque: approx. 38 ounce-inches at 10,000 r.p.m.
Power output: 1 B.H.P. per c.c.
Power/weight ratio: ·071 B.H.P. per ounce.

Material specification:

Crankcase unit: pressure die-cast light alloy
Cylinder: mild steel (unhardened)
Piston: cast iron
Head: light alloy die casting
Crankshaft: hardened steel
Connecting rod: dural, brass big end bush
Main bearing: brass or bronze sleeve
Spraybar assembly: brass

Manufacturers:
Ogawa Model Mfg. Co., Osaka, Japan.

unless started very rich and also ran very hot, but it ran steadily and smoothly when properly adjusted. It did, however, appear to generate a fair amount of vibration at all speeds. The power output achieved on test could no doubt be improved with more rigid mounting and experimenting to find an optimum fuel mixture, when its performance for a plain bearing engine could be quite phenomenal.

Constructionally the O.S. "29" follows conventional glow motor practice. Only one major casting is involved—the crankcase unit, which is bushed with a bronze or brass sleeve for the main bearing. (It is reputed that the bearing life is low on the O.S. "29", which would be the case if this is brass. On the other hand the fit was perfect and there was not the slightest evidence of wear on the test engine at the conclusion of two to three hours running.)

The cylinder is of mild soft steel, machined with thin fins in the conventional American manner. This is a sliding fit—and a tight one, too—in the crankcase casting, with only a relatively narrow seating area on the transfer passage side. Nevertheless the sealing seems quite satisfactory, the cylinder unit being held down with two long bolts. Four more bolts secure the finned head to the top of the cylinder. Both the head and the crankcase backplate are light alloy pressure die castings.

The (upper) transfer and exhaust ports are rectangular and of generous area, cut into the cylinder walls diametrically opposed. The lower transfer ports consist of two holes in the cylinder, matching two similar holes in the piston, the transfer passage being provided in the crankcase casting. Transfer and exhaust overlap to a considerable extent, the transfer opening very shortly after the exhaust. The piston is provided with a deflector on the transfer side to direct the incoming mixture into the head. Nevertheless a considerable proportion of incoming unburnt fuel is ejected through the exhaust, adding to the fuel consumption of an already thirsty engine.

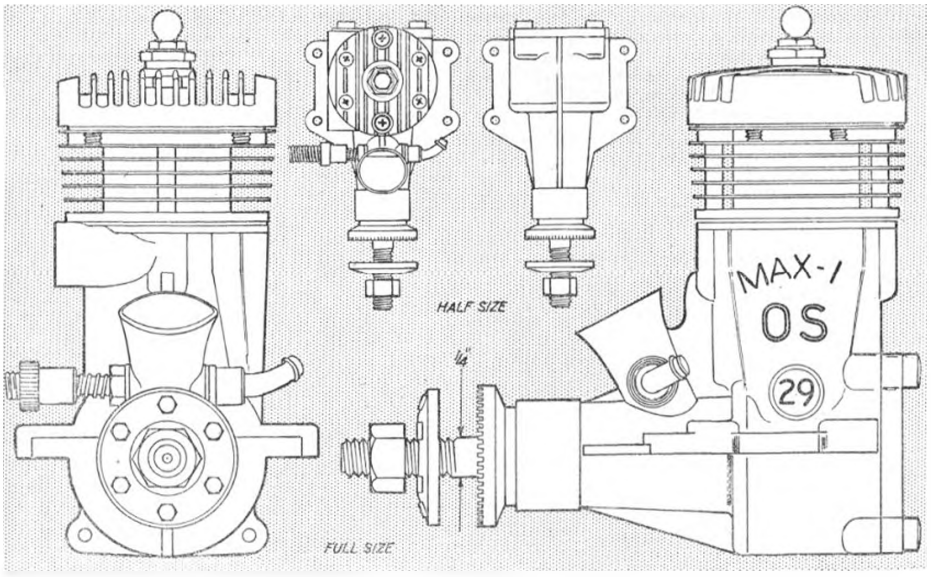
PROPELLER—R.P.M. DATA

Propeller dia. x pitch	*r.p.m.*
9 x 4 (Stant)	13,500
10 x 4 (Stant)	12,000
8 x 4 (Stant)	16,300
8 x 5 (Stant)	15,100
7 x 4 (Stant)	17,600
8 x 8 (Stant T.R.)	13,600
7 x 9 (Stant T.R.)	13,400

Fuel used: methanol 40 per cent.
nitromethane 20 per cent.
Castor 40 per cent.

The inlet port timing is also quite extreme, being open for well over 180 degrees. It opens very early long before the transfer is closed. The porting is thus quite obviously designed for efficient high speed operation. At lower speeds the O.S. "29" is not so happy about running at all.

The connecting rod appears to be a forging, with a brass or bronze big end bush, drilled through for oil passage. Gudgeon pin diameter is 5 mm. (·196 in.), this being an easy "floating" fit in the cast iron piston. The little end bearing extends the full internal width of the piston, but is not bushed. Fits throughout are excellent. The piston itself is



not as light as on some American glow motors of similar size, but is still only just over ¼ ounce. It is important when taking this engine apart to re-assemble with all the components the design way round.

The crankshaft is quite massive—11 mm. diameter (·434 in.), stepping down to ¼ in. at the threaded front end. All sizes, incidentally, appear to be metric throughout with the exception of the crankshaft thread which is ¼ × 28 American National Fine standard. The crankpin is hollow (drilled through) and the crank web machined away to produce a counterweight. The $\frac{5}{16}$ in. hole through the crankshaft extends past the intake port for lightness, the crankshaft weighing 1½ ounces nevertheless. The main bearing fit and finish is just about as perfect as one could hope to achieve, with the shaft a smooth, sliding fit inserted from either end.

The spray bar is mounted right at the bottom of the bellmouthed intake (cast integral with the crankcase unit), the height of this tube being relatively short. The spray bar unit is of brass, with the fuel tube fitting angled back—a feature we would like to see on more engines. It certainly means that the fuel line can be laid neatly alongside the engine without kinking. The exterior part of this fitting is nickel plated. The needle valve is mounted on a flexible extension, with coil spring locking inside the thimble. This, again, was another welcome feature since it meant that the needle could be adjusted out of range of the heat—and waste oil—ejected from the exhaust. Another fore and aft spacing of the mounting bolt holes, practical feature deserving of comment is the wide giving a nice firm base for anchoring the motor securely.

Summarising: an engine where the general standard of design, workmanship and finish is very high; and although a plain bearing engine its performance must be competitive with many racing engines of similar size. Certainly not the sort of engine you want to bench run at home if you want to stay popular with your neighbours—and the rest of your family—but one which could undoubtedly win honours on the flying field, in the right hands.

What's the answer?

"WEAK:—MAY LAST THE DAY OUT"

About downthrust, power and performance.

Frank's 1957 Wakefield is just about as good as any we have had in the Club. Frank placed a good second in the Area Eliminators with it and only just missed a place in the team. He believes in using a fairly weak motor to give a longer power run—something like 70 seconds in the air.

Our theory man knew just why Frank missed one of those four top places in the Trials. "Look at all the downthrust you're using," he said. "With a weak enough motor to start with you are wasting another ten per cent. or so." Yet that does not seem to be borne out in practice. Downthrust or not we reckon Frank's model is as good as most, judged on its consistent high performance. What's the answer?

What would YOU do in a case like this! Think a moment then twist this page for the solution to the problem printed below.

"IT'S HOLDING ITS OWN FRANK!"

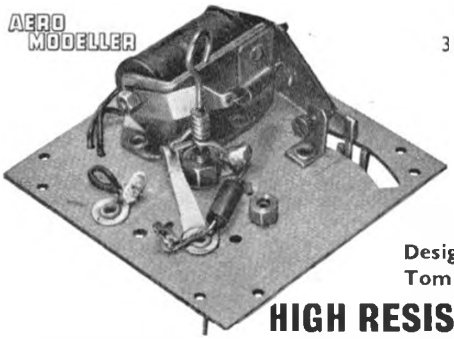
"YOU'RE LOSING 10% ON DOWNTHRUST, 10% ON A NEGATIVE TAIL, 10% ON THOSE WARPS, 10% ON THAT COVERING AND 50% ON THAT PROP — IT'LL NEVER FLY!!"

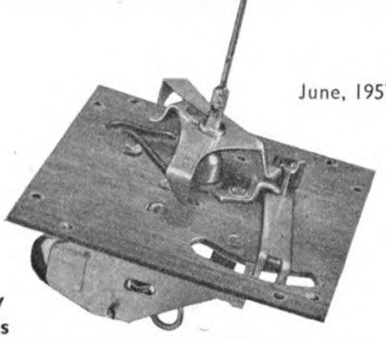
"PEAK PERFORMANCE"

ANSWER: Downthrust is not necessarily wasteful of power. The fact that the thrust line is tilted down relative to the *fuselage* centre line does not mean that it is acting at that same downward angle to the flight path.

Almost certainly, we would say, Frank's model is balanced with the centre of gravity fairly well forward. This implies a negative tail setting to trim and a negative tail setting, in turn almost always means using a fairly generous downthrust angle. This holds true whether the motor is weak or strong.

If the point of balance were moved *back*, then the tailplane setting could be reduced, or even made positive. With this change of trim, downthrust could be reduced. Whilst theoretically the performance should be increased slightly this is because the tail is now contributing more to the total lift—not because the downthrust has been *reduced* by this change. In practice the longitudinal stability has also been reduced. In practice the downthrust has been reduced. This a model trimmed out with a fairly large downthrust angle is often more stable and consistent. This type of trim, incidentally, works out best on models with freewheeling propellers.





