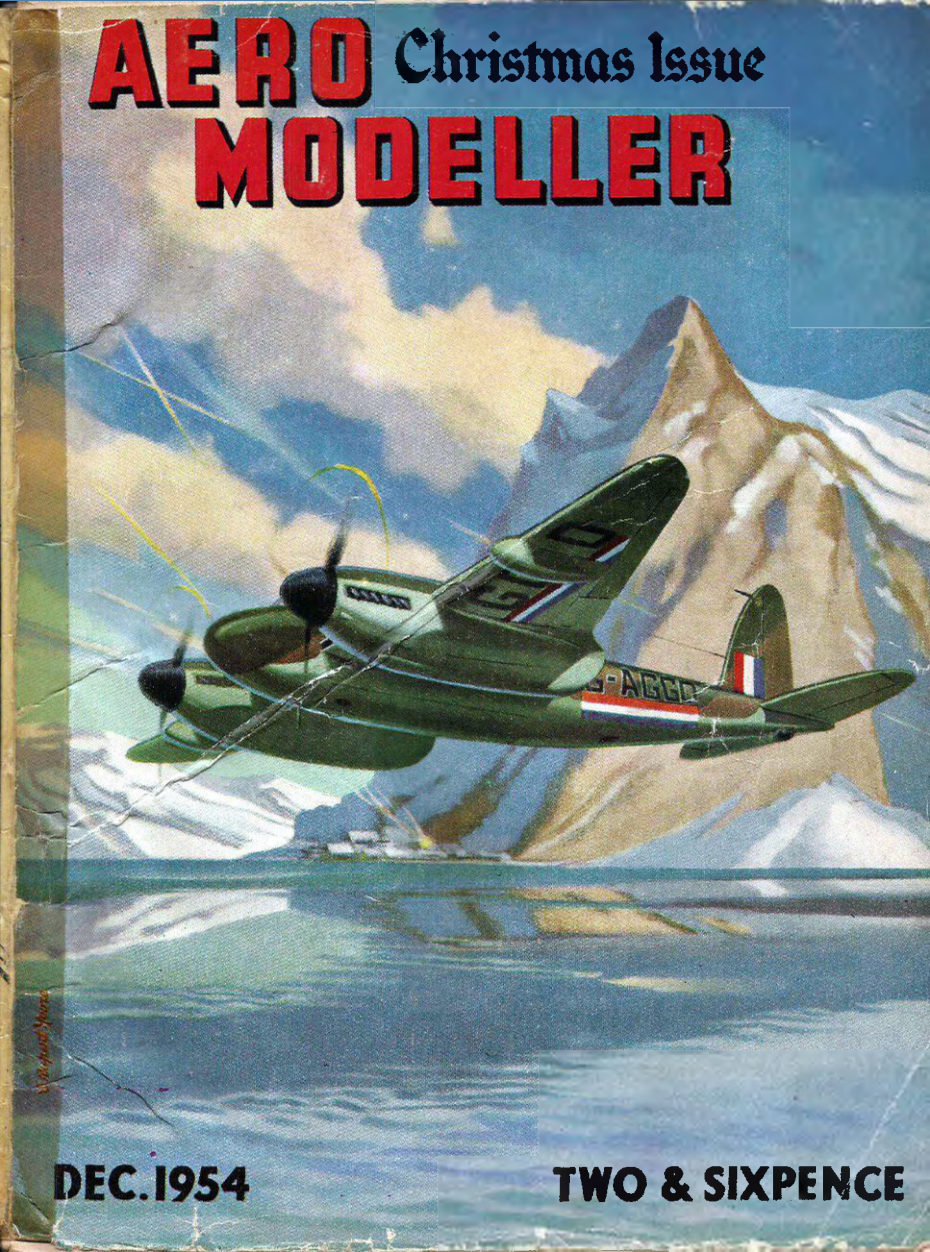
AERO MODELLER

Christmas Issue



DEC. 1954

TWO & SIXPENCE

Digital Edition Magazines.

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

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

All Plans and Articles can be found here:

Hlsat Blog Free Plans and Articles.

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

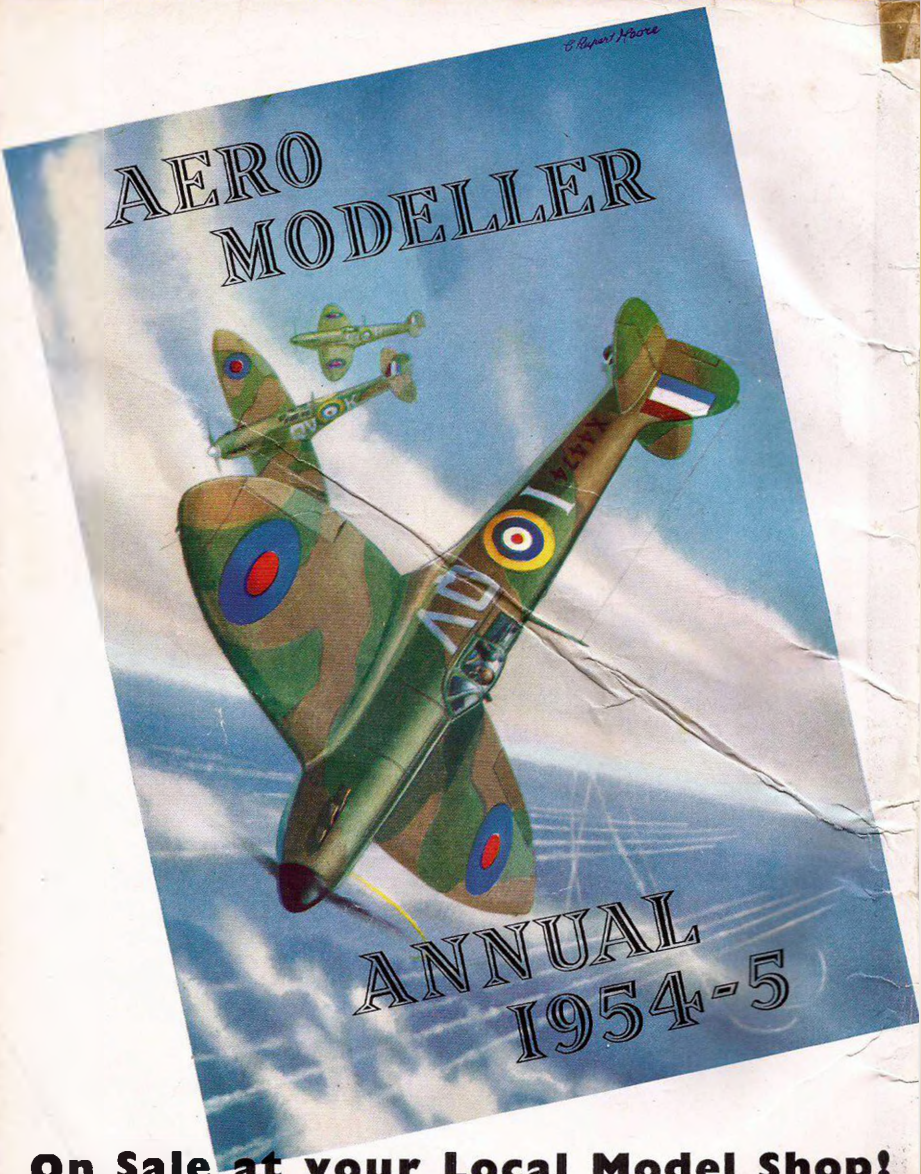
AeroFred Gallery Free Plans.

http://aerofred.com/index.php

Hip Pocket Aeronautics Gallery Free Plans.

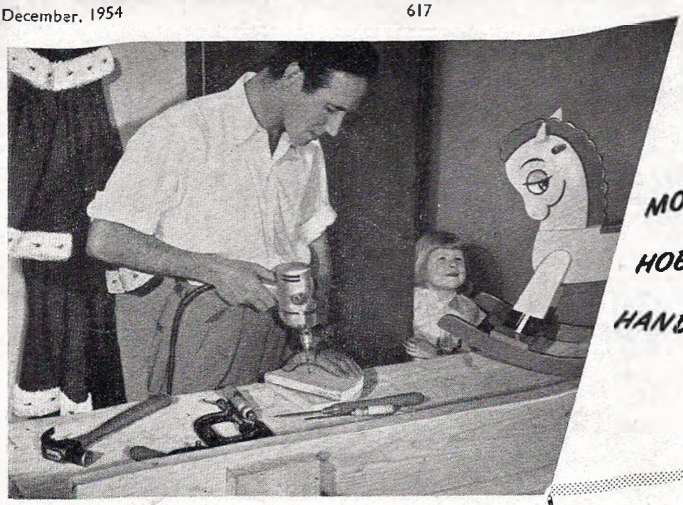
http://www.hippocketaeronautics.com/hpa_plans/index.php

Diligence Work by Hlsat.



On Sale at your Local Model Shop!

Price 10/- Or direct from the Publishers at 10/9 including postage.



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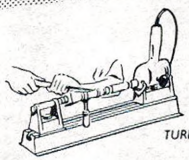
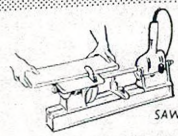


TURNING



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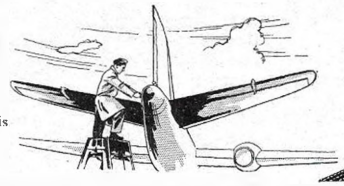
AS IN THE CASE OF SERGEANT ASHLEY ALLEN PARKER★. . .
(who has been all over the world)

There's a place for the best in the R·A·F

" One of the advantages of having moved around during my service in the R.A.F.", says Sergeant Parker, " is that I now have friends all over the world." It's 16 years since Sergeant Parker, then quite unskilled, joined the Royal Air Force as a fitter's mate : and during that time he has had a wide experience of places, people and jobs : target towing duties at an Air Gunnery School ; assembling crated aircraft on the Gold Coast ; photo-survey work in Egypt and the Sudan. He has been an airframe fitter for some years during which time, although employed in the Ground Trades, he has done quite a lot of flying. The R.A.F. offers a first-class technical training on the most up-to-date aircraft in the world, and increased skill leads to increased pay and promotion. "Apart from his technical training a chap coming in can learn anything he likes, with the free education the R.A.F. provides," says Sergeant Parker, and that's an important point for any young man getting ready to take his first job. Does life in the Royal Air Force interest you? Send in the coupon *now*, and learn more about the many absorbing jobs that are open to ambitious young men.
★*Sergeant Parker's own story*

and a place for hobbies, too

Allen Parker is a bachelor. He has his own room in the Sergeants' mess, and finds plenty of time to spend on photography and tuning up his high-powered motor cycle.



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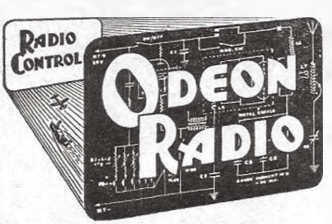

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New 28 page catalogue 6d.

Christmas Greetings to our Customers Everywhere

May your presents, particularly the aeromodelling ones, be numerous. If not, give yourself a treat and wile away those long winter evenings building a radio-control outfit. Hundreds of the famous "Aeromodeller" Receiver have already been built from our parts, and now we can offer the same service on the new "Aeromodeller" Transmitter described in this issue. Remember also that we have every aeromodelling accessory in stock, and give a by-return service.

" AEROMODELLER " RECEIVER

We are now able to offer superb form-wound Quench Coils at 6/6, and made up R.F. Chokes at 2/6 for this unit.

Component List	Retail Price inc. Tax
1 Paxolin Panel 3½" x 2½" x 1/16"	1/-
1 7 or 8 pfs. Philips Beehive Condenser	1/6
1 ¾" Aladdin Former with Slug	1/1
1 3.3 megohms Resistance (½th Watt)	6d.
1 100 pfs. Fixed Condenser. (Tubular Ceramic)	1/-
1 .003 mfd. Fixed Condenser (Hunts Miniature)	1/3
1 .01 mfd. Fixed Condenser (Hunts Miniature)	1/6
1 B7G Button Valve Base (Amphenol)	1/-
1 Relay E.C.C.	25/-
E.D. Standard	22/6
E.C.C. P100 Polarised Relay	29/6
1 Valve 3S4 (tested and guaranteed)	13/5
1 4-Pin Polarised Plug (Miniature)	6d.
Quantity 38g. Enamelled Copper Wire (2-oz. Reel)	2/9
New lightweight plastic covered stranded wire, 12 colours, yd.	3d
1 doz. BBA ½" length Bolts and full Nuts	10d.
2 doz. BBA Washers	4d.
1 doz. BBA Solder Tags (double-ended)	5d.
1 yard 2 mm. Systoflex Sleeving	4d.
1 1" BBA Bolt	1d.

The following components, while not essential, are strongly recommended as spark suppressor and are fitted across the relay contact points:

1 100 ohms Resistor ... ¼-Watt	6d.
1 .1 mfd. Fixed Condenser	1/3
Components required for attachment to fuselage:	
1 50k. ohms Potentiometer (Miniature) Dubilier	6/6
Or while stocks last, 100k Miniature	3/9
1 On-off Switch, E.D. Flat Type (D.P.S.T.)	3/9
1 4-pin Polarised Socket	6d.
1 2-pin Polarised Socket	6d.
Covers for Plug	3d.
Multicore Solder, per box	6d.
Rawplug Cored Solder	16½d.
Solon Electric Soldering Iron (New Instrument Model 3½ oz.)	19/8

" AEROMODELLER " TRANSMITTER

Components Lists	Retail Price inc. Tax
Case	37/6
4½ x 4 in. of 18 Gauge Aluminium Sheet	1/-
3½ x 4 in. of 1/16th Paxolin	9d.
1 "On-Off" Switch	3/6
1 Polarised 2 pin plug (with cover) and socket	1/3
1 Keying Choke	3/-
1 Aerial Socket	5/-
1 0-50 M/a Moving Coil Meter	12/6
1 8ft. Sectional Aerial	5/-
1 Ever-Ready E.136 Batrymax 90v.	16/-
1 Ever-Ready Plastic 4 pin, plug and lead	2/-
17 6 BA Nuts and Bolts 3 4 BA Nuts and Bolts	1/6
1½ ft. Systoflex 1 ft. Plastic covered multi-strand wire 1 ft. 20 gauge tinned wire	3d.
1 D.C.C. 90 valve or 3A5	29/6
1 Valve screen	1/6
1 B7G Valve Holder	1/-
1 30 pf. Beehive Condenser	1/6
2 10k Resistors	1/-
2 100 pf. – 1% Condensers	3/-
1 Eddystone 1011 R.F. Choke	1/9
8 Single onded Solder Tags 2 Double onded Solder Tags	4d.
1 Micro Switch and lead	11/-
(Alternative Push button Switch)	5/6

Transmitter Keying Choke

Kits ★ Engines ★ Radio Spares

TRANSMITTER CASE

Stoutly built with chromium handle, this handsome case measures 12 x 8 x 5 inches, and is available in crackle finish in Black, Grey and Bronze. **Price 37/6**

MANNING-CARR RELAY

We are Stockists to the Model Trade for this sensational new *Polarised Relay*, see advert on page 692. **Price 32/6 inc. Tax**

★ ★ ★ R/C KITS ★ ★ ★

Sky Skooter 48"	25/- : 4/-
unior 60"	39/6 + 6/7
Radio Queen 84"	67/- + 12/6
Mercury Matador	21/5 : 3/7

★ ★ BATTERY SERVICE ★ ★

Every battery used in R/C in stock.

★ ★ ★ ★ BOOKS ★ ★ ★ ★ ★

Flight Handbook	15/-
Development of the Guided Missile	15/-
Radio Control of Model Aircraft	9/6
Radio Control of Model Ships, Boats, and Aircraft	8/6
Aeromodeller Annual, 1954	10/-

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SPECIAL XMAS COMBINATION OFFERS

The new MERLIN .76 c.c. engine, PROVOST KIT, Propeller, Tube of balsa cement 58/- post free.

LARGE RANGE OF THE FOLLOWING SOLID SCALE KITS IN STOCK:—SKYCRAFT, VERON and AVIAN. Send for COMPLETE PRICE LIST FREE.