Designed by
Tommy Ives

HIGH RESISTANCE ACTUATOR (Relaytor)

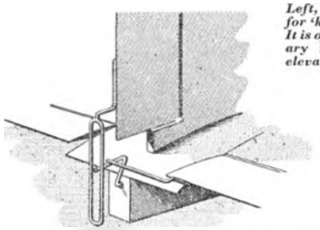
THIS UNIT has been designed for operation with the "AEROMODELLER Transistor Receiver" and does of course combine the duties of both relay and actuator. The coil resistance in the prototype is 3,000 ohms, but any value from 2,000 to 4,000 would be suitable.

The escapement is not the usual 4-arm, self-neutralising type, although this is shown for those who require same. It has two neutral positions close to one another, one being free for an additional control if required. Sketch shows author's method of utilising this control for a "kick-up" elevator from which it will be seen that the normal rudder crank holds "up-elevator" as long as the second neutral position is held. This control system comes a little strange to those people used to the normal self-neutralising type, but does ensure positive identification of the control to be applied. Sequence is as follows: "Neutral"—no signal; "Left"—one signal held; "Right"—release signal. A further signal then gives "Neutral" if released, or if held on gives the secondary neutral or "Elevator". Familiarisation takes a few minutes but we guarantee that once the average "button pusher" tries it in practice he will be converted. The beauty of the system is that there is never any doubt as to which control comes next which is the main weakness of the self-neutralising actuator.

Due to the low power factor of this type of actuator every moving part must be perfectly free, and provided reasonable precautions are taken no trouble will be experienced. Coupling to the rudder must be by means of a universal joint.

The high current change required to operate this actuator necessitates a current saving switch which limits the average drain on the H.T. battery to approx. 3 m/a on receipt of a signal. Total battery drain with no signal is about 1·2 m/a so that small batteries can safely be used.

The coil is the most difficult part of the unit and should be tackled first. Use Swedish iron if possible, making the head from the same material. Soft iron will do if the former material is unavailable. Knurl or centre pop all round each end of the core to ensure that the cheeks do not move once the winding is in place. Fix the core head and cheeks. Cover the core with two layers of thin tissue or Sellotape. Take the end of the wire (46 g. enamelled) and bare a length of about 3 inches. Fold the bared end into three and solder at the inner end. Place this lead on one cheek and cover it with tissue to insulate it from the winding. Wind on 16,000 turns and cover the winding with two layers of tissue. Finish off the end of the wire in the same way. Solder both leads to some fine flex and cover the finished winding with Sellotape. Before covering it is preferable to impregnate the whole coil with paraffin wax.



Left, shows scheme for 'kick-up' elevator. It is of course, necessary to spring load elevators in neutral position

Coil Bracket. Prepare as shown in drawing. Use soft or Swedish iron. Drill and bend as drawn.

Armature Pivot Plate. Make this in 20 g. brass. Rivet it in place on coil bracket.

Base Plate. Make as shown from Formica Paxolin, etc.

Make and fit floating pawl pivot. Use brass screwed rod and fit a length of 18 g. spring steel wire through the centre. Make and fit the escapement bush. The centre hole should be a sliding fit on the wire for the shaft. Place a solder tag under the bush shoulder. Fit solder tags for the coil leads, etc. Place coil bracket in position and bolt and rivet.

Armature. Make as shown in the drawing. Bend the catch as indicated. This protrudes through the base to engage the floating pawl. Wrap and cement two layers of tissue round the blade to prevent any sticking to the coil head.

Armature Spring Anchor. This is quite straightforward. Use 20 g. brass. Fix the coil in position on the bracket with an 8 B.A. nut. Place the anchor under the nut.

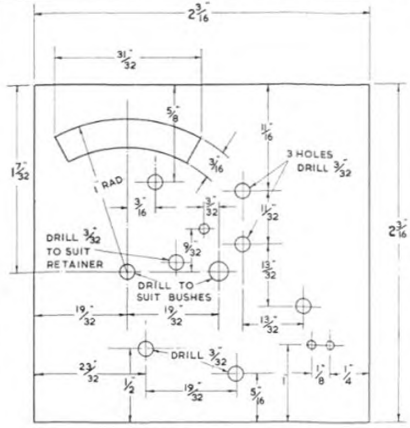
Spring. Wind this, close spaced, $\frac{1}{4}$ in. long, plus ends, on a former of $\frac{3}{32}$ in. diameter. (10 gauge wire.) Use 33 g. spring wire or 30 g. spring brass wire. Bend one coil at each end to provide a means of fixing.

Armature stop and bracket. The drawing shows this clearly. Tap 8 B.A. and slot one end. Close this end slightly in a vice so that the screw will be a close fit. Rivet to panel as shown in photo.

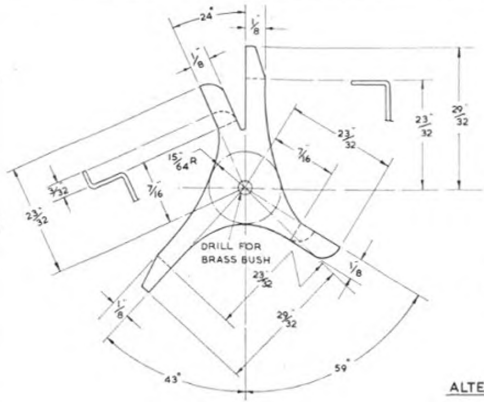
Place armature and spring in position and a preliminary test may now be made. Connect in series with the coil a battery of say 20 volts, a meter, and a 30,000 ohm potentiometer. The potentiometer should be at maximum resistance. Reduce resistance until the armature pulls in. Note current reading. Adjust stop screw and spring so that the armature pulls in at approx. 2·5 m/a. It should fall out at 1 m/a. If it falls out at a lower figure or sticks, wrap a further layer of tissue round the blade. The total movement of the armature should not exceed $\frac{1}{16}$ in.

Floating Pawl. This is the next item and is constructed from 20 g. brass. Drill and bend as shown. The holes should be slightly smaller than required and should be reamed to a good fit on the pivot. The pawl must be quite free but not sloppy. Bend the catch points as indicated. Make the pawl retainer and rivet to the base after fitting the pawl. Bend the retainer to a point at which it just clears the pawl.

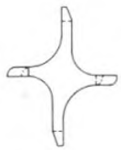
(*Continued on page* 325).



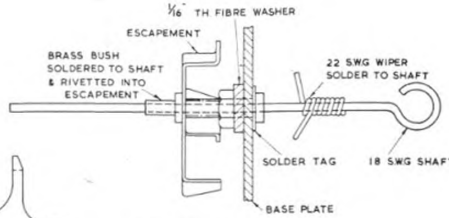
BASE PLATE
1/16 TH. FORMICA



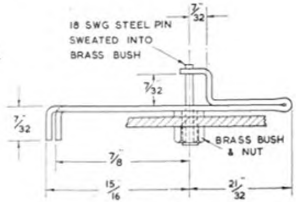
ESCAPEMENT

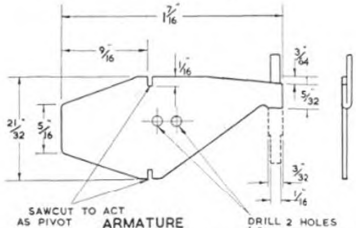


ALTERNATIVE STANDARD ESCAPEMENT
SCALE HALF SIZE

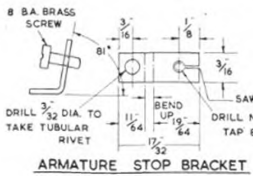


ESCAPEMENT ASSEMBLY

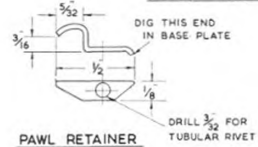




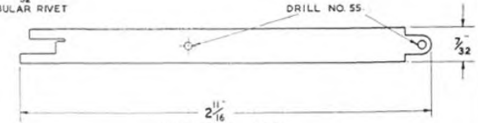
ARMATURE
20 S.W.G. SOFT IRON



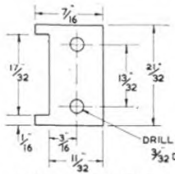
ARMATURE STOP BRACKET



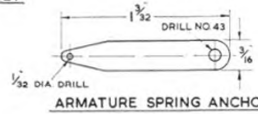
PAWL RETAINER



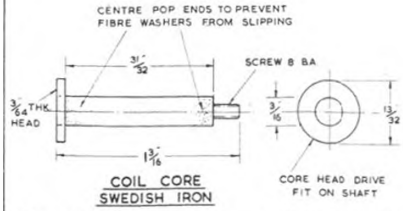
FLOATING PAWL



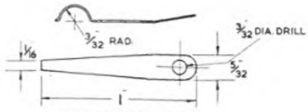
ARMATURE PIVOT



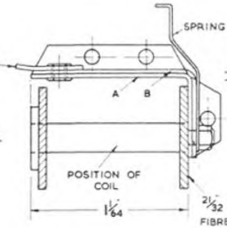
ARMATURE SPRING ANCHOR



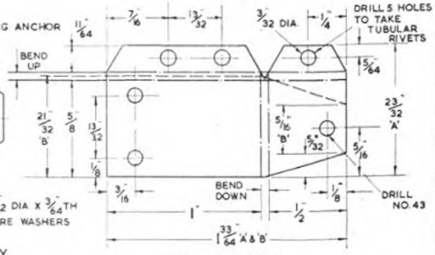
COIL CORE
SWEDISH IRON



CONTACT STRIP
·010" SHIM BRASS



COIL & BRACKET ASSEMBLY



COIL BRACKET
1 OFF 'A' 1 OFF 'B'