FULL RANGE OF KEIL KRAFT FLYING SCALE KITS IN STOCK:—

NEW M.E. 109, Spitfire, Hurricane, Gloster Javelin, etc.

NEW EeZeBILT KITS:—

SEDAN and SPORTSTER all at 3/6d. each plus 6d. postage, 3 or more sent post FREE. SEND FOR LATEST KEIL KRAFT ILLUSTRATED PRICE LIST.

NEW "MARINECRAFT" KIT, H.M.S. BOUNTY

This kit is ideal for the beginner, a fully detailed Photographic Chart simplifying construction and making it possible for the amateur builder to produce a model equal to the finest craftsman. Length 12", price 29/2d.

OTHER GALLEON KITS, "VICTORY," 20" 70/-; "ARK ROYAL," 19" long 59/6d., "CUTTY SARK," 17" long 42/-, "MAYFLOWER," 18" 35/-, "GOLDEN HIND," 24" long 56/- and "SANTA MARIA," 19" 47/3d. SEND FOR FREE Coloured Brochure.

THE IDEAL XMAS PRESENT FOR THE AEROMODELLER. X-ACTO BURLINGTON HOBBY CHEST. A fine kit in a magnificent moulded cabinet, containing three knives, and 23 cutting tools, spokeshave, plane, stripper and steel rule. Price 84/-. Other tool chests from 30/-. SEND for FREE X-ACTO ILLUSTRATED LEAFLET.

NEW RANGE OF SKYLEADA "SILHOUJETTES" KITS DESIGNED FOR THE JETEX 35 or 50. JAVELIN, BOULTON PAUL, SWIFT, AVRO 707, D. H. COMET and HUNTER, all at 2/6d., each, postage 6d.

SPECIAL COMBINATION OFFER, any one SILHOUJETTES KIT PLUS JETEX 35 outfit 11/9d., or with JETEX 50B, with Fuel, wick, gauzes, washers, etc., 11/9d.

JETEX 50 powered INTERCEPTER ready to fly, price 39/6d.

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JETEX 50 outfit 12/9d. Jetex 50b, with augmenter tube 12/9d.

JETMASTER 100 outfit 28/-.

HAWKER HUNTER and SWIFT for the JETMASTER, price 21/- each, post free. AUGMENTER TUBE FOR JETMASTER 5/10d.

SEND for full list of JETEX KITS, etc.

USEFUL ACCESSORIES

Allbon UNIVERSAL TEST STAND 12/6d., CELSPRAY for a perfect finish 8/6d., YEOMAN STUNT TANKS from 3/6d., YEOMAN TEAMRACER TANKS 15 c.c. 3/2½d., BONDAGLASS at new reduced price. DROME AIRWHEELS, 2" dia. 7/- per pr., 2½" dia. 8.9d., 3½" dia. 10/6d., SWANN-MORTON CRAFT TOOLS 2/6d., with 3 blades. SWANN-MORTON HANDITOOL with 4 blades 5/-.

SECOND-HAND ENGINES	
ETA 19	65/-
E.D. BEE	35/-
FROG 150	35/-
E.D. Baby .46 c.c.	37/6
E.D. Racer 2.46 c.c.	55/-
E.D. 3.46 c.c.	45/-
Amco B.B. 3.5 c.c.	57/6
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Elfin 2.49 c.c.	45/-
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I pay cash for second-hand engines. Send for my Second-hand Engines Price List.

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AMCO AVIONIC REMOTE CONTROL TRANSMITTER 133/1d., RECEIVER 77/-. For immediate delivery.

P-100 Polarised Relay	29/6
Fenners-Pike Servo-Unit	68/6
Pulse Box	68/6
E.C.C. Telecommander 1061 Transmitter, price	83/2
951A Receiver, price	83/2
202 Escapement, price	17/10
E.D. Boomerang complete	239/6
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E.D. Mk. II 3-valve unit	351/6
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Mercury Matador 50"	25/-
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For .5 c.c. motors:—

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NEW JETEX TAILORED KITS FOR THE 50 "SKYRAY", "SUPER-SABRE" AND "SKYROCKET" 10/6d. EACH.

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The New MERLIN .76 c.c. ENGINE

The ideal engine for the beginner, easy to start and only 47/6.

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A really grand kit designed especially for the ELECTROTOR 240 Electric motor. Easy to build, length 12 in. Price 10/6., ELECTROTOR motor extra 9/11d.

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AMCO B.B. 3.5 c.c.	91/5
Allen Mercury .25	61/6
Allbon Merlin .8 c.c.	47/6
Allbon Bambi .15 c.c.	103/11
Allbon Dart Mk. II .5 c.c.	64/2
Allbon Spitfire 1 c.c.	64/2
Allbon Javelin 1.5 c.c.	65/4
D.C. 350 3.5 c.c.	78/5
Frog 150 1.5 c.c.	50/-
E.D. Baby .46 c.c.	53/3
E.D. Bee 1 c.c.	34/9
E.D. Hornet 1.46 c.c.	57/-
E.D. Racer 2.46 c.c.	78/6
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Frog Vandiver 1.5 c.c.	14/6
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Mercury Texan Class A	15/6
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K.K. Ranger up to 2.5 c.c.	12/3
Skyleada Hornet 2.5 c.c.	10/11
Skyleada Auster 1 c.c.	8/7
Veron Panther 3.5 c.c.	29/2
Beehag 1 c.c.	14/-
Minibuster team racer	17/6
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Phantom 1.5 to 2.5 c.c.	21/7
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CHALLENGER, the only ready-made CONTROL-LINE MODEL AIRCRAFT 42/-. Engine extra E.D. BEE 1 c.c. 54/9d.

The PROVOST Trainer

A NEW "Super Quicky" Control line kit by Veron. It is so simple to build and can easily be assembled in one evening. Suitable for .46 c.c. to 1 c.c. Price 8/9d.

MY NEW 1954 MODEL AIRCRAFT PRICE LIST, KEIL ILLUSTRATED LIST, VERON, X-ACTO and JETEX LEAFLETS FREE. ALL ORDERS POST FREE IN U.K. OVER £1 in value. Under £1 please add 1/- for postage and packing. C.O.D. ORDERS WELCOME.

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AERO MODELLER

"Covers the world of Aeromodelling"

VOLUME XIX
NUMBER 227
DECEMBER 1954

Managing Editor - C. S. RUSHBROOKE

Editor - - - - - H. G. HUNDLEBY

Assistant Editor - - - R. G. MOULTON

In this issue

Special features

Regular features

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

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Christmas Greetings to all Readers

OUR USUAL PRACTICE when considering the Christmas issue Editorial is to hark back over the past season, and attempt to review the happenings and trends that have been evident throughout those busy months.

Undoubtedly, the main topic for any discussion of 1954 is the atrocious weather experienced for practically the whole of the recognised "summer" months. The details are too recent in our memories for us to comment further on that aspect, but its effect on the aeromodelling activities of this country has been far-reaching, as a number of model shop proprietors will confirm. It is common knowledge that far more models have survived the 1954 season than is usual, and this marked fall in the loss-cum-prangery mortality rate has had a noticeable effect on the normal replacement business within the Trade.

Strangely, the majority of contest dates have been fairly lucky with the weather, and reasonable conditions were evident at the Nationals and all the big rallies.

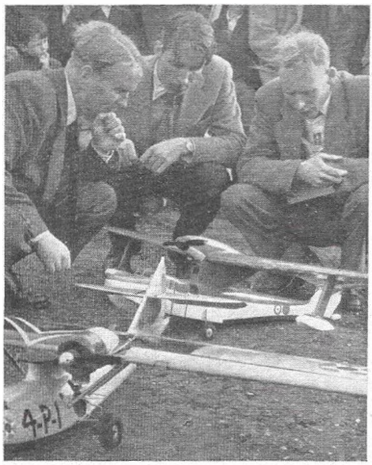
Notable during the past year has been the increased activity in the radio field, and a number of notable flights have been achieved. Foremost of course is the successful emulation of the Bleriot Channel crossing, and full marks go to the E.D. equipe for obtaining a very useful measure of publicity for the aeromodelling hobby in consequence. Other highlights are the International Record attempts made by Geoff. Pike (current holder of the radio-controlled duration record with a time of 1 hour, 40 minutes and 35 seconds) and H. L. O'Heffernan from Salcombe, who has since exceeded Pike's time by no less than 50 minutes and 45 seconds.

1954 is also notable for the re-introduction of Indoor Flying on a large scale. Four meetings have been staged at the Cardington sheds since we were successful in obtaining the co-operation of the R.A.F. in this connection, and records have been smashed at each and every meeting to date.

In official circles, the S.M.A.E. has had immediate success with its new membership scheme, and this welcome attention to the non-contest man has brought about a resurgence of interest in many clubs, some of whom had undoubtedly got a little tired of subsidising the out-and-out pot hunter.

For ourselves, we leave this issue to speak for us in the sincere hope that we continue to provide the reading public with just what they want from a—we hope not *too* technical—hobby magazine. We consider ourselves lucky in that we deal with a subject that is personally close to our hearts, and with a public that is invariably appreciative of our efforts (and most vociferous when it is not!). We get a lot of fun out of our work, and trust that we continue to satisfy our very wide readership to an even greater extent in the future.

May we end with the usual seasonal greetings for Christmas. To all our readers, both at home and abroad, the very best of good wishes for Christmas and the coming 1955, and may you get all you wish for. (We know it never comes out that way, but there's no harm in hoping is there!!)



Future for flying boats? John Cunningham and Peter Bugge, D. H. Comet test pilots deliberate on the merits of C. Percival's Seagull with St. Albans' club chairman, Jim Greening at the All-Britain Rally, Radlett

Heard at the Hangar Doors

The (New) Record Look

Just to hand is the new list of International Records issued by the F.A.I. from Paris, and we welcome the streamlining of a system that had developed into a hunt for freak categories in order to establish a "record."

The four World Record categories are retained, denoting the highest figures in all categories for duration, distance, height, and speed, but the general classifications have been telescoped into a total of 30 recognised record classes. Duration, Distance, Height and Speed classes are recognised for aircraft (including hydroplanes) in both rubber-driven and engine powered versions, the same for Helicopters, and further for radio-controlled models. All categories with the exception of Speed are included for Gliders, both general and radio-controlled, and the usual four control-line speed categories are retained.

Of the current list, only 21 records have been ratified, and of these Russia holds 6 (also the four World Records), Hungary 7, and the U.S.A., Great Britain, Germany, New Zealand, Italy and Czechoslovakia one each. (Detailed listings will appear in our next issue.)

Aeromodeller Annual 1954-55

With its seventh appearance "AEROMODELLER ANNUAL" begins to take on the character of an institution. Many experienced aeromodellers are lucky enough to possess the complete set of volumes covering the progress of the hobby since 1948, but the newcomer can quite happily begin his collection with this volume, for each is complete in itself providing a summary of the main features of the aeromodelling year. We are constantly endeavouring to make each year's volume better than the one before, and "AEROMODELLER ANNUAL," 1954-55, for the first time, provides readers with a real full colour painting for the dust-cover, repeated within as a frontispiece. That famous "AEROMODELLER" artist, C. Rupert Moore, A.R.C.A., was specially commissioned to provide this flash-back to the "Battle of Britain," and has moreover contributed a most valuable article on post-war British camouflage.

Parnell Schoenky of Kirkwood, Missouri, another world-famous expert amongst the contributors, gives advice on helicopter models. Just van Hattum of Holland offers a splendid summary of A/2 Sailplane development in Europe: George Honnest-Redlich, E.D.'s electronic expert, provides factual information on radio control actuators: Ron Moulton gives the results of a most exhaustive series of timer tests—"gen" that must prove invaluable to every contest flyer.

On the plans side we have again combed the aeromodelling literature of the world and contacted our overseas correspondents, to provide the most interesting selection of record, novel, curious and interesting designs that have been flown in France, Japan, Poland, Czechoslovakia, U.S.A., Italy, Germany, and Gt. Britain, including several specially produced for the Annual.

Talk About Torque

A significant fact arising from the new scale of horsepower figures published by ourselves is that to date we have yet to receive one single valid rebuttal of the new standard and that every engine manufacturer of our personal acquaintance has verbally confirmed acceptance of our power curves. Attempts by one author have been made to camouflage a justification for sticking to the old exaggerated scale with flowery terms on B.M.E.P. B.H.P./Litre and talk of variance in production engines; but not with any shred of evidence as to how the high torque figures are obtained to provide this information. It is also significant that this same author has taken it upon himself in *Model Airplane News* to quote us as having said that all horsepower figures on the old scale have been overly-optimistic to the tune of 100 per cent., and carries on to extract our inference that 10 c.c. Doolings and McCoys are up to 200 per cent. exaggerated. That this is grossly untrue is perhaps evidence of magnification effect on the part of said scribe's typewriter—we have never made such a foolish statement and have

always maintained that with increasing capacity, volumetric efficiency increases, so that differences between old and new scales will diminish as capacity rises. Leading with his chin, this champion of wordage before veracity, believes that "The magazine in question (*AEROMODELLER*) will, as time goes on achieve specific output figures more near to the accepted (*old scale*) standards." Strangely enough, we too feel the same way—we hardly expect engine design and power output to stagnate.

Record Roundup

Since facilities were granted for the use of the balloon sheds at Cardington, indoor flying records have taken a severe bashing at each meeting, and times have risen to amazing levels. With many enthusiasts now consistently knocking up near-twenty-minute flights, at the last meeting for 1954 held on October 10, Phil Read of Birmingham, set the current record for Hand-Launched Stick models of 23 min. 58 sec.

On the 7th October, H. L. O'Heffernan established a new Radio Control Duration Record with his Mills powered "Sky Sedan" by remaining aloft for 2 hrs. 31 min. 20 sec. The flight was made at Thurlestone, South Devon, under good conditions, and the model was landed with the motor still running within 94 yards of the take-off point. The reason for this was fast approaching darkness which forced O'Heffernan to bring the flight to a premature conclusion. Subject to ratification, this establishes a new World Record, and we congratulate a very persistent flier on a very stout effort. Readers may remember that O'Heffernan attempted the Channel crossing prior to the successful crossing by the E.D. Team, suffering a most unusual setback, when seagulls attacked the model and forced it into the sea.

Technical details of the model, which is a modified "Skyskooter," are as follows: Engine, Mills 1·3 c.c. Mk. II; Fuel, Mercury No. 3; Feed was by gravity from tank in fuselage; Receiver, home-made, based on the "AEROMODELLER" No. 1; Relay, E.C.C. 5A; Batteries, H/T Mallory Mercury 54 volt; L/T and Actuator, Venner Accumulators; Control was by proportionate rudder with variable mark-space pulsing. Actuator was a Mighty Midget motor. Transmitter was a 3-valve crystal-controlled unit of his own design, with power supplied by a 12-volt car battery via a vibrator pack.

We imagine that there are at least three stiff necks in the Salcombe Club as a result of this successful attempt (pity the poor timekeepers!) and look forward to repercussions from the Nottingham district in the not too distant future?

L.S.A.R.A. Conference

With an attendance record book reading like one that might be found at the portals of Air Ministry, the collection of boffinry that listened and questioned the eight papers read at the first Model Aeronautical Conference, probably represented the first official acceptance of aeromodelling as being of *direct* value to the aircraft industry. The meeting had been called at rather short notice so that N. K. Walker, B.Sc., the Director of Research, could attend before departing for a three-year period of duty in the U.S.A.; and enabled him to summarise the L.S.A.R.A. work in opening the conference.