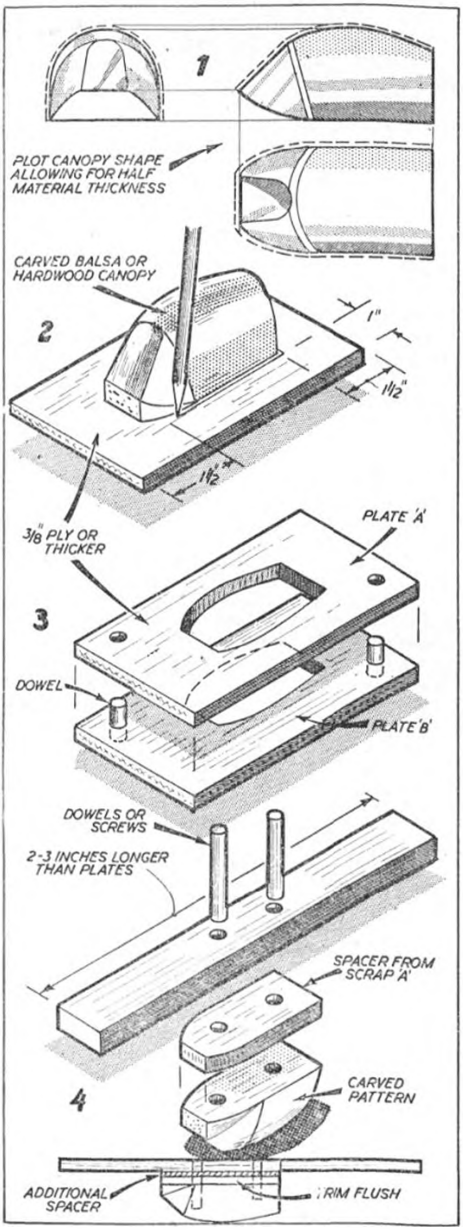
SCALE: FULL SIZE.

COIL 3K 16000 TURNS 46 S.W.G.

NOTE: ALL PARTS 20 SWG BRASS UNLESS OTHERWISE STATED.

Aeromodelling Step-by-Step

THE PROFESSIONAL METHOD OF CANOPY MOULDING



THE GENERAL method of moulding cockpit covers, etc., from transparent plastic sheet has been described many times in the past. The process of heating the sheet to a "plastic" state and then forcing over a suitable male pattern (or forcing the mould into the heated sheet) is capable of giving excellent results. Without the required "know-how", though, a lot of time—and sheet plastic!—can be wasted following such general instructions. Hence we are describing this *specific* method of obtaining first-class mouldings.

Starting point, as in other methods, is to draw out a full size pattern of the shape required (**1**). This must be slightly undersize to allow for the thickness of the sheet material forming the moulding.

The next step is to cut two identical ply plates appreciably larger than the base of the pattern (**2**). Plate B, which becomes the bottom plate, is cut to take the pattern with a clearance all round equal to the plastic sheet thickness. Plate A is cut out in similar fashion, but with a more generous clearance. The clearance on plate B is not critical provided a moulding "tight" to the bottom edge of the pattern is not required, but it must be large enough not to jamb the sheet in the final moulding process. In other words, it can be oversize without giving trouble, other than an exaggerated "draft" on the bottom edge of the moulding. The two plates are conveniently located and locked together with a couple of dowels (**3**).

The pattern itself is increased in depth by the thickness of plate A (the cut-out piece from plate A can be trimmed down for this spacer). A balsa pattern is best assembled with hardwood dowels (**4**). With a hardwood pattern, woodscrews can be used for assembling on the pressure bar. The latter is any convenient size of hardwood strip some 2 to 3 inches longer than the plates so that it overlaps each end when the pattern is laid in the mould plates. If the final moulding has to be trimmed flush with the bottom edge of the pattern, another spacer (about 1/16-in. thick) should be fitted to give an extra depth of draw. This will eliminate the chance of getting a curled edge at the bottom of the trimmed moulding.

A suitable heater is easily made by fitting a standard electric fire in a conventional ceramic mount (**5**). A single, continuous element rated for the mains voltage applicable will give strong heating but best results are usually obtained by joining *two* elements in series, so that the heater operates at dull red heat (or almost "black"). This increases the heating time required but is virtually equivalent to infra-red heating, as used in industrial processes.

The heater can be supported, upside down, on wooden blocks (**6**) or on any suitable stand. Leads should be taken out well away from the front of the unit and completely insulated. The height of mounting is decided by first finding what height plate B has to be blocked up for the finished moulding to have about a ¼"-in. clearance. Blocks can then be fitted to plate B to give this clearance, making sure that they are well clear of the cut-out portion. Then arrange the height of the heater so that the top of plate A is about ½" in. below the level of the heating elements.

The complete moulding cycle is then shown in steps (**7**), (**8**), (**9**) and (**10**). First of all the heater must be switched on and sufficient time allowed for it to heat up to maximum, uniform temperatures. With twin

elements this may take up to twenty minutes. The first job, therefore, is to switch on the heater (**7**) and utilise the warm-up time for preparing the rest of the gear.

The plastic sheet is cut to size and sandwiched between the two mould plates A and B (**9**). The sheet should overlap at least one inch all round the cut-out. Make sure, too, that the sheet is clean and free from scratch marks. When sure that the heater has reached constant temperature, slide the plates underneath and start a watch to check the heating time (**8**).

The heating time required will depend on both type of plastic and its thickness. It is best determined by experiment with a few trial runs. The plate unit can be withdrawn at regular intervals and the state of the plastic observed. It is ready for moulding when it is showing definite signs of deformation or slight sagging, or is plastic enough to be pushed out of shape readily with a blunt piece of wood. As a rough guide, heating time required is usually of the order of 1 to 1¼ minutes with 30/1,000 in. plastic with "dull" heating, then proportionately longer or shorter for thicker or thinner material, respectively.

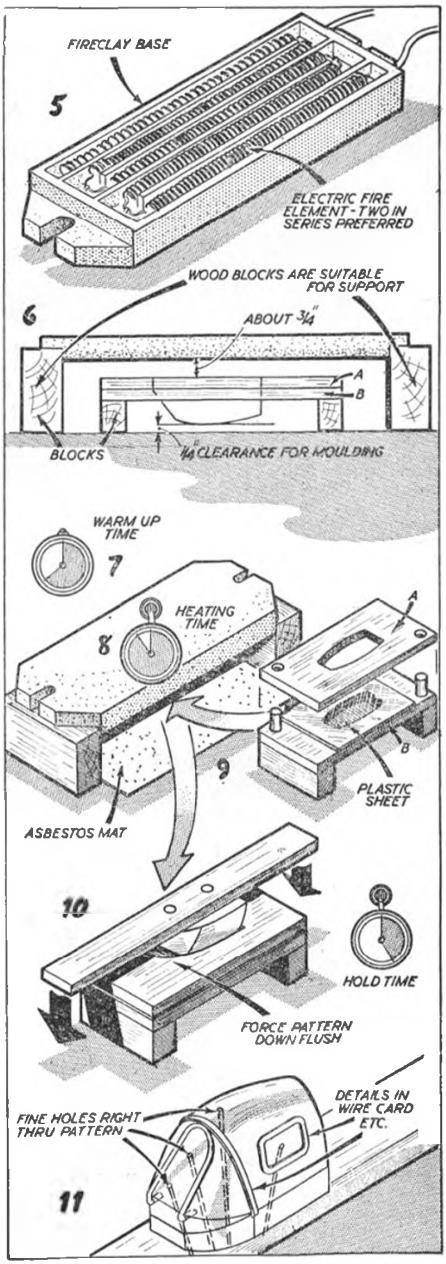
The actual moulding stage consists of withdrawing the plate assembly from under the heater and immediately forcing the pattern into the mould plates (**10**), making sure that the pressure bar is brought down flat and flush with the top of plate A. It should be held down in this position (although pressure can be relaxed somewhat) to make sure that the moulding will not warp during its initial cooling. The hold-down time required is usually about one-half of the heating time used.

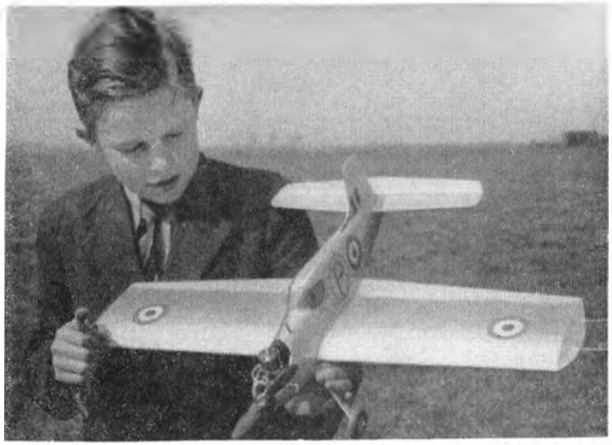
If the material is too rigid to form properly at stage (**10**), then most probably the heating time has been too short. Some improvement may result from preheating the pattern by laying on top of the heater. The same is true if the moulding has a rough surface, then the plastic has been overheated. If the material looks overheated but is very difficult to mould (*i.e.*, requires extreme pressure at this stage), then increase the clearance on plate B. If the bottom of the moulding (top when removed from the mould) has a rough or flattened surface, check that there is sufficient clearance between plate B and the table and that the moulding is not actually being forced into contact with the table surface.

The other thing to remember is that the best mouldings will only result from using plastic *suitable for pressure moulding*. Not all plastic sheet moulds well, or gives satisfactory results. Celluloid, and standard acetate sheet, is not easy to mould in deep draws, as the heating time is quite critical. If overheated, it bubbles, if underheated it may draw but will also go milky white in patches. So try to get acetate sheet, or similar, specified *for* pressure moulding.

For really detailed mouldings, the same technique can be used with some re-working of the pattern (**11**). In this case the pattern *must* be finished perfectly smooth as every surface mark will show up. Details such as frames, etc., can be added by fitting wire, card, thin plystrips, etc. Each panel area should then be ventilated by drilling with a very fine hole. In practice, it is easiest to drill a number of larger holes through the back of the pattern assembly and link up to these with the fine holes drilled through the actual pattern surface. The holes must be small as otherwise they will show up as small "pips" on the final moulding.

With this type of pattern, the escape of air trapped between the pattern and the plastic sheet as the pattern is pressed home sucks the sheet down flush with the pattern surface, and thus follows all the detail lines added. Lack of reproduction in any particular area calls for more vent holes in this region.





HOW TO STUNT YOUR RASCAL

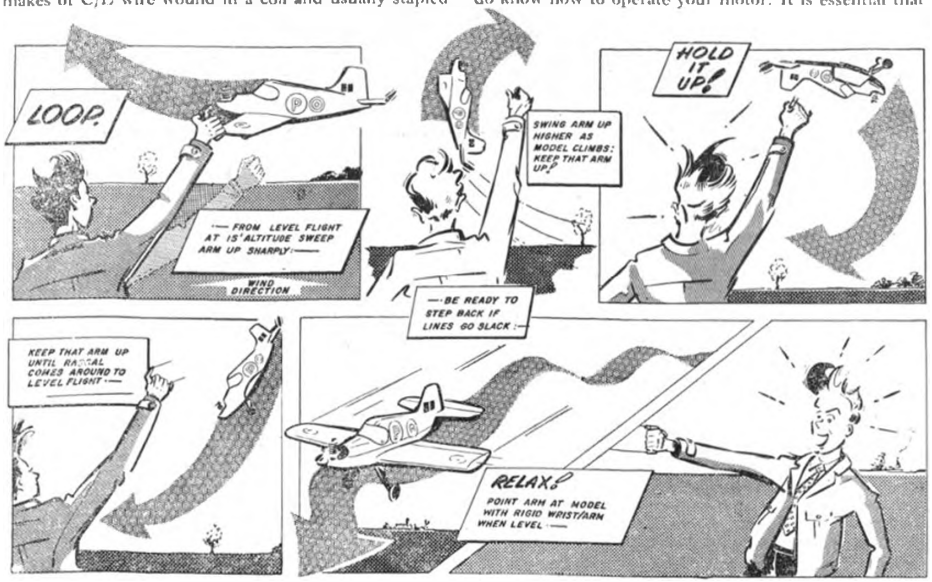
Not for experts, this feature will teach any control-line beginner how to perform loops and other manoeuvres

SO NOW YOU WANT to learn how to put your stunt model through its paces—and if you have built *Rascal* from the A.P.S. plan presented with the Reverend Callon's full instructions last month, you will have a design that is capable of flying through the "book" many times over, during each flight. The two prototypes have been exhaustively flight tested to prove that *Rascal* will fly with a variety of engines. One had the new type Allbon Sabre 1·5 c.c., the other an AM.10, both engines showing excellent starting qualities and performed very well using either the E.D. plastic 7¾ x 6 or the new Frog nylon, 7 x 4 for the AM.10.

Because we believe that preparation takes one more than half-way to success, the following details should be noted. Steel lines are essential if you want to have effective control of the model throughout all manoeuvres and the first item we shall consider is the care of the lines.

The model shop can provide you with a variety of makes of C/L wire wound in a coil and usually stapled to a stiff card. If you remove it from the card and start to pull on the loose end, the wire will soon be in a mess, so one must be cautious and first cut a scrap disc of balsa that will just fit as a centre core in the middle of the coil. Stick it to the card, add a card disc on the other side so that the wire is sandwiched in a drum (*see sketch at right*) and you can now undo the pieces of soft wire used to retain the coil and start to unwind, using a screwdriver as a pivot though the centre hole. Make up two lines of equal length, about 35 ft., winding the ends, as shown, in three stages and fit your handle and the model with some 18 gauge piano wire clips of the key chain type for attachment. A second 6 inch dia. drum can be made to store the ready-made lines between flight sessions.

Next essential is that one should be familiar with the engine. As this feature is directed at the modeller who has already attained some experience, with simple straight and level trainer models, we assume that you do know how to operate your motor. It is essential that



full power be used for the very first test flight, for power means speed, and speed means tight lines through all manoeuvres, desired or otherwise—and there may be plenty of the latter! !

Control must be friction free through the full range of elevator motion permitted on *Rascal*. You will only be using small deflections to execute all manoeuvres when experienced, but for the first loop, it is going to be a case of all "up" or nothing. When checking the model see that it balances correctly. Although the c.g. point shown on the plan for perfect performance is back near the front line, both prototypes pivoted only ¼ in. behind the leading edge, but this has no effect whatsoever on performance and is, in fact, turned to advantage because the model tends to have more pull.

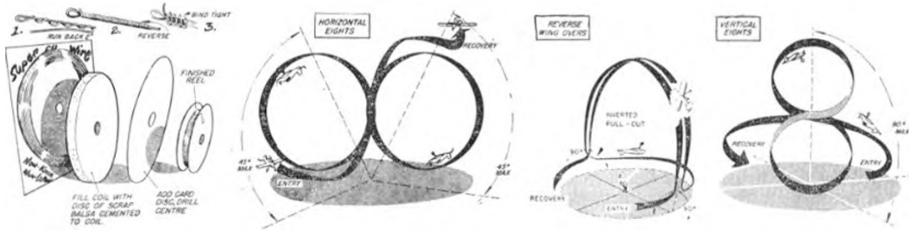
Now we can try that first loop.

Proceed as though you have never seen a controliner before, though perhaps you have plenty of experience. Hook up the controls, pick up the handle and point naturally at the model. At 35 ft. radius, you ought to be able to see that the elevators are neutral. Fine! Now force yourself to keep that control arm rigid. Point at the model, then swing the arm up, locking the wrist position on the arm as you do so, watch the elevators. They are fully up. Right. This is for the take-off, you lift the arm, and up go the elevators. Now get the mechanic to lift the model to about 5 ft. off the ground and watch those elevators, still keeping your arm out there like the Statue of Liberty. The elevators are beginning to neutralise as the model comes up in line with your pointing arm. That's the principle we need to employ for the first flight, keep that arm rigid, point where you want to go and let the *Rascal* fly itself. But don't point over high, or below ground. Now get the model airborne and first go through the motions of a purposeful zoom. Get to the stage where you know you can go up in a wingover and split the circuit in half, always holding your arm rigid, pointing where you want the model to go and you will find that if you ever get into trouble, you should simply point the arm about 15 ft. up from the ground at the flight radius and *Rascal* settles down to straight and level in no time at all.

The first loop

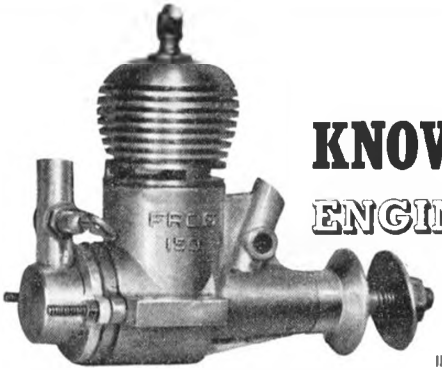
Fly at moderate height for a couple of circuits, then with the tail just past the windward side of the circuit (wind on your back) start a diving zoom to about 15 ft. altitude, followed by a swift upswing of that rigid arm, and as the *Rascal* flicks up and over on its back HOLD IT! ! ! Keep that arm pointing up there at the vacant sky, and *Rascal* will curl around in a jerky loop. At the bottom she will be shuddering from too much elevator, too little airspeed and too much pilot, so relax that arm carefully and resume the 15 ft. pointing attitude, as soon as she pulls out into a climb. Soon you find the *Rascal* back at straight and level. The lines are crossed but that doesn't matter, we can cross them twenty times and still have control if there are no kinks. Practise the loop and soon we try a horizontal eight. Proceed as for the loop, but as soon as the model is upside down and on its way around, swing the arm down and *hold it there*. A little practising and soon we find the outside loop that completes the eight is quite easy to tackle by itself, and that we call a "bunt".

Now all of this may sound very simple on paper, and yet when you come to try it out on the field, you will find yourself much less willing to "have a go". What is there to lose?" *Rascal* is tough enough—providing you are flying over long grass, to withstand most of the unwelcome collisions with *terra-firma*, and once you have got over that initial hurdle of forcing yourself to put the model into the first-ever loop, you will begin to realise how easy it is to fly through these simple manoeuvres. Sketches show three of the most satisfying stunts in contest schedule, and the man who executes a perfect reverse wingover is experienced indeed. A small model like *Rascal* cannot possibly perform such a manoeuvre with perfect "square" pull outs as required in top class competition, but will give you an awful lot of fun trying, and even if you do rub into the ground when upside down at the bottom (we did several times) you will soon find that a flick of the propeller with more fuel in the tank, will set you off again for yet more of this practice which makes perfection.



Sketches show how to convert the model shop control-line wire card into a handy dispenser reel, also the advised method of end binding for lines. Other stunts are all possible with Rascal, giving great satisfaction when performed consecutively

Heading opposite shows Adrian Hundleby admiring one prototype, being checked at inverted flight by designer (right). Because of thick section low wing, Rascal is very stable when upside down!



KNOW YOUR ENGINE PART ELEVEN

ENGINE SPEED CONTROL

Engine at left is easily identifiable as a Frog 150, but can you guess the reason why it has two carburettors? Answer is at foot of first column, next page

INHERENTLY THE small two-stroke engine is less amenable to throttling by varying the amount of fuel fed to the cylinder than its full size counterparts, due both to an apparent "scale" effect with small volumetric sizes and, particularly, the method of carburettion employed. Thus throttles, as such, are absent from standard aero-engine designs. Running speed is then largely dependent on the load (*i.e.*, the size of propeller driven) with the mixture control (needle valve) adjusted for optimum performance, except in the case of spark-ignition engines. In the latter case, speed and any load can effectively be varied by adjusting the timing or the instant at which the plug sparks, *e.g.*, by rotating the contact breaker in the same direction as the direction of rotation to retard the spark and slow the engine; and against the direction of rotation to advance the spark to make the engine run faster.