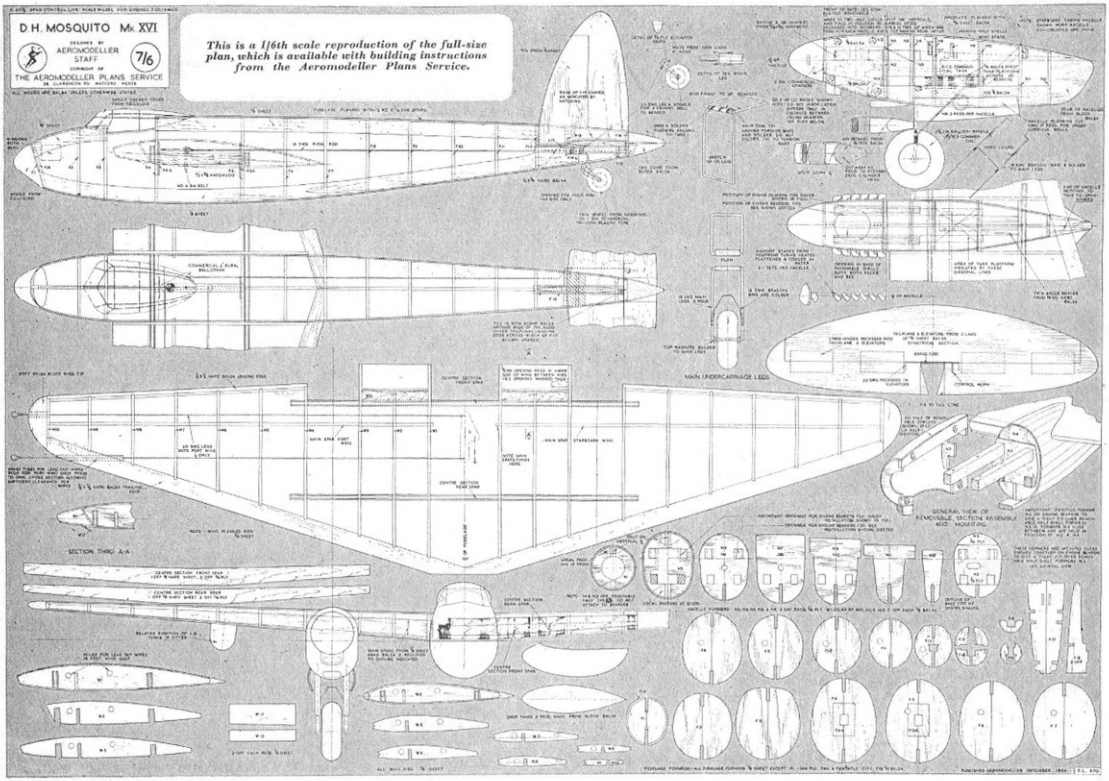
First speaker was W. A. Crago, who gave many revealing facts on the value of dynamic models (reproducing the full-size in scale weight, loadings, balance, etc.) and showed films of a free running 70 m.p.h. model Hydroski fighter, roaring across a calm river surface at 4 a.m. under R/C. Free-flight R/C models have debatable value for research it seems, and the bulk of the Saro dynamic model work is conducted in a test tank with simulated catapult landings. Aircraft of the future are modelled to an amazing degree of accuracy and provide information that can decide the future of a design before construction is started.

Other talks on the L.S.A.R.A. radio-control experiments (see R/C notes), Low speed aerodynamics and Reynolds numbers (by R. W. W. Annenberg) were highly technical and found to be controversial by questioners. Dick Hirdes even brought along his copy of F. W. Schmitz's *Aerodynamik der Flugmodells* to point out his particular query. Tom Smith outlined in a practical way, his progress through countless "hot" designs to Fried Fritter and Oliver Twister and P. R. Payne recalled L.S.A.R.A. developments on behalf of Jetex, notably the creation of the Jetmaster and Augmenter tubes.

The talk which held most interest for ourselves, was that due to be given by P. G. F. Chinn, on Model Engine tests, who was not present. In his place, N. K. Walker spoke of the difficulties in testing by the Torque beam, and acknowledged Warrings findings that slipstream can provide an error to the magnitude of 40 per cent. in some cases. We felt rather sorry that Mr. Chinn had not arrived to give his talk in person, and with heads filled with technical terms, the like of which some of us had never heard before, we left confident in the fact that modellers in industry are doing trojan work for we who enjoy it as a hobby.

More Models In Research

The recent nation-wide publicity given to the Comet investigation has perhaps done more than any other occurence to bring home the value of models to the general public. Sir Arnold Hall, Farnborough "boffin" in charge of the highly technical research into the disastrous crashes, disclosed that no less than 100 models had been built for the purpose of investigating wreck patterns, etc., the test flights being carried out in one of the Cardington balloon sheds with remarkable results. The use of models for demonstration has been common practice for years, but the large scale employment of miniature replicas as in this instance is surely unique.


D.H. MOSQUITO Mk XVI
DESIGNED BY AEROMODELLER STAFF
7/6
COPYRIGHT OF THE AEROMODELLER PLANS SERVICE
This is a 1/6th scale reproduction of the full-size plan, which is available with building instructions from the Aeromodeller Plans Service.
SECTION THRO' A-A
MAIN UNDERCARRIAGE LEGS
GENERAL VIEW OF REMOVABLE SECTION ASSEMBLY AND MOUNTING

AERO MODELLER

A 40-inch Span Control Line Model of the Mk. XVI

MOSQUITO

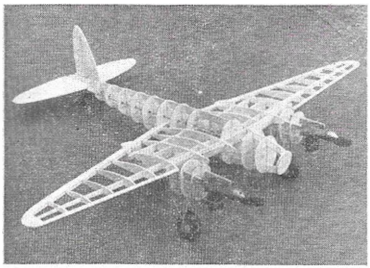
For 1 — 2½ c.c. Motors

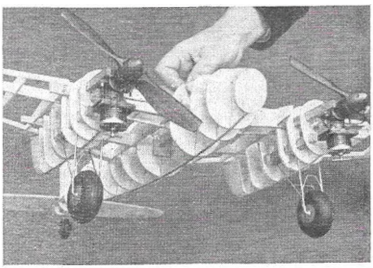
THE VOGUE for twin-engined control-line scale models is attaining tremendous proportions in this country, probably due to the fact that multi-engined machines offer a relatively untapped field of prototypes for the scale enthusiast, and the only really foolproof way of flying models of such aircraft is on the end of lines. The popularity of the A.P.S. *Invader* led us to look for a British machine which could be worked up into a really classic model—what better than the ubiquitous *Mosquito*?

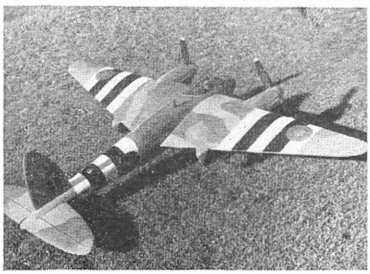
A review of the various *Mosquito* marks produced the fact that the XVI was fitted with chin intakes immediately behind the spinners which would help to disguise a pair of inverted motors. Used by P.R.U.'s as well as for bombing, this mark also offered a choice of colour-scheme, and since the glazed nose was sometimes doped over, a chance to produce different appearances while still being authentic. Invasion markings, optional but also correct dress for the mark, further widen the scope and allow builders to vary the rut.

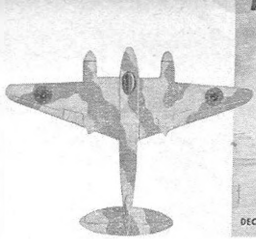
To preserve the sleek lines of this beautiful aeroplane all-sheet covering was obviously essential; this offers splendid opportunities to concours builders, and we expect to see whole squadrons of really first-class "Mossies" at 1955 rallies!

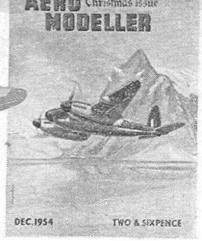
At ¾ in. to the foot the model comes out at a little more than 40 in. span and will accommodate most 2·5 c.c. motors. Our original, using two E.D. 2·46s, lapped at nearly 50 m.p.h. on one motor and at well over 60 on both. About the minimum power for flight would be two 1 c.c. motors.











MY COVER PAINTING

By C. RUPERT MOORE

NOTHING could demonstrate the supremacy of the Mosquito during Hitler's war better than the incident depicted in the cover painting. This shows a "Civil" Mosquito belonging to B.O.A.C. running the gauntlet to Sweden in 1943. The audacity of the B.O.A.C. in flying unarmed aircraft right through the Skagerrak in broad daylight infuriated the Hun enough to cause him to divert fighter squadrons to try and stop them. "The Ball Bearing Run" to Sweden as it was known, was a revival of the commercial route to Stockholm from Perth which had been flown regularly until April 9, 1940, when the Germans overran Norway.

Early in 1941 B.O.A.C. were asked to re-open this route in spite of the fact that the whole of the European coastline was in the hands of the Hun. The "fleet" was started by one Lockheed aircraft which had once belonged to Poland and was flown here by a refugee crew. It was given a registration ending in B.G. and was therefore known as "Bashful Gertie," the terror of the Skagerrak!! Lockheed Hudsons were released from the R.A.F. and Lodestars with Norwegian crews joined in. British crews flew the obsolete converted Whitleys.

It was usual for these aircraft to fly high, but on being intercepted speed would be gained by diving to a few feet above the sea, this manoeuvre also prevented attack from below. Casualties were not light in those slow aircraft, but in spite of this, on some nights a dozen aircraft flew the gauntlet.

In the summer of 1943 the whole scene was changed by the introduction of Mosquitoes to this route. Sweden makes some of the finest ball bearings in the world and Germany needed them badly and she would get them all unless we could go and get them ourselves. The ball bearings could be packed into a small heavy concentrated load just suitable for B.O.A.C. Mosquito bomb-bays. Soon after their introduction Mosquitoes were called to carry passengers! The crew of two occupied the only available space in the cabin so the bomb-bay was the only place possible. The first two passengers were both elderly men with no previous flying experience. They were both experts in the ball bearing industry and they both had to be in Stockholm the next morning to counter a German move to get more of the ball bearings. The bomb-bays of two Mosquitoes were padded with felt and fitted with safety belts. One passenger was strapped down inside each. A quickly improvised electric light and inter-com was fixed and they were given books to read on the journey, a packet of sandwiches and a flask of coffee. These gentlemen not only arrived safely in Stockholm, where they successfully completed their mission, but both returned home safely a few nights later by the same means. Of all the great exploits of the Mosquito, and they were many, none could have surpassed the cool courage of the crews and passengers of these unarmed aircraft on the Ball Bearing Run. Only two other exploits can be mentioned in this short resume. In September, 1941, six Mosquitoes bombed a hole in the Gestapo headquarters in Oslo to release prisoners and, of course, the regular raids on Berlin each Mossie dropping a 4,000 lb. "block buster."

Colouring

Regulation colour for B.O.A.C. aircraft during the war was: Top surfaces, flanks including rudder and fin, camouflage of dark green with dark earth; undersurfaces, aluminium. Most Mosquitoes, however, were the pale duck egg green known as "Sky" below. Black civil letters were carried above and below the wings and on the fuselage sides, the latter outlined in aluminium. Broad bands of vermilion, white and ultramarine underlined the letters on the fuselage and below the wings, the band underlining the top letters had the white omitted. A military type fin flash was used. Spinners varied, dark green, dark earth or black. Some registration letters G-AGFV, G-AGGC, G-AGGD, G-AGGE, G-AGGF, G-AGGH, G-AGKO. These were not in service all together.

R.A.F. and F.A.A. Types

1941-42 ROUNDELS.—Proportion was, the two outer blue and white bands were each equal in width to the diameter of the centre vermilion circle. These appeared below the wings on certain types and always on the fuselage sides, the latter being outlined by an extra circle of yellow equal in width to the blue. The roundel above the wing was vermilion and ultramarine only. Fin flashes 24in. x 27in. of equal width stripes of the same colours were used.

1942 and after, colours changed to Indian red, white, and indigo blue, and the white and yellow bands reduced to very narrow bands.

The Royal Navy, Fleet Air Arm in those days, used the same insignia *including fin flash.*

Basic Camouflage.—The prototype W4050 was vivid "trainer" yellow all over with pre-1942 insignia.

One of the first squadrons to be used with the bomber version was 105 Squadron; their aircraft were camouflaged dark sea grey with dark green top surfaces (*i.e.*, above the centre line of the fuselage), including the rudder, and fin, and medium sea grey below. 1942 type insignia and flashes were used with no roundel below the wing. Spinners were medium sea grey, and squadron letters paler grey with black serial numbers. Two aircraft were GB-E No. DZ353, GB-A No. DZ360.

Day Fighters at the same period were of similar colour with roundels below the wing tips.

By 1944 they were camouflaged dark green and medium sea grey above with the same medium sea grey below. This is the scheme illustrated in the heading. The particular aircraft EW-E No. MV563 belonged to 307 Polish Squadron. Squadron letters were in Indian red, and a small 9-inch square chequered Polish marking was painted on each side of the nose.

Early night fighters were matt-black all over with usual insignia but no roundels below wings.

P.R.U. Mosquitoes were dull turquoise P.R.U. blue all over, with Indian red and indigo blue roundels above the wing tips and on the fuselage. The fin flash also had the white deleted. Naval Sea Mosquitoes were camouflaged dark slate grey and dark sea grey on top, and sky below, spinners were dark sea grey.

Locate that lost model by . . .

Compass retrieving

suggests J. G. WALDRON

THE IMPORTANCE of the successful retrieving of a contest model certainly needs no enlargement. Any modeller with contest aspirations will soon find that flying the model successfully is only half the battle.

Now a model can go a long way in four minutes on a windy day, and that assumes one is not allowing that little extra d/t fuse to cover the risk of erratic burning. In poor visibility the model is often going O.O.S. after the first two or three minutes, and there are often obstacles to be encountered, boundary fences to be crossed, and even woods and streams to be by-passed. All those divert one's attention and make it extremely difficult to keep the model's line of flight in wind accurately. Most of us use "rule of thumb" methods for lining up the course of a model such as by taking a line between any convenient landmarks such as trees and buildings, but these methods are not always feasible especially in flat meadow country, or where there are belts of trees which restrict vision.

The answer to all this heartburn is quite straightforward and is simply to use a pocket marching compass.

Over the past season the writer and other members of the Henley club have used this simple method of keeping a model's course in mind, and have to date retrieved many models with its assistance.

For instance, at this year's Nationals Dave Painter retrieved his glider using a compass, while the writer located a club member's power model after the owner himself had given up and come back. In this case a bearing had been taken as the model went out of sight from the take-off point. At Northern Heights Gala, the writer retrieved his glider quite successfully after an unlimited fly-off, while by following a compass bearing taken immediately after a timer and fuse failure, Tony Cooke found his power job a night later, three miles away from the club flying ground.

The cost of a marching compass need not be great, it must have sights, a stop to lock the needle, and preferably a mirror or prism to read the bearing; it must also be compact enough to fit in the pocket.

If on open ground and taking a bearing on a disappearing model, it is important to note the spot on the nearest line of trees or hedgerows over which the model appears to be passing, if the model is O.O.S. by the time this point is reached; this will enable one to take a bearing forward from that point, and if it is a prominent tree one can take back-bearings on it later to check the direction of search (*see Fig.* 2). Better still, take the bearing —from that spot, or any convenient fixed object, or tree which is in line—it is no good just taking a bearing from the middle of an empty field, and naturally it is important to be on the course of the model yourself. Another point to watch is that any bearings are taken only when the model is broadside

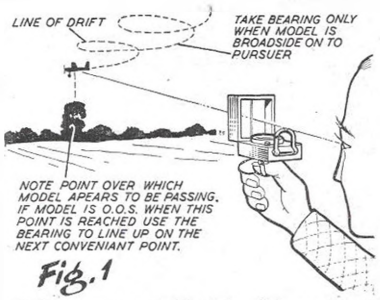


Fig. 1

to the pursuer, a model circles fairly consistently about its true line of drift, and any bearing taken when it is facing towards or away from the pursuer will give a false direction.

One has merely to follow up the bearing, appreciating that the model is likely to lie anywhere within the radius of its flight circle from this line. It is possible to by-pass impossible obstacles such as streams and cornfields, by taking a bearing forward to a point on the other side and then travelling round to that point by the easiest route; in this way one continues across difficult country in a series of "hops," but always remaining on the path of the model. If there is a chance that the model will have landed in trees, it is often easier to locate from a distance.

A further advantage is that one can resume a search for a lost model quite accurately at a later date, should the circumstances demand it, provided the bearing and any relevant landmarks are memorised.

Having summarised this system, perhaps we have given the contest-minded types something to think about; much scepticism was expressed in Henley club when the idea was suggested originally, but it has proved itself in use, over a period of time.

We take great pains in the construction and trimming of our models, is it not rather logical to take even greater pains to ensure getting them back?