This is a particularly positive form of speed control for with the spark retarded, for instance, it is not possible for the engine to speed up unless the contact breaker unit is rotated. Also the engine will continue to run steadily at this setting. Throttling a diesel or glow motor, on the other hand, *e.g.*, by running on a very rich mixture setting or reduced compression (diesel) can lead to the engine speeding up, or stopping during flight without any change in adjustment.

Although no spark-ignition aero-motors are now produced in this country or the United States (the last was the spark-ignition version of the Frog "500" which was withdrawn in 1956) the type is coming back into favour in certain limited fields, particularly radio control models. Apart from the additional complication of the contact breaker unit and the weight of the ignition components to be carried, the spark-ignition motor suffers, by comparison with diesel, and glow ignition, in that its maximum speed is limited, and hence its power output per c.c. inferior. But where this can be tolerated its ready adaptability to speed control and its comparative cleanliness are still in its favour.

To avoid the necessity of mechanical movement of the contact breaker assembly, electrical switching can be used for speed control by fitting a duplicate set of contact points—*Fig.* 1. The contact breaker unit is now fixed, the two sets of contacts corresponding to "retard" and "advance" positions. (Fixed, here, is a relative term: the whole unit may still be movable for initial adjustment). It is then possible to switch the ignition circuit from one set of contacts to the other, to change from "low" to "high" speed, or *vice versa*. Alternatively, the switching can be arranged to short out the high speed contacts for the low speed running, this being the more general arrangement.

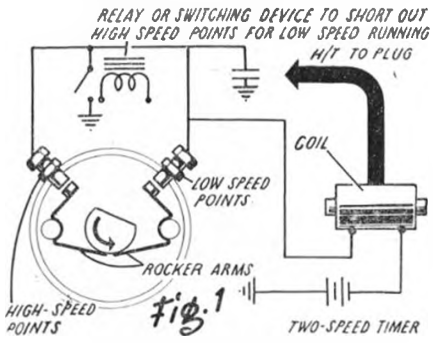


Fig. 1

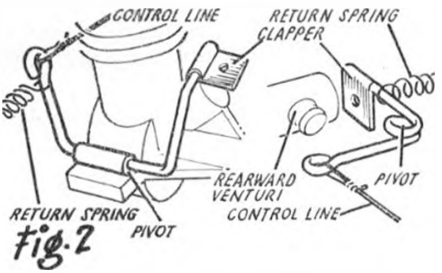
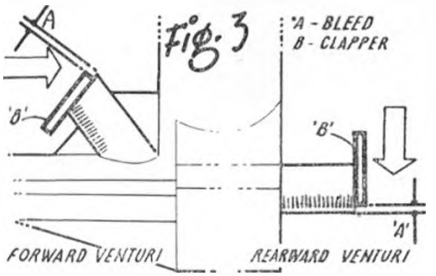


Fig. 2

Both diesel and glow motors can, however, be throttled quite effectively, although not always to the same positive degree. In both cases this is nearly always accomplished by supplying the engine with an excessively rich mixture for low speed running, although some diesels can equally well be throttled back by reducing compression. All diesels will reduce speed when compression is backed off from the running position, accompanied by "missing". It is very much an individual characteristic of the design, however, whether the engine will continue

to run with reasonable consistency when this is done, or whether it will tend to stop. On a limited number of engines, the non-critical response to reducing compression may be such that the engine cannot be stopped by this means, *i.e.*, with the range of upward movement possible of the contra-piston, the compression ratio still remains high enough to continue to fire the mixture.

Altering the compression, however, is not a practical means of speed control, allied to light servo mechanisms which have to be contained on the model. Thus the rich mixture method is preferred as this can be accomplished with a simple clapper valve or similar device. There is one marked difference between diesels and glow motors when



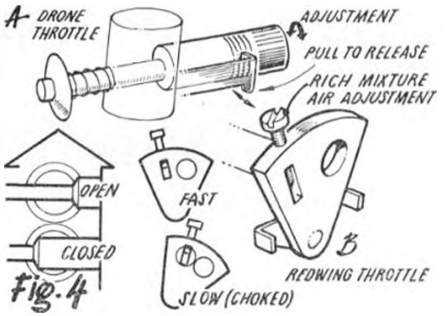
slowed by running on over-rich mixtures. Nearly all diesels have a tendency to die if run too slowly, whereas glow motors will generally keep going. The main objection to "throttling" by the use of a very rich mixture is the extremely messy running, a large proportion of solid fuel being ejected through the exhausts.

It must be remembered that engines with sub-piston induction cannot be completely throttled by "choking" since whilst the air supply through the intake pipe is restricted by this method, additional air is drawn into the crankcase through the exhaust at the top of the stroke and hence the final mixture remains on the weak side.

A simple clapper valve merely consists of a flat disc which can be lowered over the end of the intake tube—*Fig.* 2. The valve must seat reasonably well, but not completely seal off the air supply. Rather than rely on an indifferent seating to give the necessary air bleed it is better to make the clapper seat quite well and pierce it with a small bleed hole —*e.g.*, about 1/32 in. diameter. The size of this hole can then be adjusted to produce consistent slow running with the clapper over the intake.

Depending on the individual design of engine again, it is possible to use a clapper valve to give a range of engine speeds, by varying the final position of the clapper offered up to the intake. In other words, the amount of air induction is modified by the proximity of the clapper.

This was the prototype for the latest Frog diesel 1.49. It used a standard crankcase, with the development "Vibra-matic" induction valve on a specially modified sump cap. The shaft was made solid, not using the front rotary intake



Quite small movement of the clapper may then produce a marked variation in engine speed but the system is rather difficult to adapt to variable speed control by servo mechanisms. It would be more easily worked on the principle of sliding the clapper over the end of the intake, rather than lowering it in position—*Fig.* 3.

Two proprietary throttles produced some years ago in America operated on the "choke" principle —the Drone throttle (*Fig.* 4*a*) designed specifically for the Drone diesel, and the Redwing speed control. The latter was designed for linkage to the bellcrank on control line models so that a violent manoeuvre threw the control quadrant over to the "choked" position when it could be restored to normal running position by a sharp pull on the line—*Fig.* 4*b*. Operation is self-explanatory from the illustrations. The Drone control, however, was more useful as a motor cut-out since throttling could only be effected by screw adjustment of the plunger and thus required several turns either way to change from normal running to rich and back again.

Continued next month with details of needle valve controls.

"Relaytor" *Continued from page* 317

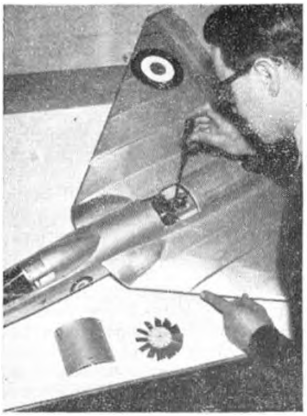
Escapement assembly. This is fairly straightforward item and the drawing shows it quite clearly. Keep to the measurements shown. Use 20 g. brass or steel sheet. Fit the contact strip first, then the wiper to the shaft, passing the shaft through the bush. Slide on the escapement. Arrange the position of the escapement so that it touches the pawl when there is no current in the coil and the wiper is just touching the contact strip. There are two positions where this occurs. Solder the escapement in position. See that it is quite free.

Solder one lead from the coil to the tag under the bush. Connect a resistance of suitable value between the tag and the contact strip. Connect the other lead to a separate tag. The total resistance of coil and resistor should be approx. 9,000 ohms. For a 3,000 ohms coil the resistor should be 6,000 ohms. Place the unit in a clamp and attach a loop of $\frac{1}{4}$ in. rubber about 9 in. long. Connect battery, meter and potentiometer as before. Short the resistor temporarily. Adjust spring and stop so that the unit operates on 2·5 to 3 m/a and falls out at 1 m/a.

The unit should be suitably insulated by means of a foam nylon shock pad and mounted on a bulkhead in the usual way.

VISIT TO VERON

We look in at the Bournemouth model manufacturers



Extreme left, Designer Phil Smith attending to a prototype of the F.D.2 kit fitted with an A.M.10 diesel and one of his latest special impellers. Kit introduces new construction and high standard die-cutting

Bill Forster and his son manage the business side of Model Aircraft (Bournemouth) Ltd. and are seen in conference over costing schedules aimed to bring the consumer price down to lowest level

THE NAME OF Model Aircraft (Bournemouth) Ltd., more popularly known as Veron, will be just 21 years old in September of this year, and as if to celebrate their well-being on this fitting occasion they should, by all that is predictable, be enjoying terrific sales of their finest-ever kit about that time. We refer to the new Fairey Delta 2 for Ducted Impeller. Those who saw the prototype in action at the Northern Heights and All-Britain Rallies will know what to expect, and now that we have had an opportunity to see the design, along with the three new and improved twelve blade "Imp System" impellers specially produced to match any possible engine choice for the design, we can truthfully say that this is going to be a really outstanding model.

These new fans are of ply and fibre construction. They are all personally assembled by designer Phil Smith, and come neatly packaged with full instructions to suit the 1 c.c. to 1·5 c.c. range. They are very efficient and run at "normal" prop revs, unlike the earlier twisted blade impeller which made up with speed the deficiencies of its blades, and they are extremely safe, with each part glued and pinned in place so that it is genuinely impossible for a blade to shear. Prices are 7s. 6d. each for 3½ in. dia. x in. and x ½ in "B" and "C" types for 1 c.c., 7s. 9½d. for the "D" type which is 3 in. dia. x ½ in. thick for 1·5 c.c. The letter coding indicates that there are two more sizes to follow, one for ·5 c.c. upwards and a big one at 4 in. to 4½ in. dia. to use on 2·5 c.c. or 3·5 c.c.

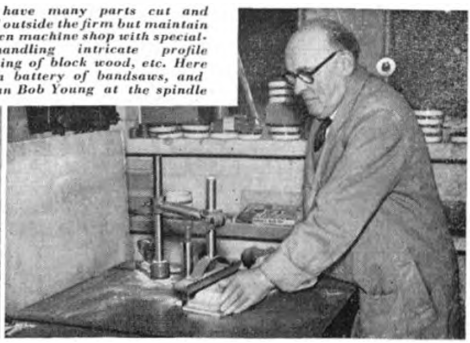
That was the immediate production picture at Norwood Place, Bournemouth, when we called in at this hive of industry last month, and for the future—well, with the ducted impeller now through teething stages and well developed, it seems obvious that it will have C/L scale applications, and on the boat side, there's a fine 32-in. long Motor Coaster on Phil's drawing board that will take R/C with diesel or electric power, and which is well past the prototype stage.

Mention of boats brings our notice to a side of Veron we aeromodellers rarely appreciate. The output of this neat organisation covers a wider range of kit types than any other manufacturer in Britain, in fact one might say that with lines ranging from solids to yachts, controline to tugs and free-flight to launches, the variety from Veron is matched only by one other kit firm in the whole world.

We saw the ever-popular Hawker Sea Fury being kitted up alongside the favourite Veronica 27-in. yacht during our visit, the girls packing each box in well-remembered sequence to ensure safe arrival, and to be certain that the many well-prepared parts get into the tightly packed kit.

The system of making up kits in relatively small batches, offering a wide variety of types is a policy that

Veron have many parts cut and printed outside the firm but maintain their own machine shop with specialists handling intricate profile machining of block wood, etc. Here we see a battery of bandsaws, and Foreman Bob Young at the spindle



has been followed by Veron, under the able guidance of Managing Director W. J. (Bill) Forster for many years. Stock-piling is impossible when manufacturing space is so valuable, although quite a large area still has to be reserved for empty boxes awaiting their contents. Thus at Veron we do not see vast banks of kits awaiting orders, the stock is just neatly balanced to cover emergencies and the happy family atmosphere that prevails, matched by the clean and tidy working areas, enables any order to pass through the firm with very prompt despatch.

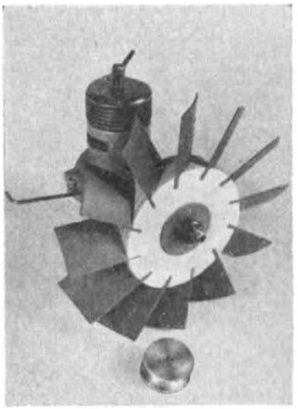
Bill Forster, joined by his son W. A. Forster managing the office, told us how company under the able Chairmanship and Directorship of Mr. and Mrs. G. Rickard has prospered since the early days of 1936 with progressive need for expansion and in recent years the continual flow of new kits joining the range at the rate of several per month. Die-cutting sheet parts for ribs and formers has become a standard feature, and the use of combined die-cutting with decorative printing fully explored in the well-established "Quickies" all-sheet scale range which is now being rivalled by the 3s. 7d. "Tru-flites" (ultimately to include some three dozen scale types). Then there is the solid series of 40 "Tru-scales", right up to the mark with latest aircraft introduced just as soon as military restrictions permit extensive detail to be included on the characteristic Phil Smith plans.

Each new design presents its own tooling problem to cater for the present day demand for prefabrication. In the machine section, Foreman Bob Young, long associated with Handley Page's, produces the gimmicks that enable a spindle and other woodworking machines to cut those blocks which make modelling a real pleasure. He demonstrated how the Skidboat is shaped in a trice from square section block—yet one can imagine that this relatively simple operation must have taken hours of planning. A battery of Whitehead bandsaws consumes vast quantities of balsa block in shaping solid fuselages and other similar kit components.

One cannot fail to be impressed by the strength of the light that Veron holds under its bushel, or by the enthusiasm for turning out a first class job—including the huge crates they make for exporting big orders to all parts of the globe. The F.D.2 kit will typify their designing skill and desire to give a maximum of pleasure to further our enjoyment of the hobby.

Nimble hands and systematic packing ensure that the myriad parts of each Veron kit are securely contained in the colourful boxes. To the left are Veronica Yacht kits being made-up, at right, the popular Sea Fury controliner. Kits do not have long waiting periods on shelves but pass straight through to a large packing and despatch shop

Heart of the new Impeller kits will be the ply and fibre fans as seen here on a 1.5 c.c. Albon Sabre. Five sizes are planned, three are available at the moment to suit choices of engine for the F.D.2. Blades are guaranteed not to shear, are glued and pinned in place, came with alloy pulley to be adapted for prop-shaft and used for starting



FAMOUS BIPLANES

(Continued from Page 310)

Boulton Paul Overstrand

20. Make all the other struts from boxwood.

21. Fit wire handrails and paper strip cockpit hood runners.

22. Colour the model, except the upper surface of the top wing. While the paint is still tacky, press the cockpit cover and gunner's windshield into position; the paint will hold them as well as any glue, and far more neatly.

23. Add a petrol filler pipe to the port side of the fuselage.

24. Because of the complexity of the rigging, a new method was used on the model shown, which is the same as was used for the SPAD (April, 1957) except that Terylene thread was substituted for wire. Glue generous lengths of thread into all strut holes, and pass the appropriate threads through sawcuts in the upper ends of S and T. Glue them here, then trim off the surplus.

25. Pass all other threads through their corresponding holes in the upper wing, and tie their ends together so that they can't fall out. Glue the c/section struts into the holes in the fuselage, glue the tops of these and S and T, then apply the top wing and hold it in place with an elastic band. Take the interplane struts and working outwards along the wings, glue them in position. Add an extra rubber band at each wing tip, then pull all the threads tight and glue them generously where they emerge from the top wing. When the glue is hard, trim off the surplus thread and file the patches of glue flat.

26. Colour the top wing and add roundels.

27.* Add the gun mounting rings. The springiness of the lower ring will hold it against the sides of the fuselage; the upper one should be soldered to the ring jammed into the aperture in the fuselage.

28.* Glue the pitot shown into fine holes in the wing.

29.* Pass wire exhausts through holes in the cowlings and glue them into the hollow sylinders.

30.* Carve hardwood propellers.

31.* Tie threads to the inboard ends of the servo arms, cross over, and glue into the sawcuts. Glue into the slots a servo rudder of thin card.

32. Add control horns and navigation lights.

CLUB NEWS

AS I THOUGHT, the area I chose to visit for the first A/2 Eliminators reflected a very healthy increase in the number of entries and I understand that this was typical of the competitions throughout the country, for in spite of high winds there were 254 entrants. Congrats to Vicky Jays for making such a sweeping entry in the A/2 field.

London

The LONDON AREA Team Race League appear to have worked very well although they had a windy day on April 7th, when I understand a certain new engine by Gig Eiffiander opened a few eyes, performing in Dave Platt's latest stunt model. Dave will be going over with the British Team as a stunt representative for the Criterium of Europe in Brussels the week after the Nationals. Ed Bennett's resignation as the London Area Secretary was accepted with deep regret and considerable thanks have been made for his valued service. The new "boy" is P. Muller, and if you want to contact him, his address is 18 Holly Grove, Rye Lane, London, S.E.15. A new type controline contest which sounds remarkably like the all-in Rat Races held in Southern California is being run by WANSTEAD Aeromodellers. I learn that there are two classes. One up to 2 c.c. on 40-ft. lines, and two, 2 c.c. on 50-ft. lines. Class I is run first, and all competitors fly together in one circle, any old sport or combat models can be used. Only rule is that there are only three pit stops allowed, last model in the air is the winner, and I presume that everybody starts off with the same size tank.

South Midland

Keenness should always be recognised and two of the keenest youngsters I have heard of for many a moon were the pair that set out by public transport, 'bus and train from Abingdon, Berks, to get to the Area Rally at R.A.F. Henlow. It only took five hours, and even when they got there they could not enter as they arrived too late ! ! The ABINGDON M.F.C. have livened up with a couple of events for scale, power and glider, whilst their recent exhibition on March 29th caused great interest among the local townsfolk and more than fulfilled club members' expectations and a useful increase to the club funds. A recent talk by Mr. J. V. Patterson of Solarbo was received with enthusiasm and here's a clue for other clubs to book a most entertaining speaker, who will talk all about Balsa. The OXFORD METEORS had an open nomination contest on Port Meadow and the winner was Don Perkins with 11 secs. error flying his Junior Mallard. The fascinating thing about this all-in contest is that the second model was a McCutchen Helicopter flown by Ken Hulton with only 13 secs. error.

South Western

This year's Devon Rally will be held on May 26th, at Crownhill Down, near Plymouth and will be open to clubs in Devon and Cornwall. Competitions include: Rubber, Glider, F.F., Power, Radio Control and an R.O.W. event as a suitable pond is available. The Rally is being organised by the PLYMOUTH M.F.C. and full details of competitions and directions to Crownhill Down can be obtained from the Hon. Sec., A. H. Thomas, 38 Pemros Road, St. Budeaux, Plymouth.

North Western

Eleven models were entered in the Northern Models Exhibition by the WHITEFIELD Club and eight places gained including one first and three seconds.