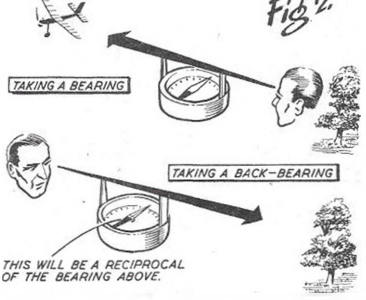


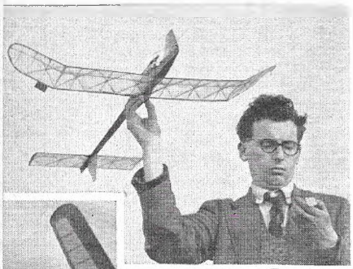
Fig. 2

THE 1954 ALL BRITAIN RALLY

Radlett Aerodrome, Herts, Sun., Sept. 26th

THE impression this mammoth event gives can best be likened to Hampstead Heath on a Bank Holiday, or Epsom Downs on Derby Day. With nearly 18,000 people, 1,700 cars, 50 coaches and some 700 modellers from over 80 clubs, the place was a maelstrom of aeromodelling activity. The weather was fine, but as usual an unkind wind was blowing in the direction of the railway line, with the inevitable problems of retrieving. Accent was definitely on spectator appeal, with many clubs laying out their wares rather on the lines of an eastern bazaar. In fact, price tickets on the array of models would have completed the picture! Due credit must be given to the St. Albans Club for the tremendous effort that the running of this event must entail. It introduces the man in the street to aeromodelling better than any other event we know.

One of many hundred spectators who over-ran the Radio-Control take-off area ducks for cover as Ted Hensley's winning machine comes in to land. The model was badly damaged through hitting two or three people as it touched down.



RESULTS

Rubber
1. J. Palmer, Croydon, 6.00 & Flyoff.
2. G. Woolls, Bristol, 6.00

Glider
1. Mrs. P. R. King, Belfairs, 4.34

Power
1. A. Brooks, Grange, 5.01

Seaplane, Rubber
1. P. T. Taylor, Croydon, 3.33

Seaplane, Power
1. V. Jays, C.M., 1.21

"Aeromodeller" Trophy—Best Seaplane
1. P. T. Taylor, Croydon, 3.33

Tailless, Rubber
1. G. Woolls, Bristol, 2.55

Tailless Glider
1. F. Smith, Southern Cross, 1.34

Tailless Power
1. G. F. W. Fisher, I.R.C.M.S., 1.01

Concours D'Elegance—Scale
1. A. J. Briggs, Park M.A.L., "Lincoln"

Concours D'Elegance—Non-Scale
1. M. Gaster, C.M., Power

Concours D'Elegance—Outstanding Model
A. J. Briggs, Park M.A.L. C/L "Lincoln"

Clipper Cargo
1. R. Moulton, West Herts, 13¾ oz.

Radio-Control Aerobatics
1. O. E. Hensley, Bushey Park, 32 pts.

Team Race—Class "A"
1. M. Smith, High Wycombe

Team Race—Class "B"
1. K. Muscutt, West Essex

Combat
1. C. Taylor, West Essex

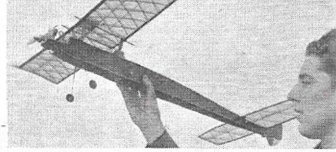
"Model Aircraft" Trophy—Rally Championship
G. Woolls, Bristol

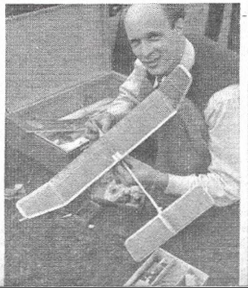
Hertfordshire Championship
A. Weston, West Herts

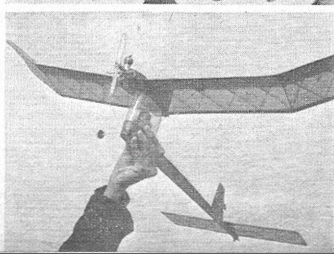
International Jetex Contest
1. J. O'Donnell, English Electric, 14.31

"Aeromodeller" 1 c.c. PAA-Load
1. B. T. Faulkner, Cheadle, 3.38

Photos from left to right are as follows:— Johnie O'Donnell watches the clock as he runs through his first Jetex charge to build up pressure; A. Weston of West Herts with his Aluminium boom Cargo Clipper entry which used a Javelin for this event and a Spitfire for the 1 c.c. PAA-Load; Unusual channel wing Clipper model by Pete Holland; Sigurd Isacson came all the way from Sweden for the Jetex event; P. S. Lambert of West Middlesex built this novel Elfin 50 powered PAA-loader; Brian Faulkner with winning Bee powered "AEROMODELLER" 1 c.c. PAA-load entry.







WE LIFT THE IRON CURTAIN

Latest news of aeromodelling in Russia, including a report on the MMS Soviet States International at Tusino airport, Moscow, in August

While speed models are timed over a specially made base with tall wire protection, and competitors await their turn in clearly marked pits, a Mil 3-seat Helicopter hovers before chasing a wayward free-flight model

OUR OWN personal contact with Russian modellers dates back a few years, when control-line was in its infancy here, and one of the Soviet Embassy staff in London joined us in early team racing experiments at Fairlop. He became a firm friend of many habituees of the Fairlop tarmac, and displayed an imaginative approach to the then new habit of flying on wires and, when he returned to Moscow, we fancy he became a leading light among the S.S.S.R. controliners. Our latest news from Moscow appears to indicate that he was typical of the Soviet expert class—quiet, very reserved, and extremely methodical.

Readers of "World News" will be aware that in August, all countries of the Soviet Bloc were invited to send National teams for a three-day Olympics. In some countries, special effort was delegated to experts long before the event, so that engines could be prepared and models fully tested, all of which compares very closely with the intensive training of Soviet Athletes before entering International competition. Teams flew via IL-12 transport to Tusino airport and in all, eight countries participated. One man from each country flew solo in each event, so the onus on the individual was rather of high order.

Organisation was of a standard only possible with complete government support, there being a special control-line base, shelters for competitors, motor-cycles and cars for transport, four light planes and a helicopter for recovery. At the signal of a Very pistol, full size planes took off to chase any fly-away and such was the skill of this airborne recovery squad, that it was obvious that this was not the first occasion on which they had the chance to demonstrate their ability.

Leading lights in the Soviet modelling movement, part of the D.O.S.A.V. sporting aviation department, were present to organise and also display their particular skills prior to the contests proper. Large radio models of the record holding type, were flown by types like Michael Vasilchenko, the 33-year-old doyen of Russian record holders. Horizontal pairs of aerials with transmitters mounted high above the ground controlled 8-foot span models, weighing up to 10 lb. and yet with only 4.4 c.c. diesels for power. In the main, these demonstrators put up an impressive display and for our part we have nothing but admiration for the struggling efforts of the K-16 long stroke engine. See photo, page 635.

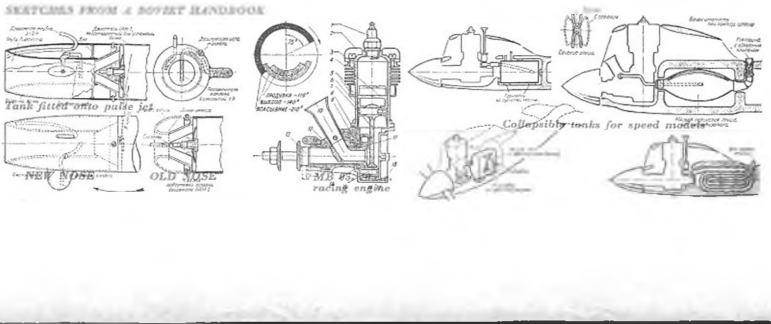
Fair weather favoured four of the five events, and as times indicate, the standard of the leaders compares well with our own Western International contest figures, in spite of a serious shortage of balsa and rubber. In Wakefield alone, heavy rain spoiled many of the better models, and no concession was made to old man weather—the contest ran very strictly to time schedule and no matter whether it was coming down in buckets or not, out the competitors went to make their flight. Flying to the International classifications for Wakefield, F.A.I. Power and A/2 as well as speed, does enable us to draw a comparison with our own Western efforts, and is best dealt with class by class.

Wakefield

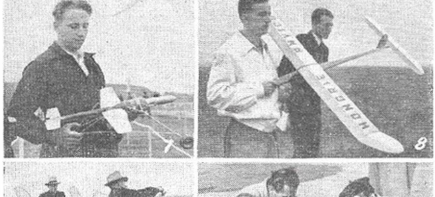
A strong wind and heavy rain plus low cloud handicapped performance to some degree but Niestoj of Poland won with 2 : 33 followed by four max's. He, and the Hungarian Krizsma, were the only modellers flying with gears, and the first four in this event were using a new Hungarian rubber, 1 m.m. thick and claimed to have greater elasticity. Russian and Czech models were balsa, others of mixed hardwood structure, some using a lot of *Graminae*. East German entry used Dunlop rubber, the Czech model, Pirelli. Magnificent airscrews on Niestoj's and Matvejev's (2nd) models contributed to their success. One cannot help but notice O'Donnell touches in the Russian model, photo 12, but use of a Hacklinger style airfoil and elastic turbulators is right out of keeping. A drawing will appear next month, the construction being more than ordinarily involved.

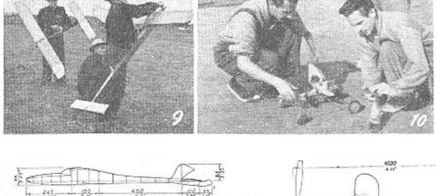
Power

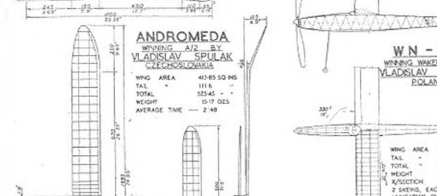
Won by Hajek with 2 : 45 and four max's, using an AMA 2.47 as reviewed in our April, '54 issue, the



1. Wake winner Niestoj and 2, speed box also from Poland. 3 M. Vasilchenko, famous Russian designer; 4 the Russian team on parade, note gull wing on power job. 5 Winner Hajek and large F.A.I. model.







standard was very high and provided great variety in the types of engine used. An E.D. 2.46 placed 2nd for Jermakov of the Ukraine, and an E.D. copy came third for Russian Kucerov, flying a very stimulating VTO design of ultra long moments (photo 9). The take-off arm for VTO on this model, hinges under the pylon and measures 4 ft. long! Hungarian Kun used a Super Tigre, East German Gorke, a Willo 1.5 diesel and others the Russian designed K-18. All of the first three managed four max's apiece, indicating that like us, the odd flight in five generally spoils the result due to poor motor run, etc. Heavily undercambered sections, avoided here in power, due to looping tendencies, appear to be a favourite in all classes.

A/2 Glider

Fantastic high averages have always been achieved by the Czechs and Spulak averaged 2 : 48 in this event with the aid of only two max's. Radoczi of Hungary, flying a beautifully finished very British looking A/2 (photo 8) came 2nd with three max's to help him, and of the rest of the eight, 2 : 17 appears to be a steady top average flight. Georges Benedek of airfoil fame, flew for Rumania, not Hungary, and East German Leimert (photo 18) had curved plate solid balsa wings. Topadze of Russia had an attractive short nose model (14) with cabin and unusual thick section of 12 per cent. thickness ratio.

Speed

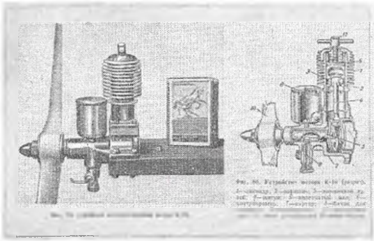
Here in Jet speed, we apparently have the Soviet's pride and joy. The RAM jet unit with relatively low pulse rate, glow-plug for starting via blowlamp at the tail, and incorporated nose tank from moulded calico and dope (Elementary Fibreglass?) reigns supreme. Wheels are welded to the jet, wings bolted on each side, tail on top of the fin and Igor Modelarski is ready to make plenty of noise and fly all day. Sladky, whose projectiles have been illustrated several times in "World News" won with his Letmo powered Strely II, and Ivanikov followed by only 1 m.p.h. One of Lipinski's one-wing models actually flew at 168 m.p.h., but crashed on fire! 5 c.c. speed was another Czech victory, which clinched the overall team prize with Zatocil flying his model using the Sladky/Husicka Letmo 5 c.c. to get 124 m.p.h. Remembering that this is without Nitro Methane, that Letmo engine must be good. A Dooling 29 came 2nd and an own design engine third, for Russian Gajevski, who builds all-metal models.

Drawings of interesting runners-up, will be published next month.

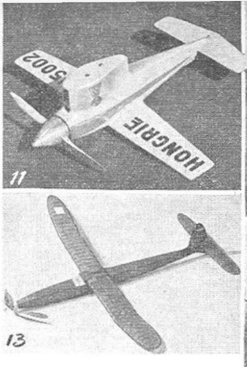
6. Winning Czech team in track suits. 7. Doberkei, East Germany and 9. D model jet, does 110 m.p.h. 8. Radoczi of Hungary and best finished model. 9. Russian power entry, Kucerov. Assistant holds his reserve model. 10. Sladky and Zatocil with fastest 5 c.c.

		WAKEFIELD	**Secs.**	
1.	NIESTOJ	Poland	873	(900)
2.	MATUEJEV	Russia	849	(866)
3.	NASONOV	Ukraine	847	(863)
4.	KRIZSMA	Hungary	778	(844)
5.	NETEPV	East Germany	754	(835)
6.	CIZEK	Czechoslovakia	749	(814)
		F.A.I. POWER		
1.	HAJEK	Czechoslovakia	885	(844)
2.	JERMAKOV	Ukraine	865	(831)
3.	KUCEROV	Russia	812	(783)
4.	PURICE	Rumania	713	(723)
5.	KUN	Hungary	517	(650)
6.	GORKE	East Germany	511	(629)
		A/2 GLIDER		
1.	SPULAK	Czechoslovakia	839	(566)
2.	RADOCZI	Hungary	755	(544)
3.	LEIMERT	East Germany	738	(527)
4.	BOTVINOV	Ukraine	672	(515)
5.	TOPADZE	Russia	626	(506)
6.	BENEDEK	Rumania	536	(498)
		JET SPEED	**m.p.h.**	
1.	SLADKY	Czechoslovakia	144	
2.	IVANIKOV	Russia	143	
3.	HORWATH	Hungary	138	
4.	MOLDOVJANU	Rumania	131	
5.	LIPINSKI	Ukraine	116	
6.	DOBERKEI	East Germany	110	
		5 c.c. SPEED		
1.	ZATOCIL	Czechoslovakia	124	(138)
2.	EGERVARY	Hungary	122	(138)
3.	GAJEVSKI	Russia	121	(133)
4.	DEMJANENKO	Ukraine	115	(133)
5.	BRETSCHNEIDER	Poland	78	(125)
6.	RASKOV	Bulgaria	71	(124)

Times and speeds in brackets are for equivalent placings in our Western International contests, 1954.



Above: The Russian K-16, universally used 4.4 c.c. diesel. 16. A/2 winner Spulak and his Andromeda, a Nordic with a cabin. 17. Ivanikov's jet with spare tank/valve unit. Must be light to get away with wing loading restrictions. 18. East German Leimert and pair of laminated balsa winged A/2's with Go 417a section.



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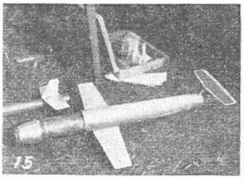
14

11. Egervary's 2nd placing Dooling 29 speed entry for Hungary. 12. Russian rubber model champion Maturjov and Wakefield, has complex structure, turbulator on wing. 13. Cizek's Wakefield has elron lines. 14. Russian Topadze with A/2 and power man Kucerov. 15. Lipinski's jet from Ukraine has a "fuselage" around jet, nose tank, diminutive wings.