A precision contest was held recently, the rules being four flights, nearest to 5 mins. total being the winner. The result was a tie between John O'Donnell and J. Trainor with a difference of six secs. by each. It was decided to fly off and the nearest to 1 min. would be the winner. J.O'D. thus won by 1 sec. flying a timer-operated D/T Glider. Latest use of Club transfers is depicted by an A/1 which was lost, without carrying any address (shame!) and yet the modeller was located by letter addressed to the "Whitefield Model Club", thanks to the G.P.O. The Royal Show at BLACKPOOL has slowed the local flying activities due to the obstructions on the field, but controline is taking on fast with emphasis on scale and a number of twins, including a *Northrop* F.51 *Reporter*. Next project is to be a quartet of *Avro Lancasters* intended for demonstration, and to attract new members. Any new members will find the Blackpool club on the old Airport Site, at the East Side of Stanley Park on any Sunday. CHEADLE AND D.M.A.C. announce that P. Guest was winner of their Club A/1 contest for juniors held on that bad weather day, March 10th, and that Wally Neild placed 3rd for them in the Area results at Ternhill for the first A/2 Elims. SHARSTON D.M.S. have redecorated their club room. One member is rather unfortunate in that his E.D. Racer, No. RN205/6 complete with flying wing was lifted from the local flying field.

MANCHESTER INDOOR MEETING

RESULTS

Class B Microfilm

Monks, R.	Birmingham	6:52	7:42	7:25	13:53	Best	13:53
O'Donnell, J.	Whitefield	5:50	6:56	7:33	12:38		12:38
Read, P.	Birmingham	4:44	7:48	8:51	11:16		11:16
Poole, D.	Birmingham	5:15	5:00	10:46	7:31		10:46
King, A.	Australia	5:49	4:56	8:21	7:15		8:21
Parham, R.	Worcester	8:09	5:58				8:09

Open Class Microfilm

O'Donnell, J.	Whitefield	3:50	6:59	11:50		Best	11:50
Copland, R.	Northern Heights	5:48	4:08	11:46	4:11		11:46
Read, P.	Birmingham	6:12	9:42	6:07	5:30		9:42
Monks, R.	Birmingham	2:15	6:19	9:04	3:20		9:04
Poole, D.	Birmingham	7:55	8:24	4:41			8:24

Tissue Covered

Poole, D.	Birmingham	6:53				Best	6:53
Read, P.	Birmingham	5:12	2:41	2:30			5:12
Monks, R.	Birmingham	4:43					4:43
Parham, R.	Worcester	4:00	3:42	4:33			4:33

Chuck Glider

Dixon, J. H.	Unattached	26	22	30	26	20	20	Best 30	secs.
O'Donnell, J.	Whitefield	27	20	13	19	26	24	27	
Monks, R.	Birmingham	26	26	25	24	26	26	26	
O'Donnell, H.	Whitefield	21	19	22	18	22	9	22	
Hartley, J.	Wolves	19	17	9	8	10	3	19	
Watson, M.	Whitefield	7	7	19	8	16	15	19	

Contest Calendar

May 19th

ASTRAL TROPHY: (F.A.I. Power) } Area
CUTTERIDGE TROPHY: (Wakefield) } Centralised.

British Nationals.

The Nationals will be held at R.A.F Station Waterbeach on June 9th and 10th, when the programme will be:—

June 9th

*Thurston Cup	U/R Glider
Short Cup	2·5 c.c. Class
Gold Trophy	PAA-Load
S.M.A.E. Trophy	C/L Stunt
Davies Trophy	Radio Control
Speed—All Classes	Team Race "A"
A/2 Tailless	International Trial
International Trial	

June 10th

*Sir John Shelley Cup	U/R Power
*Model Aircraft Trophy	U/R Rubber
INTERNATIONAL TYLESS	A/2 Glider Spec.
Super Scale Trophy	Power Scale
Aeromodeller Trophy	Radio Control
Davies Trophy	Team Race "B"
Speed-All Classes	International
Combat	Trial

*Area Championship events

Northern

HUDDERSFIELD D.M.A.C. announce an Open Rally to be held at Huddersfield on September 1st, with Open, Rubber, Glider and Power (including Jetex) and Controline Combat.

Southern

PORTSMOUTH D.M.A.C. are making every effort to get back on the map and a 32-seater turned up at the Area Eliminators, Stoney Cross, which was also the venue for the Southern Area Rally. Len Larrimore placed first in the Power event with a total of 9.17 and R. Cummins first in Rubber beating the next man by a near second. Club meetings are held every Friday at Copnor Road Boys' Modern School and prospective members of either sex will be made welcome. I also have details of WEST HANTS Open Rally to take place on Sunday, September 1st. Peter Manville of BOURNEMOUTH topped the Glider event at the Southern Area Rally and the second A/2 Eliminators will be held at the School of Artillery ranges at Larkshill, near Amesbury, on May 19th.

South Eastern

A full coach will be coming from SOUTHERN CROSS A.C. to the Nationals, where everyone is going to camp and the club is going to organise breakfast and lunches on Sunday and Monday. I am pleased to see the club is organising Speed R.T.P. models, calling for the span at least 60 per cent. of the length, wing loading 20 oz. per sq. ft., and the nose radius shall not be less than 4th and the line capable of standing 25 times the weight of the model. R/C has a strong following in the NORTH KENT NOMADS M.C. The favourite combinations are *Rhomas* (in various sizes) with *Hill* receivers, and Bonner-type actuators. A trend towards larger models (around 8-ft. span) is evident. The Mayor of Bexley presented the prizes at the Annual Social and Prizegiving, and the Hon. Sec. Ray Parker walked off with a goodly share of the silverware. It appears that as well as doing all the hard work of running the club, he also does most of the flying! Dartford Heath is still the regular flying ground—but watch those parking notices.

Midland

The A.P.S. A/1 *Aiglet* is a very popular design among the CHESTERFIELD SKY-LINERS M.A.C. and this is one of the lucky clubs that has recently received the joyful news that a kind farmer has given them the use of a several acre field for free-flight. The club has elected a specific bus

Secretary, whose job it is to arrange bus outings; and right now his main job is to look after the contingent going to Waterbeach. Other outings have been to Sheffield for slope soaring, but the inclement weather either smashed models or transported them into the depths of a nearby steel works. Another outing was to Rufforth for a general flying day.

The newsheet for **LEICESTER M.A.C.** reports an improvement in the stunt and Radio Control field—they are really controlled now, but the newsheet author did not have time to discover whether this was due to the *Hill* Receiver or the general improvement in "know how". The Hill Receiver has been responsible for a good deal of improvement in other clubs, thanks to its superior characteristics, so he can pat himself on the back for finding the general reason. Winter meetings now being over, the club assembles on Sunday at Rearsby, where they enjoy a very fine field. About 80 guests attended the **RUGBY M.E.S.** Annual film show on April 5th, and everything ran smooth thanks to the organiser and energetic Secretary, K. Sansome and the Hon. Treasurer, John Bickerstaffe, who tuned the projector. Combat is the main feature of the club's controline element and they use the new Frog 2·49BB engines, which are standing up to considerable punishment. Any beginners in the district are invited to contact the Hon. Secretary, K. Sansome, 9 Barton Road, Rugby. A new club in the Area has been formed at **STRATFORD-ON-AVON** with 33 members, the main interest being combat and Team racing. Unattached modellers should contact S. Richardson, Kendall Avenue, Stratford-on-Avon. Since someone in the **WEST BROMWICH M.A.C.** discovered that microfilm isn't so difficult after all, its been the current rage in the club, luckily they have managed to use a local cinema for occasional indoor flying and they invited some of the Birmingham boys to give a demonstration. This encouraged them further. Mac Grimmet, who is very anti-flying wing with his Combat models, decided to build a flying-wing on microfilm and it flew—quite well! He has since established a new British Record with it!

East Anglian

Increased membership is reported by the **BRENTWOOD M.A.C.** who hold regular meetings on the 2nd and 4th Thursdays of the month at the local Congregational Church Hall, South Street. Interests range from indoor microfilm free-flight to radio control and the club had a good turn out at the Area Fying Meeting, R.A.F., Debden, for the first eliminators. Most memorable incident of the month in **NORWICH M.A.C.** is of the controline model that got away when J. Wells lost his down line and presumably had the up line break afterwards, leaving the model to fly away in constant rising loops. A successful film show was staged recently and in the programme they had the Shell film **"Model Fight"** which appears to have been doing the rounds most successfully. Those who have not enjoyed such a film programme and have facilities for hiring a projector, should contact the Petroleum Films Bureau, 29 New Bond Street, London, W.1.

East Midland

A **HULL** Group of the **I.R.C. M.S.** has been formed with headquarters at Sportscraft Model Shop, Beverley Road, Hull, with meetings being held fortnightly on Tuesdays at 7.30 p.m. Aims of the group are to promote and develop radio control models in Hull and the group welcome new members.

North East

Another club to appreciate the A.P.S. *Aiglet* A/1, is **BURTON-ON-TRENT M.F.C.**, where the model has already excelled itself by doing five minutes on a flight test. D. Bailey is shortly to make a fresh attempt on the radio control glider record which he set up last year at Clywd and a party of the clubsters attended the winter rally at Loughborough College, which was unfortunately, spoiled by very high winds. R. Mawson must be cursing the wing on a string boys as his *Veron Cardinal* was coming in for a very nice landing on the field the other week, when it was neatly chopped by a combat model! The **WINGATE D.M.A.C.** has now been established and application sent for affiliation to the S.M.A.E. Club meetings take place at the Secretary's address every other Saturday. An open free-flight competition was arranged for Easter Monday. Seems to me that this was about the only organised event in the whole of the country for that day. **TYNEMOUTH M.A.C.** reported very high winds for A/2 eliminators and only two entries in the whole area. Tut, Tut! The club held an open rally at Town Moor, Newcastle, on April 28th, but I wish that they had been able to notify me earlier, when I am sure a little bit of publicity in these columns would have brought them a bigger attendance.

Scotland

A 4A Team Racer using a reduced capacity Oliver Tiger in an old F.A.I. Model gained a second place for the **PERTH M.A.C.** at Kelvin Hall, Glasgow. Main news is that R. Irvine's latest speed model with a Barclay McCoy 60 clocked 129 m.p.h. on its first official record attempt and this was subsequently hoisted to 144 m.p.h.