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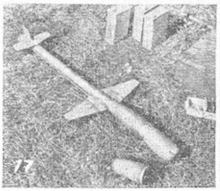

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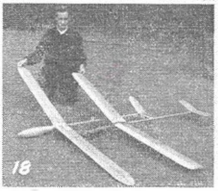

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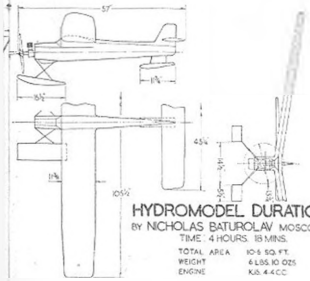
SOVIET RECORD HOLDERS

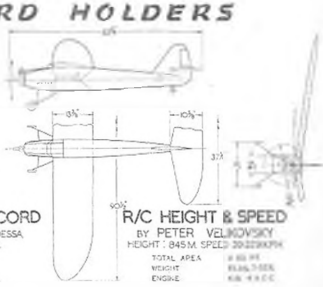


HYDROMODEL DURATION
BY NICHOLAS BATUROLAV MOSCOW
TIME: 4 HOURS 18 MINS.

TOTAL AREA	10·5 SQ. FT.
WEIGHT	6 LBS. 10 OZS.
ENGINE	K/6 4·4 C.C.

WORLD DURATION RECORD
BY IGOR KULAKOVSKY ODESSA
TIME: 6 HOURS. 1 MIN. 6/8/52.

TOTAL AREA	6·72 SQ. FT.
WEIGHT	6 LBS. 9 OZS.
ENGINE	3·5 C.C. DIESEL



R/C HEIGHT & SPEED
BY PETER VELIKOVSKY
HEIGHT: 845 M. SPEED: 30·2 KM/H

TOTAL AREA	[illegible]
WEIGHT	[illegible]
ENGINE	[illegible]

ALLBON

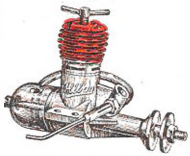
'Engineered to last a Modelling Lifetime'

BAMBI
.15cc. 108/11

Built like a watch, this masterpiece of production engineering will delight the heart of the true modelling connoisseur. It will fly models up to 80 sq. in.

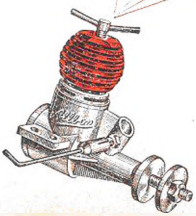
DART
5cc. 64/2

The most powerful of all "pot lives" and the ideal engine for scale models. It has a world wide reputation for easy starting and reliability, and is also suitable for small contest models.



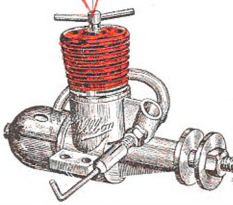
JAVELIN
1.49cc. 65/4

Superb power output makes this the ideal motor for contest work. It is also particularly suitable for the smaller radio control model, and will undoubtedly "last a modelling lifetime".



SPITFIRE
1.0cc. 64/2

Designed especially for the beginner, this is the easiest starting engine on the market. Sturdily built, it will give many years of faithful service, and can safely be described as the perfect all rounder.

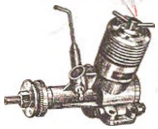


NOEL TO ALL AEROMODS

MERLIN

.76cc. 47/6

New-boy of the Allbon family and already a winner. Terrific performance at low cost, made possible by large scale production, makes this the modelling bargain of the year. It is designed for beam or radial mounting.



To our customers throughout the world we wish all the compliments of the season, and many happy flying hours with Allbon products. We hope that at least one of our famous engines, swinging down on its 'chute, will drop into the right chimney, and so brighten your aeromodelling in 1955.

To our friends in the trade we wish a very happy Christmas, and take this opportunity of thanking them for their support during the past year.

We shall continue to maintain the unrivalled quality of our engines and accessories during the coming season, and to accommodate the tremendous demand for our products have installed further up-to-date machine tool equipment to increase output. All of the Allbon engines mentioned in this advertisement are, however, readily available in your local model shop, and we would appreciate a direct notification in any instance where supplies cannot immediately be obtained.

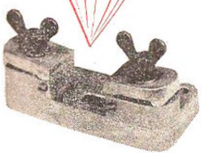
DAVIES CHARLTON LIMITED

Barnoldswick via Colne, Lancs. Telephone: Barnoldswick 3340

ACCESSORIES

There is a full range of spares and accessories for all Allbon engines. We list but a few below, the full range you can find in your local dealers.

Combined CUT-OUT and Jet Assembly	9/6
Universal Test Stand (as illustrated)	12/6
Extended Fuel Needles for Dart, Merlin, Spitfire, Javelin	2/5
Radial Mounts for Dart, Spitfire, Javelin ...	4/9

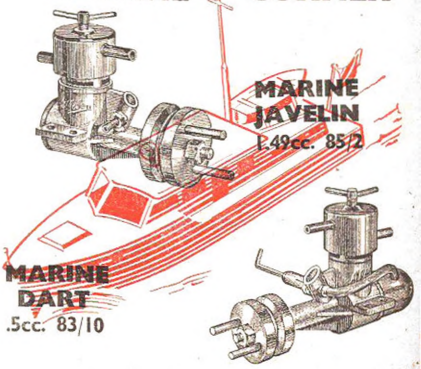


Be wise like Santa, use

ALLBON SUPER FUEL

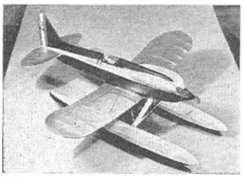
Improves performance and prolongs engine life through friction-free running 3/3 per bottle

MARINE CORNER



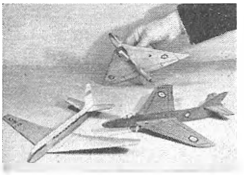
TRADE NOTES

New kits, accessories, fuel, engine, radio, tools and material reviewed

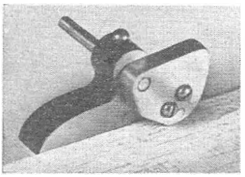


THAT SUPERMARINE S.6.B. kit by the **Model Shop (Newcastle)** mentioned last month has now been built up and what an attractive 18 in. model it makes! This photo reveals one unfortunate tendency for the wings to curve into extra dihedral with liberal application of dope; so be warned and be careful you future builders of this 14/6d. rubber-driven flying scale. New engine of the month is the rotund **Elfin** 1.49 featuring two ball races supporting the shaft, a reed or "clack" valve in the rear and some very deep head finning. At the moment our example is on the eddy-current dynamometer for the Engine Analysis feature but check readings with our standard 8 × 6 in. prop for running-in give a steady r.p.m. figure of 7,400 which is quite complimentary. Porky in appearance, the new 1.49 belies the hitherto accepted fact that for performance, crankcase volume should be cramped to a minimum. The Elfin has enough space in its back end for a stack of pennies—to give clearance for the flickering valve. Our congratulations to Frank Leahy and Co. for producing an exceptionally clean-running diesel with many new features.

Six new kits by **British Model Aircraft** to add to the Skyleada range are to be known appropriately as Silloujettes. The Comet, BP 111, Hunter, Swift, Avro 707, and Javelin are reproduced in silhouette with minor variation to make them fly with a Jetex Atom 35 or 50 unit. We built up the Comet, Hunter and Boulton Paul over a wet Sunday and they all flew straight off the building board. Wood is printed accurately, and at 2/6d. each including tax they are a good buy for the kid brother. They fly as chuck gliders too.

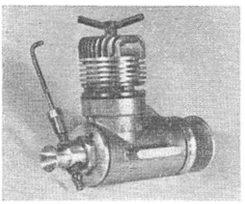


If you are interested in the Navy and shipping, the **Modhan** range of kits for solid models in balsa of all the big vessels to the scale of 50 ft. to 1 in. For example, the waterline H.M.S. King George V has a detailed Modelcraft plan, hull and superstructure parts cut to shape, sandpaper and a piece of carbon paper for duplicating off the plan. Parts are stamped with a key number



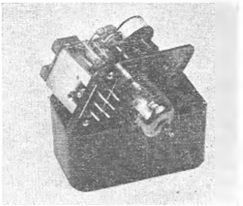
to prevent any error, and at 6/10d., this particular kit makes a 15 in. model to grace any living room.

Strip cutters of all shapes and sizes and degrees of accuracy have appeared in our Gadget Review feature, and we might say, in the trade. One which will undoubtedly sell well is the robust new product of Messrs. **E.H.** at Wincanton in Somerset, which will tackle anything from $\frac{1}{16}$ in. sq. to $\frac{1}{4} \times 1\frac{1}{2}$ in. Setting for



strip width is positive and locked by a set screw, and the shape of the stripper conveniently fits into the hand. For depth of cut the blade is adjustable, and a De Luxe version with the E.H. planer attached is obtainable at 7/11d. which we most thoroughly commend to all modellers.

Trickiest job confronting home constructors of the "AEROMODELLER" Receiver is the winding of quench coils. Messrs. **Odcon Radio** have now solved the problem by producing form-wound coils for the modest sum of 6/6d. They are attached by means of a short length of brass strip tapped 6 BA. A similar size screw is then passed through the receiver panel, effecting a neat and workmanlike method of attachment.



An R.F. choke is also available for the same receiver neatly wound on a plastic former, price 3/-. A transmitter keying choke is yet another new line produced for 3/- by the same enterprising company, being attached by the same foolproof method as the quench coil.

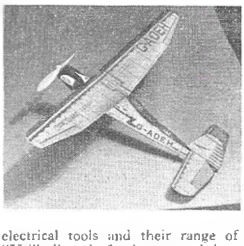
The latest **E.C.C. Telecommander** Receiver, the 951B, incorporates several new refinements. Circuit is the same as the 951A and the quench coil former has been strengthened where it joins the panel. This has proved a weak spot in the event of crash landings, but is now guaranteed not to fracture. Greatest improvement is the neat incorporation of the new P100 polarised relay, the six connecting pins of which, protude at the top of the panel. One can now terminate all the battery leads, actuator circuit, aerial, etc., at the

six-pin socket which is supplied with the set, so that the receiver can be removed in one fell swoop.

One point we must get straight is that the **Elmer** propeller price was erroneously quoted as 18/6d., should be 25/8d. thanks to purchase tax. Selling price in the U.S.A. is 5 dollars, 35 cents which includes an adaptor for American engines, installation and adjusting tools. The VP constant speed prop has been approved by the A.M.A. for use in competitions though other plastic props are frowned upon.

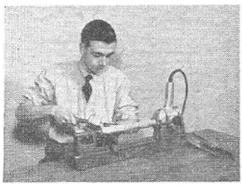
New in the **Keil Kraft** stable is the all-balsa quickie kit at 3/6d. for the Sedan 18 in. rubber job. All parts are printed in colour and die-stamped, the undercarriage is shaped and the plastic prop assembled on its shaft with the noseblock ready to fit. With such complete prefabrication, one simply cannot go wrong and the result is a neat cabin model capable of flights of around 100 ft. Two of the supplied rubber bands give the best performance.

Black and Decker is a name renowned in industry for excellent

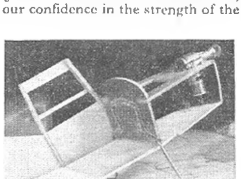


electrical tools and their range of "Utility" tools for home workshop use is already known to the keen model engineer. Aeromodellers would do well to study this attractive range of low price tools that are now available on the "easy-pay" system of instalments. There are five quite separate home workshop outfits and the cost of any of them can be spread over a whole year. Two new attachments recently added to the already extensive range are the fitments for converting the ¼ in. drill or Sander-Polisher into a portable or Bench saw. The Lathe (illustrated here) is a £5 5s. accessory for either ¼ in. Drill or Polisher and allows work up to 2⅜ in. diameter, 12 inches long or 5 in. diameter on the face plate. It can be further converted into a saw bench with 5 in. diameter blade to make a cut up to 1½ in. What about this one for the workshop as a Christmas present? A leaflet showing the whole range should be obtainable through your model shop but in case of difficulty, write to Black and Decker at Harmondsworth, Middx. One firm arranging hire-purchase through mail-order for all of the B & D products is Messrs. **Lafco**, of 3 Corbetts Passage, Rotherhithe New Road, Bermondsey, S.E.16.

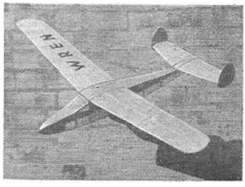
New modelling material is always news indeed, and when **Solarbo Ltd.**, sent along samples of a resin paper faced balsa, we set ourselves the task of trying it out as a ply substitute. First test was to see that it could be used as supplied with joints made straight onto the face of



the smooth brown paper. This was not possible, the very fact that the resin paper is positively impervious to fuel and non-porous made it obvious that for any face joint, the paper would have to be peeled off. This caused no grief, and we felt confident to support the ply engine plate of a Merlin powered scale Auster AOP 9 directly onto two ⅛th resin-faced bulkheads. Further, our confidence in the strength of the



facing led us to bind a 12 s.w.g. undercarriage to the balsa and to date this has proved absolutely as satisfactory as any ply bulkhead. Naturally the weight saving, easier working, etc., opens all sorts of fields for this new material and announcement of price and availability is eagerly awaited from Solarbo. The photo shows the arrangement of the engine mount

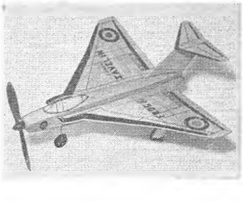


before the second fuselage side was added.

Watch out for more hot control-line kits from **Mercury**—a bird whispers that a sleek 2.5 c.c. stunter and a new class A racer are well on their way to the kit boxes, and there's talk of a combat model too.

Frog announce another range of small scale models, the Sabre, Javelin (illustrated at bottom) and Avro delta. Die-stamped and printed balsa fits together in the traditional Frog manner and all three of these pre-fabs went together in a couple of evenings. Flight tests gave us a preference for the Javelin, the rather out-of-place prop on the nose disappears in a sudden flurry as the short motor unwinds at launching. Price is 3/9d. and one point we feel might be improved is completion of the sheet covering on the fuselage bottom. Tissue is an unnecessary inconvenience here. The Wren, a 4/6d. beginners sailplane at top, is also a kit of high merit.

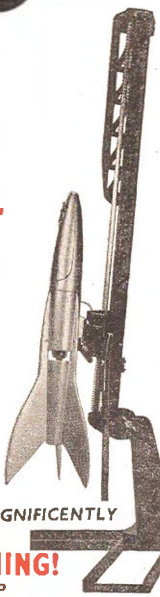
Britfix fuel, announced last month, is neatly canned in a useful oiler type container. Though not quite up to our standard for the claim of easier starting, we agree that less compression and needle opening are needed when using the fuel in one particular engine. Rev checks show it to be on a par with the best, and for some engines it may well be that Britfix brew will prove most suitable.



JETEX out-pace science with

FIRST JET-POWERED MODEL SPACE SHIP

WITH ITS OWN LAUNCHING RAMP



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ASCENDS OVER 150 ft. —AUTOMATIC 'CHUTE DESCENT

Makes ramp-assisted ascent to over 150 feet, powered by Jetex 50B motor with Augmenter Tube. At zenith of climb a specially designed mechanism releases nylon parachute from nose for safe return to earth. Technical data: Length 13¼"; width across fins 3⅜"; all up weight 2 oz. **PRICE COMPLETE 47/6d.**

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EAGLE

ANOTHER MAGNIFICENTLY EASY

JETEX Tailored KIT

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AT YOUR MODEL SHOP

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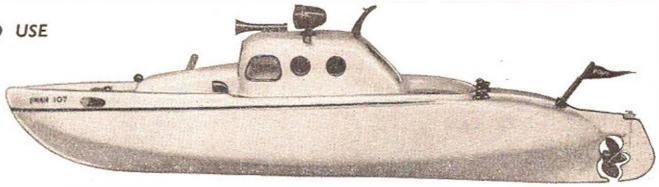
READY TO USE



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All Jetex products are manufactured, patented and marketed throughout the world by:

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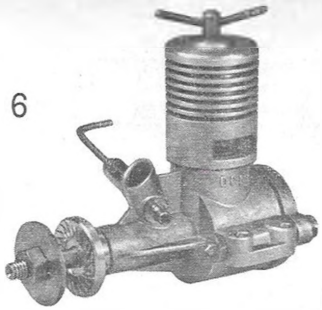
Engine Analysis Number 6

ALLBON MERLIN



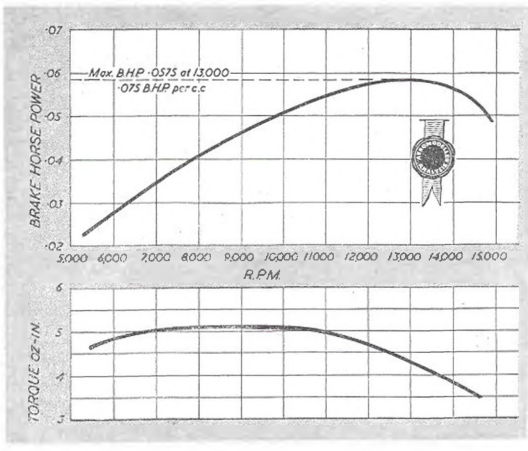
Reviewed by Ron Warring

SUGGEST to Hefin Davies of D-C Ltd., that British engines are unnecessarily large in overall size and appreciably overweight, compared with contemporary American practice, and he will take you to task vigorously. And just to add weight to his own arguments, latest model from the Davies-Charlton stable is an engine produced to an American "size" specification and designed specifically as a "low-cost" power unit to match the U.S. product. That this particular argument is likely to be a sound one is backed by the fact that our own tests showed the **Merlin** to have the edge on performance against any contemporary American .049. Weight is also of the same order—and even the price works out at about the same. Discounting purchase tax, applicable to home sales, this is a "five-ninety-five (dollars)" production, although import duty, etc., will undoubtedly fix the American price at a higher figure.

The Merlin has a more utility appearance than previous Allbon designs, and also incorporates a departure from orthodox British practice with regard to mounting. Alternative beam or radial mounting is possible. The latter is accomplished by two 6 BA screws, which also serve to hold the crankcase backplate in place. Being positioned on the centre line, this means that the bottoms of the mounting lugs come below the thrust line—a point not to be overlooked in "sidewinder" beam mounting.

Overall, the engine has a very "cylindrical" look, both crankcase and cylinder being parallel, unrelieved by edge radii. The result is an appearance of added bulk, but the total weight of only 1¾ ounces belies this. It features the now standard angled needle valve assembly, always welcome on crankshaft valve engines to keep the fingers away from the propeller disc when adjusting the needle valve. Unfortunately this feature also means that the fuel tubing has to be swept forward to fit the other end of the spray bar which often leads to trouble in fitting the fuel line without kinking in close-cowled installations. This failing is common to all engines of small size with angled needle valve, but the Merlin scores an extra point here in that lowering the mounting lugs gives more clearance between beam mounts and fuel tubing, if required.

Being of small size, you cannot afford to flood the Merlin and then expect it to start readily. Starting characteristics are very good, but not outstanding. The size is too small to give that same positive "feel" that you can get with a larger diesel. Even so, it is



PROPELLER	r.p.m.
dia. pitch	
8 × 4 (Super Scru)	7,000
7 × 6 (Stant)	6,000
7 × 4 (Stant)	8,200
6 × 6 (Stant)	9,500
6 × 4 (Stant)	12,000
6 × 4 (plastic E-D)	12,200
6 × 3	12,400
5 × 3	13,600

Fuel: Allbon diesel fuel (ready mixed)

SPECIFICATION

Displacement: .76 c.c. (.046 cu. in.)
Bore: .375 in.
Stroke: .420 in.
Bore Stroke ratio: 0.9
Max B.H.P.: .0575 at 13,000 r.p.m.
Power rating: .75 B.H.P. per c.c.
Bare weight: 1¾ ozs.
Mounting: beam (8 B.A. screws) or radial (6 B.A. screws)

Material Specification:
Crankcase: L.A.C. 113A
Crankcase bearing: Plain
Cylinder: S.90
Cylinder jacket: Dural
Piston: Mechanite
Contra-piston: Mechanite
Crankshaft: S.90
Con rod: R.R.56

Manufacturers:
Davies Charlton, Ltd.
Retail price 47/6 (including tax)

infinitely better in this respect than some American counterparts with O-ring contra-piston seals.

Another important operating feature is the fuel used. We found the Merlin to be a little bit on the fussy side as regards fuels. One or two it did not like very much, showed a little reluctance to start on and ran over only a comparatively small range of compression adjustment. By far and away the best fuel tried was Alibon's own diesel fuel which gave maximum r.p.m. for any particular propeller, easy starting and completely non-critical control settings. Needle valve position could be forgotten—provided it was open far enough. The engine would then run over a range of compression settings of one whole turn, although obviously a "best" position could be found for any particular propeller load.

The Merlin has to be fitted with a separate tank. For tests, a standard team race tank was used, positioned with the top roughly on a level with the needle valve. We found suction rather limited in that if the tank was lowered appreciably from this position, sucking up a full fuel line was rather difficult for starting. The fuel sucked up all right, but had an all too ready tendency to retreat again, leaving an empty line. There were no air leaks in the connections to account for this. Also once the engine was started, the tank could be lowered to a suction head of several inches without interrupting the fuel feed. For most effective operation, therefore, it seems best to mount the tank as near the level of the needle valve as possible.

Three turns of the propeller with a finger choking the intake tube induced sufficient "prime" for easy starting. Alternatively, after making sure that the fuel line is full to the spray bar, a single shot direct through the exhaust port proved equally effective. Starting can be accomplished at running setting if the "prime" charge is correctly estimated, otherwise the compression setting must be backed off. The greater the excess of fuel, the more the compression lever must be turned back. If necessary to turn back more than half a turn, then the engine is suffering from excessive "prime."

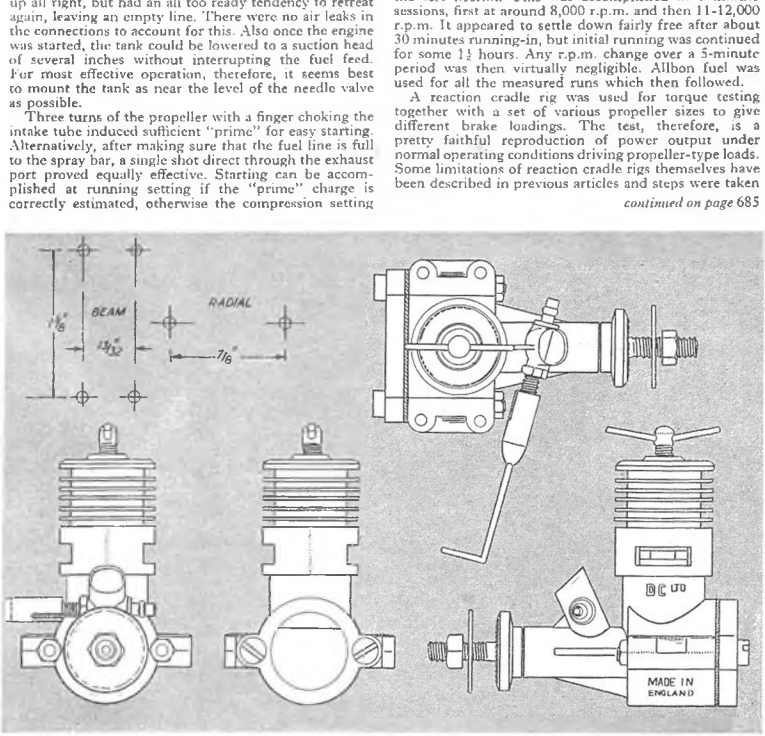
As operating speed increases, so also does the compression required for best running settings. Between 6,000 and 10,000 r.p.m. there is a difference of approximately half a turn in the compression setting (screwed down); and between 10,000 and 13,000 r.p.m. a further quarter turn. The engine runs with the compression advanced well beyond the optimum setting, but is then labouring and delivering less power—a point which may again be overlooked by inexperienced operators. The "low compression" point is well defined, with the engine commencing to "knock." Setting for maximum r.p.m. is generally about one third of the way between this and the point where marked labouring occurs.

Running-in advised

A fair amount of running-in seemed advisable with the test Merlin. This was accomplished in 5-minute sessions, first at around 8,000 r.p.m. and then 11-12,000 r.p.m. It appeared to settle down fairly free after about 30 minutes running-in, but initial running was continued for some 1½ hours. Any r.p.m. change over a 5-minute period was then virtually negligible. Allbon fuel was used for all the measured runs which then followed.

A reaction cradle rig was used for torque testing together with a set of various propeller sizes to give different brake loadings. The test, therefore, is a pretty faithful reproduction of power output under normal operating conditions driving propeller-type loads. Some limitations of reaction cradle rigs themselves have been described in previous articles and steps were taken

continued on page 685



SWISS MISS

Out of seventeen contests entered in the 1954 season this design gained 12 Firsts, 2 Seconds (in the European and World Championships) and 2 Fifth places to make it the "MODEL OF THE YEAR."

By Arthur Collinson & Silvio Lanfranchi

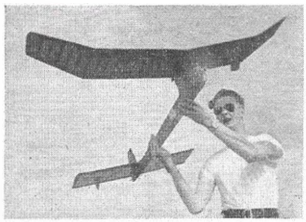
Aged 27 . . . Electrical engineer . . . Married, with one 3 year-old son . . . hobby is trying to beat Silvio.

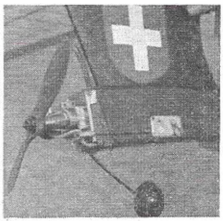
Aged 54 . . . Cake Manufacturer of note . . . Married, with 6 children (all big ones) . . . once made a Wakefield !

WHEN SILVIO LANFRANCHI returned home at Bradford after seeing the '53 World Power Championships at Cranfield, he was the wiser by close study of the American models, and the wealthier by virtue of a new K & B 15 engine obtained from one of the U.S. team members. This combination led to an even greater than normal amount of restlessness in the Lanfranchi mansion, and Silvio's aeromodelling righthand man, Arthur Collinson was called in to draw up a World beater. The result was Swiss Miss, and how it came as close as a scant thirteen seconds to being a World beater is now common knowledge. Of the seventeen events in which it has flown this year, perhaps the three most outstanding were the team trials at Wittering, where Silvio won the Aeromodeller Gold Cup and topped the British team performance; the European Championship at Brussels where he was only 41 seconds behind Emil Fresl, and finally, the supreme performance at Long Island where it came so close to being '54 World Champ.

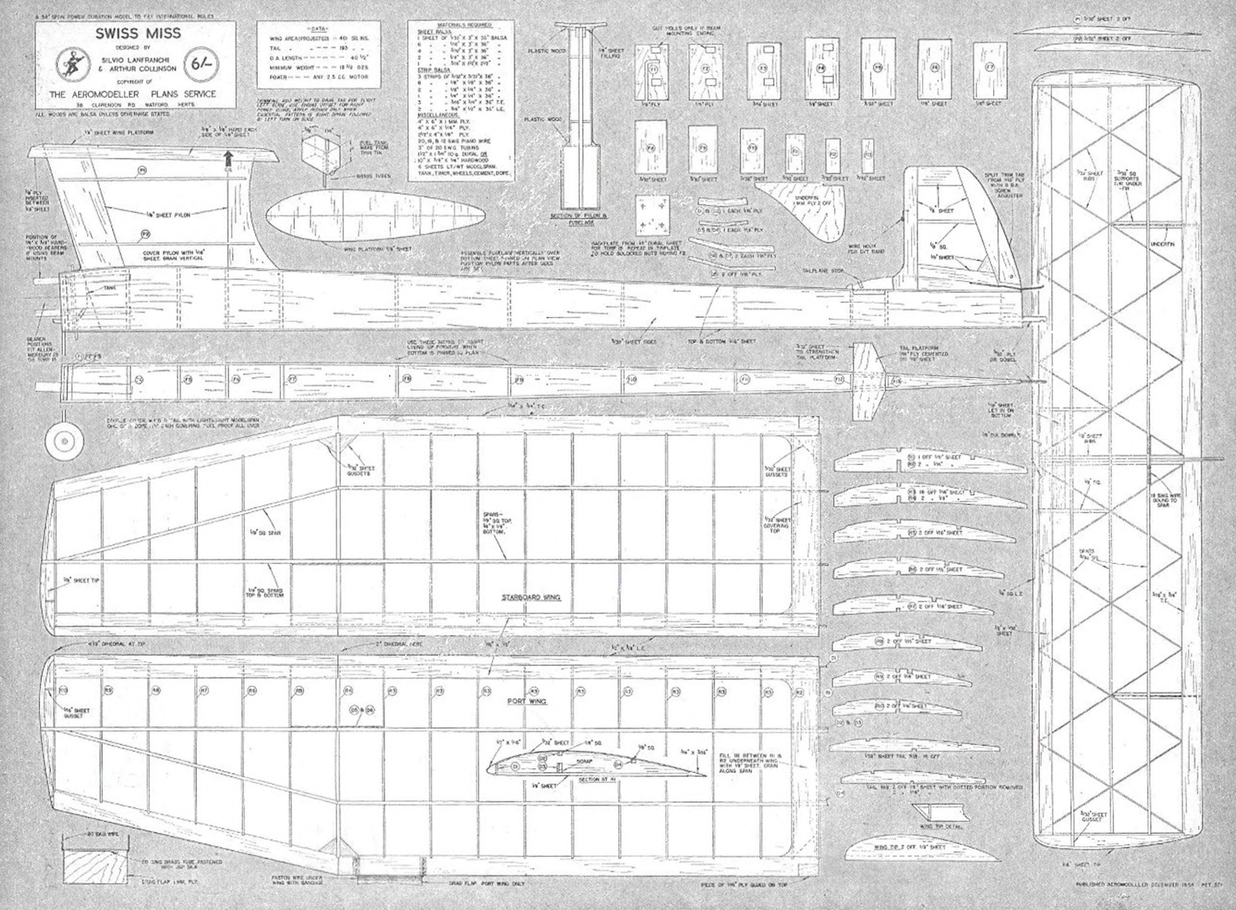
It could be said that originality is not its keynote: but what of that if performance is so high? Anyone who has built a San de Hogan could build an Eliminator, and anyone who has built an Eliminator would have no trouble with the Swiss Miss. Structurally it is a tough design, an all-weather flier for British conditions with the optimum area for its 2·5 c.c. glowplug engine and sufficient inherent stability to make it child's play to trim. Normal flight pattern is a right spiral climb followed by a left-glide turn obtained by the drag tab on the port wing.

Though designed as an F.A.I. specification model, the docile trim of the prototypes led Arthur Collinson to doubling up the cc's and fitting a Frog 500 for open contests. The rate of climb is naturally more than enhanced, and doubtless in '55 we shall be seeing and hearing a lot more of the high powered version, and not only from the Bradford quarter now that full-size copies of the 1/5th scale plan opposite are available from A.P.S., price 6/- post free.





Left: Arthur Collinson about to release the 500 version for a soaring climb at Croft Airport. Model will take any power from 2.5 to 5 c.c. (.15 to .29 cu. in.). Right: with Swiss shield emblazoned on the Pylon, one of Silvio's models displays the four point radial mounting plate used with the Torp. 15 and strangler cut-out operated by E.D. Clockwork Timer. Beam mounting details are given on plan.