Ireland

DROGHEDA M.F.C.'s date for their annual contest at Butlins, Mosney, will be Sunday, August 11th, commencing at 12 noon. Events are Combat, Class A, Class B, Team Racing and Controline flying scale, with valuable prizes of engines and kits for each case. Entry fee is 2s. in each event or 5s. for the lot. It is completely open and English competitors are especially welcome to combine their holidays with this good flying meeting, and should contact P. Hughes, 16 Mary Street, Drogheda, Ireland. The **MODEL AERONAUTICS COUNCIL OF IRELAND** held their A.G.M. in January and a new membership claim adopted for country members, who all but one had left the M.A.C.I. I now learn that the clubs are now unified under the controlling body and an insurance scheme is available, whilst the M.A.C.I. will be arranging general meetings with film shows and contests.

Those who are unattached should contact the Hon. Sec., F. Synnett, 4 Leader Park, Harolds Cross, Dublin. From the **BELFAST M.F.C.** newsheet I gather that the club was asked recently to give a short lecture to the Ramblers Association on our hobby. It would seem that in the B.M.F.C. we have a speaker, who would grace any after dinner session. After being allotted 30 minutes to demonstrate our "craft", said secretary kept the audience enthralled for one hour and only for the fact that another lecturer was waiting, he could have spoken for another hour about his favourite subject.

Wales

The first Fying Contest to be organised by **BUILTH WELLS M.E.C.**, has been arranged for Wednesday, April 24th, 1957, at their five field flying ground, Llanelwedd Fields near Builth railway station, all classes are invited, but only small prize money will be available. Why not spend an enjoyable day in this lovely part of the Wye Valley?

Pen Pal

Wanted for a member of the Phoenix, Aero Club, Dublin, Barry Coleman 16 Merton Road, Rathmines, Dublin, who builds every type of model except Wakefield and Radio.

That's all— THE CLUBMAN

For Your Diary

May 12th
C/L Rally—King's Mead Rec., High Wycombe, T/R, Combat.
May 26th
C/L Rally—Dartford Rec., Dartford—T/R 5 c.c. Combat.
Devon Rally, Crowhill Down, Portsmouth All F/F Classes, Row, and R/C.
June 16th
Rush Trophy Gala (Novocastria Open Rally)—all classes f/f, Combat, Concours—Newcastle Town Moor.
June 23rd
Northern Heights Gala—All Classes—R.A.F., Halton.
Clywd Slope Soaring, all glider classes—no fuse D/T's allowed.
July 7th
Enfield Controline Rally—T/R, Combat and speed.
Hyde Rally—F/F all Classes—R/C, Combat—Hyde, Cheshire.
July 28th
Slope Soaring Rally, Epsom D.M.F.C.—Box Hill—Albatross Trophy.
August 5th
Chester C/L Rodeo—T/R-Combat—Stunt—Chester Roodee Racecourse.
August 25th
South Midland Rally—All Classes—Cranfield.
September 1st
Huddersfield Rally—Open F/F all Classes—Combat.
West Hants Rally—T/R—Stunt—Combat F/F all Classes.
September 22nd
All Britain Rally—Radlett—all Classes.
September 29th
South Eastern Rally, Ashdown Forest—Open Event. F/F only. All Classes.

S.M.A.E. Contest Results

KEIL TROPHY

(42 *teams entered*)
4 in team. 3 flts.—4 minute max's.

1.	Coventry	37·04	7. Thame-side	25·44
2.	Baildon	35·56	8. Ashton	25·02
3.	White-field	30·57	9. Henlow R.A.F.	22·16
4.	Surbiton	28·21	10. Lough College	21·44
5.	Walsall	26·40	11. Wigan	19·00
6.	Birming-ham	25·56	12. Novo-castria	18·09

S.M.A.E. CUP

A/2 Glider (1st Elims. 254 entries)
5 flts.—3 minute max's.

1.	Jaya, V.	Surbiton	13·15
2.	Tideswell, G.	Baildon	13·07
3.	Oliver, K.	Foresters	13·01
4.	Cameron, G.	Baildon	12·49
5.	Lefever, G.	S. Essex	12·48
6.	Dowling, B.	Wayfarers	12·29
7.	Crossley, P.	Blackheath	12·23
8.	Rowe, R.	St. Albans	12·22
9.	Cartwright	Hull Peg.	12·22
10.	Burwood, R.	Surbiton	12·00
11.	Burrows, L.	Blackheath	11·49
12.	Greaves, D.	Leamington	11·45

GAMAGE CUP

March 17th, 1957
(116 *entries*)

1.	Barnacle, E. A.	Leamington	7:39
2.	Wiggins, E. E.	Leamington	6:54
3.	Lennox, R.	Birmingham	6:45
4.	Chambers, T. B.	Stockton	6:06
5.	O'Donnell, J.	Whitefield	6:03
6.	Moore, L. E. / Greaves, D.	Leamington	5:57
8.	Taylor, S.	C/Member	5:46
9.	Morley, P.	Lincoln	5:31
10.	Alexander, A. W. F.	Cowley	5:26
11.	Giggle, P.	Southampton	5:09
12.	Punter, J.	Cowley	4:45

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AEROMODELLERS (clean condition) 1950-1954 1956. Ninepence each (includes postage). D. Northcott, 12 York Street, Penzance, Cornwall.

Ready to fly, beautifully finished E.D. 3/46 powered "Waveguide", equipped with E.C.C. 951B receiver and transmitter, E.D. escapement, milliameter, batteries, etc. £10. Canning, 251 Leyland Lane, Leyland, Lancs.

O.K. Cub 0·49B 35s. Mills ·75, 30s. Elfin 1·49 PB as new, 35s. Elfin 1·49 P.B. as new, 35s. Elfin 1·8BB as new, 50s. E.C. Racer, 40s. Frog 500 as new, 45s. Eta 29 IIIc reconditioned £5. E.C.C. 951B Rx. £3. E.C.C. 951B Rx. £3. All the above goods are in good condition. Apply to H. Cook, 9 Fairfield Close, Llandaff, Cardiff.

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E.C.C. Tx. 2 E.C.C. Rx Typhoon escapement, complete R6-B with E.D. Comp. special, meters, motors, etc. £15. Davis, 113 Leicester Causeway, Coventry.

Spark ignition de Long 30, fitted Bramco throttle £4 5s. E.D. 3-reed unit, 6-reed unit 25s. each. E. Cable, 12 O.M.Q., Allington Way, Boscombe Down, Amesbury, Wilts.

Wavemaster boat with E.D. 2/46, AEROMODELLER receiver with Sigma relay, motorised rudder and Exide batteries. AEROMODELLER transmitter. Triang receiver, 951B receiver all in good order. Immigrating. Box 519.

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AEROMODELLERS (good condition) January-July, 1953, January, 1954, March, April, 1955. Douglas Invader pictures. Briers, 29 Egerton Road, Davenport, Stockport, Cheshire.

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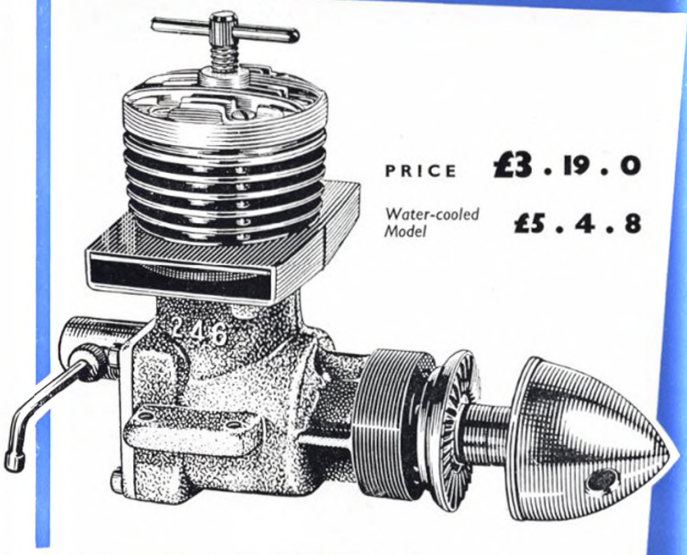

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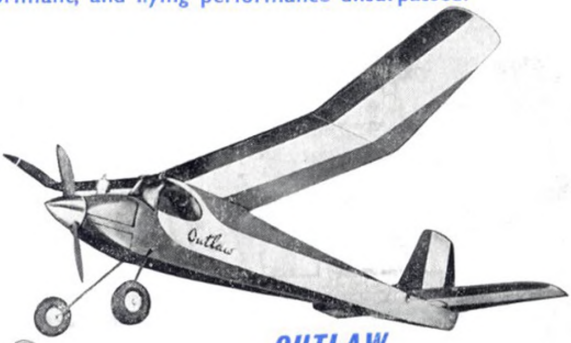

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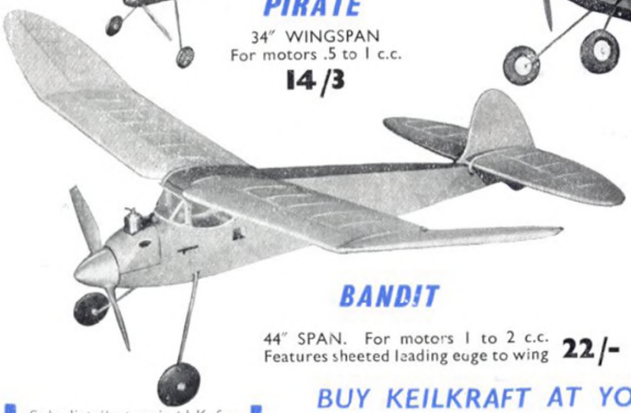

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