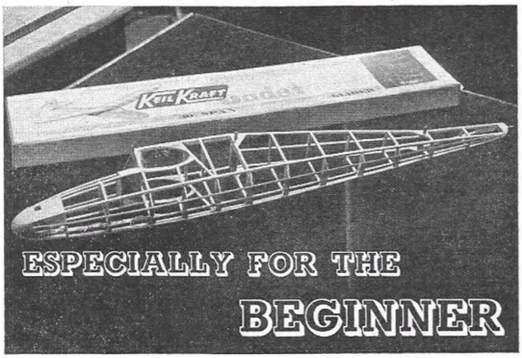

A 54" SPAN POWER DURATION MODEL TO F.A.I. INTERNATIONAL RULES
SWISS MISS
DESIGNED BY
SILVIO LANFRANCHI
& ARTHUR COLLINSON
6/-
COPYRIGHT OF
THE AEROMODELLER PLANS SERVICE
38 CLARENDON RD. WATFORD. HERTS.
ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.
-DATA-
WING AREA (PROJECTED) — 401 SQ. INS.
TAIL — 193
O.A. LENGTH — 40 1/2"
MINIMUM WEIGHT — 18 1/2 OZS.
POWER — ANY 2.5 C.C. MOTOR
MATERIALS REQUIRED
SHEET BALSA
1 SHEET OF 1/32" X 3" X 36" BALSA
STRIP BALSA
MISCELLANEOUS
4" X 6" X 1 MM PLY.
4" X 6" X 1/16" PLY.
2 1/2" X 4" X 1/8" PLY.
20, 18, & 12 SWG PIANO WIRE
3" OF 20 S.W.G. TUBING
6 SHEETS LT/WT MODELSPAN.
TANK, TIMER, WHEELS, CEMENT, DOPE.
FUEL TANK MAKE FROM THIN TIN
BRASS TUBES
1/8" SHEET WING PLATFORM
1/8" SHEET PYLON
COVER PYLON WITH 1/16" SHEET GRAIN VERTICAL
WING PLATFORM 1/8" SHEET
SECTION OF PYLON & FUSELAGE
PLASTIC WOOD
UNDERFIN 1 MM PLY 2 OFF
WIRE HOOK FOR D/T BAND
SPLIT TRIM TAB FROM 1/16" PLY WITH 8 B.A. SCREW ADJUSTER
TAILPLANE STOP
TANK
3/32" SHEET SIDES
TOP & BOTTOM 1/16" SHEET
TAIL PLATFORM
STARBOARD WING
PORT WING
1/8" SQ. SPAR
1/8" SHEET TIP
SECTION AT R1
SCRAP
UNDERFIN
WING TIP DETAIL
WING TIP 2 OFF 1/8" SHEET
4 1/2" DIHEDRAL AT TIP
2" DIHEDRAL HERE
DRAG FLAP. PORT WING ONLY
DRAG FLAP 1 MM. PLY.
FASTEN WIRE UNDER WING WITH BANDAGE
PIECE OF 1/16" PLY GLUED ON TOP
PUBLISHED AEROMODELLER DECEMBER 1954

Personal Greetings

To friends, customers and trade suppliers. May yours be the best Christmas ever. To us at home this issue of ***Aeromodeller*** may seem far from Christmas at first, but by the time it reaches the furthermost corner of the world, the festive day will be a great deal nearer. its early publication certainly gives you ample time to decide on your Christmas buying. An Arthur Mullett Gift Voucher will help, too, for the recipient can choose what he wishes from the vast stocks of kits, motors, etc., which we hold at all times

Arthur Mullett

Reverend F. Callon returns with a new series of instructive articles for beginners, opening with this feature on building a fuselage for the Keil Kraft Cadet glider



THERE ARE about 100,000 aeromodellers in Great Britain. For those of them who are searching for half-bricks after reading the title to this article, let it be said at once that an attempt is being made to compromise; to administer what to most will be obvious information as painlessly as possible, and to mix with the dose as many useful wrinkles as are known to the writer or which any interested readers are kind enough to send in. When at all feasible, words will be saved by the use of photographs, but there are some points, especially in the early stages of modelling, which cannot be explained in too much detail as I know from hard experience with a beginners' club over a number of years. And so, especially for the beginner, to work!

Gliders are the simplest to build, and without the slightest doubt you should start your aeromodelling career by building a glider. And because beginners almost invariably go for a kit of parts (instead of buying a plan and a stock of materials) and decide on a design which looks realistic, the Keil Kraft CADET has been chosen as a first model.

The Cadet certainly has good looks, and for 4/8d. it is very good value for money. But precisely because it has good looks it takes quite a lot of patience to build. It needs many carefully cut parts carefully assembled to achieve those smoothly flowing lines, so let your motto be "Take it easy!"

Fig. 1 shows the contents of the kit: 2 sheets of balsa wood with the outlines of the components printed on them, 1 sheet cut part way through into strips of varying width, 4 strips of $\frac{1}{16}$ in. square balsa, and 3 $\frac{1}{8}$ in. square, a tube of cement, celluloid windscreen, transfers, covering tissue, wire for the tow-hooks, hardwood dowelling of circular cross-section, and the plan.

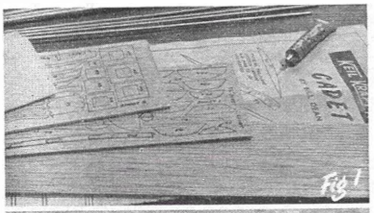
Fig. 2 shows the tools you will need for building the model: a stiff-backed razor blade (Ever-Ready type) and/or a balsa knife (X-Acto knives with interchangeable blades are first-rate); some modelling pins or ordinary straight pins, a few drawing pins, some medium-fine sandpaper wrapped tightly round a block of wood (it is fastened with drawing pins on the underside), balsa cement—you might need a spare tube—and a 12 in. metal straight edge. These items are photographed on the workboard, a very important item. It must be really flat, soft enough for pins to be pushed in easily, and larger than the biggest component of the model which has to be built in one piece. Yellow pine is good wood for a workboard; the size for the Cadet must be slightly longer than the body or fuselage of the plane, so find a suitable piece of wood at least 24 in. × 8 in. × 1 in. You will also need some waxy grease-proof paper.

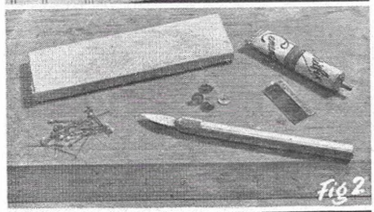
Cutting the strips

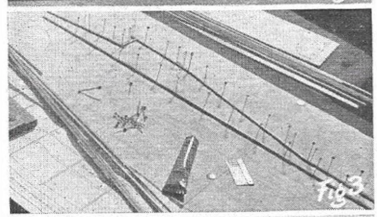
It will save trouble to cut up the sheet of strips right away, so place it flat on the workboard and pass your blade carefully down each of the partly cut grooves. There is no need for the straight edge, since the blade will follow the groove. The resulting strips will be found to have a slight "shoulder" at each side of the base which must be sanded off to give a true rectangular section.

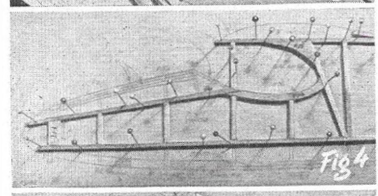
Laying out the fuselage

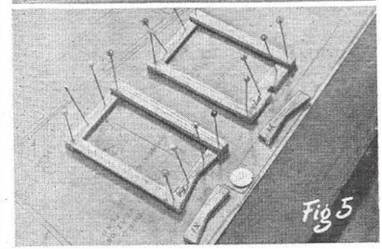
Lay out the plan with the side view of the fuselage over the workboard, cover this part with grease-proof paper, and pin down with drawing pins. If you have no g.p.p. you can stop the cement sticking to the plan by rubbing over the lines with a dry cake of soap or a wax candle end. (Why cannot plan makers have the paper waxed in the first place after printing?) The long $\frac{1}{16}$ in. spars running from end to end of the fuselage are called longerons. *Fig.* 3 shows these laid out over the lines marked for them on the plan and held in place by pins pushed in on alternate sides of the wood. Pins should *not* be pushed *through* wood as thin as this (except at the overlap at the ends, later to be trimmed off) as this would weaken it. The staggered positions of the pins also means that when you come











to build the second side of the fuselage on top of the first one, the longerons may be slid into position between the double rows of pins.

Cut the joints which have to meet face to face as accurately as possible, and use pins to hold them tightly together while the joint is setting. It is a good idea to smear cement over each face of a joint, wipe it off, and then re-cement it; then press the two faces together at once, and wipe away any surplus cement which squeezes out. Never move a joint while it is setting. It will be fairly dry in a minute or two, but should not be removed from the plan for about half an hour.

Fig. 4 shows some of the cross strips or spacers—cemented in place, together with some of the specially shaped units cut out from one of the printed sheets. Awkward shapes like that of F.16 call for a very sharp, narrow blade, and for these a balsa knife is better than a razor blade. First cut the part out roughly from the sheet, leaving a margin all round. When cut free it is easier to trim it accurately to the printed margin. Don't press too hard on the blade; a series of light, stroking cuts gives cleaner results. If the wood splits off along the grain at an awkward corner, carefully detach the loose piece and cement it in place again, allowing the joint to dry before continuing the cutting. When all the longerons, spacers and other components of the first side of the fuselage are in place, build the second side immediately over it in exactly the same way. The two sides will tend to stick together at all cemented joints, and when dry and removed from the plan, the two sides will have to be sliced apart with a thin blade. As long as the blade can reach the cemented joints this is easy enough, but if they are from the edges—as is the case with the cabin former F.16—it will save trouble to tear off a small piece of grease-proof paper and lay it over the joint before building the second side; *i.e.* a sort of g.p.p. sandwich.

Fig. 5 shows the two main formers cemented into shape over the plan. Pins can be pushed through pieces of balsa as wide as this without danger of splitting. When dry, the formers are removed from the plan and cemented one to each of the inner sides of the fuselage as shown in *Fig.* 6. The two sides are then cemented squarely together along the remaining edges of the formers, and the nose and tail drawn in as shown on the plan.

The rest of the top and bottom spacers, cut in pairs over the plan, are now cemented in place—*see Fig.* 7—and the formers F.2 to F.13 and 2a to 4a and the dashboard cut out. Note that the two top spacers under where the wing will rest have to be set about $\frac{1}{4}$ in. lower than the top to leave room for the "V"-shaped centre (the dihedral joint as it is called) of the wing. The formers below the fuselage and above the nose are meant to support the long $\frac{1}{16}$ in. square strips called "stringers." The stringers merely rest cemented on to the tops of the formers except where a notch is clearly marked as at the centres of formers 2 to 4. Do not cut notches where the double guide lines are printed: these are merely to show where the stringers will rest.

Weight Box

Fig. 8 shows a liberty which was taken with the plan of the Cadet. As we shall see later on, it is very important to be able to adjust the amount of weight in the nose of a glider, and the instructions given for a fixed weight of an empty cement tube of size not specified—did not appeal to me. So a weight box was incorporated. On the photograph the far or starboard side of the front panel nearest the nose, and also the top panel between the two upper longerons have been filled in with $\frac{1}{16}$ in. balsa sheet. A diagonal floor to the box, sloping down towards the nose, has also been cemented in place, so that any weight added later will slide down to the bottom of the "V" and stay there. The near side of the box with a hole cut out, through which weight may be added has not yet been cemented in place. Cut your panels to an accurate push fit so that they may be cemented in flush with the sides of the fuselage. The completed weight box can be seen in *Fig.* 9.

Odds and ends

The noseblock (quite literally an "end"!) calls for a lot of patience. Cut out the rectangles and where indicated their centres, and cement together pyramid style, leaving for at least an hour to set; large areas of cement dry slowly. When dry the unit can be roughly carved to shape. Pop half a dozen ·177 airgun slugs into the hollow of the noseblock as an initial weight (or if you have not built in a weight box, perhaps you prefer the empty cement tube?) followed by a shot of cement to keep them quiet, and cement the lot onto the front former of the fuselage. This joint too must be given plenty of time to dry. Carve and sand (a sanding block is essential here) to follow the lines of the fuselage. You can use rough sandpaper first and give the final polish with a smoother grade.

The windscreen is the one untidy point about the Cadet, for as far as can be made out it leaves a gap between the front former and its own top edge. I found that the best thing to do was to cut the screen into three pieces and attach the two side windows separately. The front section was then trimmed to shape and cemented in place; the top edge was pulled in and cemented to the "V"-shaped edge of the front former and the surplus trimmed off when dry. Pins pushed through the celluloid into the wood beneath make good anchors while the cement is setting. Try not to smear cement onto the exposed parts of the celluloid as it takes off the shine. The forward wing dowel should be inserted after the windscreen has been put in place but before its top is cemented to the front former. (Incidentally, a good sharp drill, in this case $\frac{1}{8}$ in. diameter—worked between the fingers will cut a neat hole through celluloid.)

One final odd or end is the tow-hooks. I found the length of wire supplied to be inadequate for three hooks, so I made two and put them in the spaces between the spots marked—as you may notice on *Fig.* 8.

That's all for the present. Next time should put paid to the rest of the framework. Good modelling.

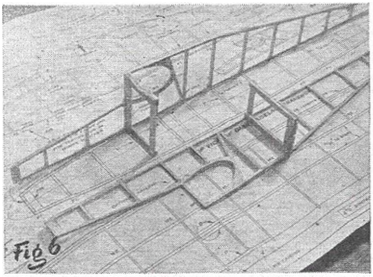


Fig 6

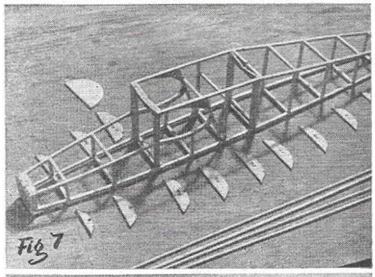


Fig 7

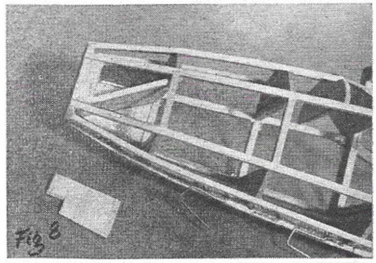


Fig 8

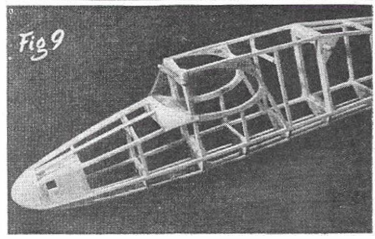


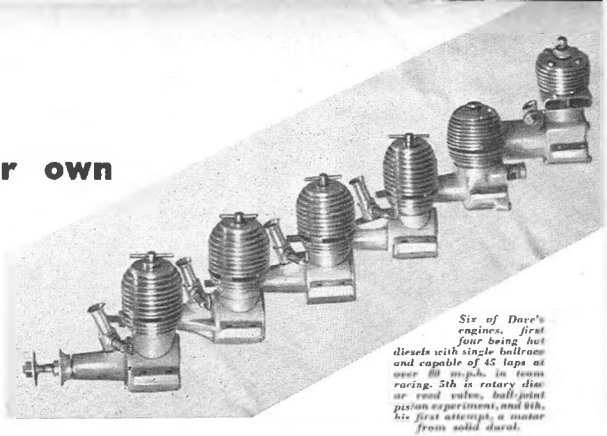
Fig 9

Making your own ENGINE

PART ONE OF A NEW SERIES BY EXPERT

Dave Sugden

Member St. Albans Club, was Chairman and Sec. of Loughborough College club, now at De H's . . . makes these superb engines for fun . . . prefers trimming a Wakefield to handling the power of his diesels . . . was 1st in Gamage and 2nd in Weston, 1953 . . . top of Rubber Average tables that year.



Six of Dave's engines, first four being hot diesels with single ballraces and capable of 45 laps at over 80 m.p.h. in team racing. 5th is rotary disc air reed valve, ball-joint piston experiment, and 6th, his first attempt, a motor from solid dural.

HOW MANY of you have longed to make the perfect model diesel engine, designed to meet exactly your own requirements and incorporating your own ideas, but have cast the thought aside, thinking that the construction of model engines can only be accomplished by skilled experts? This is not so, for although the author has made several engines he is not a skilled machine operator. The information to be presented has simply been gained by experience.

For those who have access to a reasonable lathe may I say that this work is no more difficult than aeromodelling and only demands the same qualities of ingenuity and patience. The lesser fortunate ones who have no machining facilities will probably find interest in the processes involved, whilst some of the information derives from, and is applicable to, aeromodelling. If this series only encourages you to do something with that old engine it will have achieved its object.

Equipment

The most important machine tool required is a reasonable centre lathe. Without one, making an engine would be almost impossible and the project would become a nightmare. The use of other tools, whilst making certain operations easier is not vital, for a lathe suitably set up is capable of handling all the operations.

The most convenient size is a 3½ in. centre lathe, having the centres set 3½ in. above the bed. Anything much smaller will present serious clearance problems when turning such parts as crankcase on

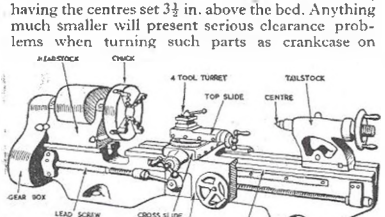


Fig 1 LATHE

engines of the 2½ c.c. size. The 3½ in. lathe possesses the advantages of being capable of removing excess metal at a higher rate and are less prone to chatter with work of our size. *Fig.* 1 shows the various parts. Lathes of the watchmaker pattern and those not having feed along and across the bed are of little use for our sort of work.

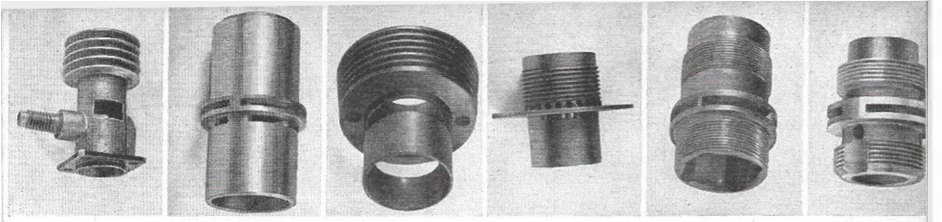
Although a lathe is capable of doing all the jobs required certain other equipment is also necessary. A grinding wheel is almost essential and one with a hard wheel should be obtained. The cheap soft wheels will be found to be useless on high quality high speed steel tools.

A milling machine is also a useful piece of equipment as it can do jobs easily which take a great deal of setting up on a lathe, but a vertical slide as supplied by Myfords for use with their lathes is more useful still, since angular motion in two directions as well as vertical and transverse motion is available.

Grinding equipment is a luxury not essential for making engines provided that your ability to produce a respectable turned finish is reasonable. Finishing of cylinder bores, pistons, etc., is facilitated by a small internal grinding and attachment which can be easily made. The largest size of grinding wheel which will fit into the bore is procured from a good engineering shop and mounted either directly on to an electric motor, or a spindle geared to run at about 20,000 r.p.m. The grinding attachment is mounted in the tool holder and used to remove turning marks prior to lapping.

Certain minor jobs such as drilling carburettor spray bar holes, jets, and exhaust parts are facilitated with a drilling machine or Wolf type drill stand. The drill holder which comes as part of the latter equipment is useful as a means of providing a mounting for the drill on the lathe saddle or vertical slide, for milling operations.

Other items you will need are internal and external callipers, a good 6 in. flexible steel rule, graduated in 1/100 ths. and 1/64ths. some sort of square, a scriber, centre pop, files and a good micrometer. It is possible to make an engine without a mike when you are sufficiently skilled, since it is possible to measure to within 2 to 3 thou. with a



Cylinders and Ports. *E.D. Comp. Special, has sawn exhaust, drilled intakes and transfer, with soldered passage. E.D. 2.46 has plain barrel with sawn ports, while K & B has integral fins and huge 180° cut ports. Yulon was multi-drilled, Elfin has transfer passages drilled before boring, while Allbon barrel at right has external milled passages leading to drilled ports. Exhausts on latter two are milled.*

steel rule, but a mike saves time and averts many mistakes. A depth gauge is useful but not vital.

Influence of available equipment upon motor design

You may find that because of lack of equipment or skill, certain operations such as milling cannot be carried out. These need not be major stumbling blocks. We shall consider the various machinesor operations, the jobs they accomplish and the means of achieving the same object, or even avoiding it, by modification of design. **Grinding** is a means of producing a good finish after ordinary turning and is often intermediary between turning and lapping or honing. Its advantage is felt on parts which are case hardened, when applying a good finish by other means becomes tedious. Parts usually ground are (*a*) Cylinder bores; (*b*) pistons; (*c*) crankshaft and (*d*) crankpins.

(*a*) A good reamered finish is nearly equal to that of grinding so that whether the cylinder is hardened or not it is not too difficult to go from the reamered finish directly to the lapped one. A good bored surface presents little difficulty either, especially if the metal is not hardened.

(*b*) Pistons are never hardened and therefore are easily lapped to fit from plain turning, in fact probably more easily lapped because the volume of metal being removed may be less due to the rough surface.

(*c*) An equivalent finish is easily obtained by careful use of fine files and emery cloth, it being not advisable to case harden crankshafts.

(*d*) Even if grinding were possible it would hardly be convenient to grind this item and a finish is obtained as in (*c*).

Thus lack of grinding facilities does not affect design.

Milling is usually carried out in transfer passages, or ports, pistons for lightening, glo-motor cylinder head finning, etc. Lack of a milling machine is no handicap, a lathe will be found to be capable of doing most jobs (to be covered later).

The chief point to watch is that the design is such that the milling cutter can get in to do the operation. On a side port design an Eta type transfer passage cannot be milled out since a suitable cutter will not reach in, and it must be shaped in the casting, a rather tricky process for the amateur. It is best to design this sort of crankcase *a la* K & B engines, making a joint at the top of the transfer passage so that the miller can enter. Alternatively a joint can be made at the base of the cylinder as on the Hornet. Transfer passages affect performance considerably and offer much scope for detail design and experiments. Milling is completely eliminated in a design like the E.D. Racer, and it can be avoided in the Oliver Tiger type of porting by making grooves, using a rotary cutter in an electric drill or by hand in the cylinder liner, instead of the crankcase as on the Javelin. There is also the soldered up tinplate E.D. Comp., Special type and the Elfin layout only requires very careful drilling, aided by using a jig, before the cylinder is drilled and bored.

If you think that milling out ports is going to be too difficult they may be drilled, (360° Elfin type) or sawn (K & B or E.D. racer type), and filed out, in which case the cylinder wall will be designed to be as thin as possible to reduce the labour. A drilling jig will have to be made for the Yulon type ports to assist the drill to start on the correct spot on the curved surface.

Milling out between gudgeon pin bosses for lightness is not essential, and if it is felt to be too tedious to set up on the lathe it can either be omitted or effected by drilling small holes, which is not worth the effort anyway. Another system is simply to drill out the inside of the piston to a larger diameter than normal, thus allowing the gudgeon pin end to float, as on K & B motors. Do, however, see that the gudgeon pin is strong enough to take the increased bending moment.

Cylinder head finning as on some glo-motors is easily accomplished in the lathe by setting up the head on the cross slide and mounting the cutter in the chuck.

Screw Cutting is usually possible since most self respecting lathes possess a lead screw, but if yours does not, the parts are merely designed to be held together with screws as in the E.D. Racer or K & B 15. Parts which screw together as in the Elfin are usually lighter and are quicker and easier to manufacture and probably more reliable. In certain cases separate screws just have to be employed.

Boring is a normal operation on a lathe but some designs are impossible by direct methods. In the case where crankshaft housing cannot be fully machined directly but must be parted off, turned round and bored from the other side, the difficulty is to get both bores concentric.

Do not design built up crankshafts, these are easily turned from solid bar.

When designing your engine, constantly keep in mind the operations involved in producing each detail. The ensuing articles, in which the various machining operations will be described, should be of assistance in design. Although you will have your own pet theories on design for high performance some indication of the merits of the various design features as found by experience is given.

The next article will deal with materials and their suitability for the various parts, pattern-making and casing.

AEROPLANES
IN
OUTLINE

NUMBER EIGHTEEN

By J. R. ENOCH

The Vickers Viscount 700 series

EARLY in 1945, shortly after the Viking prototype had first flown, the Vickers Armstrong Company began design studies for a medium range passenger-carrying aircraft to be powered by Propellor-Turbine engines. This aircraft was developed from Viking experience, much valuable aerodynamic and structural design data having been obtained from it. At that time the late Mr. Rex K. Pierson was the Chief Designer, but responsibility for the final design was largely that of Mr. G. R. Edwards.

Amongst the first ideas to reach drawing board stage was that, in April 1945, for a four engined Viking type aircraft with a nosewheel undercarriage, un-pressurised and with an all up weight of 35,000 lb., operating at 10,000 ft. over a range of 1,000 nautical miles. It was realised, however, that at the optimum operating height with turbo-props, pressurisation would be essential. Accordingly the design was developed a stage further to have a "Double-Bubble" fuselage, with a blunt "Glasshouse" nose. By December of that year the conception was altered to that for a fuselage of circular section, with large elliptical doors and windows, retaining the Viking style empennage and to carry 24-28 passengers at 20,000 ft. with a speed of 256 knots. All these types were known as the V.C.2. "Viceroy," the first being the type V.453. In May 1946, the pre-prototype design, the V.609, was assuming the shape we now know well, with dihedral tail, but with A.S. Mamba engines. This aircraft was projected to meet the requirements of the Brabazon Committee recommendation 11B of 9. 4. 42., which called for a medium stage 24-32 seat aircraft capable of operating over ranges of 700 nautical miles at 20,000 ft. with a payload of 7,800 lb. at a speed of 240 knots. Two V.609 prototypes were ordered by the M.O.S. to specification 8/46. Neither these two nor a third V.609 private venture prototype were built.

Development of the Rolls Royce Dart engine, ultimately chosen to power the prototype, was being carried out in parallel with that of the aircraft. The engine was flight tested in the nose of an Avro Lancaster, NG.465, and later two such units were installed in place of the normal engines on a Vickers Wellington, LN.715, in order to obtain handling information. In addition, in August 1951, two Dakota aircraft, G-ALXN and G-AMDB were re-engined with Dart R.Da.3s, and with these two machines used on European freight services, British European Airways amassed a considerable number of flying hours from which a wealth of operating and maintenance experience was derived.

In August 1947, design and construction of the V.630 prototype, ordered to Specification 8/46 and re-named Viscount was commenced. Throughout the preceding project period, the B.E.A. Development Branch had maintained a close working liaison with Vickers Armstrong which resulted in the embodiment of the ideas of the manufacturer and the potential operator. After an unusually short period under construction the Viscount V.630 serial VX 211., was first flown from Wisley on the 18th August, 1948, by the late Captain "Mutt" Summers who acclaimed the Viscount as the smoothest and best aeroplane he had flown. The flight lasted twenty minutes, being that of the first Turbo-Prop Airliner in the World.

Powered by Rolls Royce Dart Type 502.R.Da.4 engines of 1,000 s.h.p., the V.630 had a wing span of 89 ft. 0 in., and a length of 75 ft. 6 in. The galley of this aircraft was amidships, on the Port side and other differences from the present series were only of a minor nature, viz. the position and type of aerials and the tail-bumper which is not evident on later types. This prototype was extensively used on many and various proving flights, and, after 290 flying hours, was granted a normal category C of A in August, 1949.

Later given the civil registration G-AHRF, the aircraft was put into service by B.E.A. in August 1950. In 26 days, flying 124 hours, 1,815 passengers were carried on London-Paris and London-Edinburgh.

Heading shows type 700 prototype G-AMAV wearing a temporary coat of Capital colours. Same aircraft made tropical and cold weather trials, also flew as RMA Endeavour in the London-Christchurch race. Is distinguished by different cockpit side windows. Left, G-AMOG, RMA Robert Falcon Scott of the B.E.A. Discovery Class is a type 701.

A second prototype V.630, with the serial VX217, was diverted to use as an experimental research aircraft and allotted the type number V.663 to specification E4/49. Fully pressurised, and fitted with two Rolls Royce Tay turbo-jets of 6,250 lb. S.T., it was employed as a test-bed for the adoption of the Tay by the United States as the Turbo-Wasp J.48. It was the first aircraft to fly with the R.Ta.1 engine, the maiden flight in March, 1950, being carried out with Mr. R. G. Bryce at the controls.

The potentiality of "Stretching" the Viscount had been considered from the early design stage and work on the first developed Viscount was begun early in 1949 to Specification 21/49. Registered G-AMAV, the type 700 was first flown on the 28th August, 1950. Structurally, it was similar to the 630; the length, however, was increased by 6 ft. 8 in., and the span by 5 ft. 0 in., undercarriage track being slightly increased with the moving of inboard engines slightly further outboard.

Progress in the development of the Dart resulted in the all round improvement of performance, the R.Da.3. Mk. 505 of 1,400 s.h.p., and 365 lb., residual thrust, permitting the designed a.u.w. of 48,000 lb. being increased to 50,000 lb. over a range of 1,100 nautical miles at a speed of 303 m.p.h. with a payload of 13,500 lb.

Extensive development and proving flights were carried out with this machine, including full pressurisation and de-icing tests, notable amongst which were the flight to Khartoum for tropical trials, and as a result of an order for the type having been placed by T.C.A., the 700 was flown across the Atlantic to Canada and tests carried out under severe winter conditions were passed with ease. In October, 1953, the aircraft was borrowed by B.E.A., and specially named R.M.A. Endeavour, with Racing No. 23, was flown to New Zealand in the London-Christchurch race. For this event the prototype was modified, and fitted with four extra fuel tanks within the fuselage. Up-rated Darts were employed, and operating often under tropical conditions at 62,000 lb., the outward journey was covered at an average speed of 320 m.p.h.

Since customers' requirements did not permit the adoption of one standard internal layout, the 700 series was evolved. The 700 being a basic airframe, the variants to suit customer needs being allocated a number in the series, allowing the aircraft to be "Tailored" to suit the respective operators. This envisaged, the cabin design readily afforded the location of seating, pantry, toilets, and freight stowage, space etc., to unusually broad limits, crew accommodation being also variable.

Production of the Viscount 700 series was commenced at Weybridge, but in December, 1953, after 24 aircraft had been completed, was transferred to Hurn, from which factory the ever growing ranks of Viscount customers are receiving their aeroplanes. The first production aircraft registered G-ALWE, was flown on the 20th August, 1952, and after six aircraft had been delivered B.E.A. introduced the type named Discovery Class on the 19th April, 1953, the first service operated was on the London-Cyprus route. The first aircraft from the Hurn production line was G-AMOO, the fifteenth machine for B.E.A. Production capacity at Hurn is expected to reach 100 per year.

In early 1954, when the Viscount was in service with B.E.A., Air France and Aer Lingus, and was on order by several other major airlines, Rolls Royce announced that a further development of the Dart was available, thus a two stage development programme of the 700 series was instituted by Vickers Armstrong. The new R.Da.6 type 510 of 1,550 s.h.p., allowed an increase in a.u.w. to 60,000 lb., and a gain of up to 18 m.p.h. in speed, with a reduction in fuel consumption of approximately 9%. The second development stage was to modify the reduction gear and fit "High activity" airscrews, to absorb the full 1,550 h.p., for take off. This, associated with the higher landing weight combined to improve performance characteristics at both ends of the range scale. The aircraft thus improved is the Viscount 700 D series.

Early in 1953 it was announced that B.E.A. had placed orders for twelve, with an option on eight more of the further developed Viscount, the 801, a high capacity short haul version identified by a fuselage extension of 12 ft. 4 in. This specification, however, has been revised, and the type re-designated 802, with an increase in length of 3 ft. 10 in. forward of the wing, and maximum passenger capacity of 70.

The reputation of the Viscount is now world wide, being based on the solid foundation of unparalleled practical achievement and economical reliability. Ease of maintenance, serviceability, and the need for quick "Turn Round," were primary factors for consideration during the design stage, and that they have been well met is readily evident. From the point of view of operator, pilot, and passenger, it is an ideal aeroplane.

Construction details

The stressed skin wing structure (area 963 sq. ft.) consists of a single main spar at 40% chord, designed to support wing bending loads in addition to which are leading and trailing edge spanwise members at 5 and 7% respectively. Torsion loads are carried by the skin. Profile is maintained by closely spaced "top hat" section members which take the place of the more usual ribs of which there are only nine in each wing, at points of load concentration, *e.g.* engine bays. Comprised of three main sections, the wing of modified N.A.C.A. 63 section, has a centre section, an inner plane carrying engine nacelles, and an outer plane with detachable tips. The electrically operated wing flaps are double slotted with high drag, and high lift qualities. Ailerons of the Westland-Irving sealed balanced type have mass balances and trimming tabs. Locks are operated from the cockpit, linked for safety to the throttles. Fuel is contained within two groups of eight "cell" tanks though cross feed is provided, these tanks normally supply their respective engines. In addition there is a long range tank inboard of the inner plane which directly feeds the main tanks. The fuel tanks which are either pressure or gravity filled, are of flexible bag type "buttoned" to the wing structure to prevent collapse when empty. Thermal de-icing along the leading edge is employed. A large number of panels in the lower skin afford adequate access to tanks, wiring, etc.

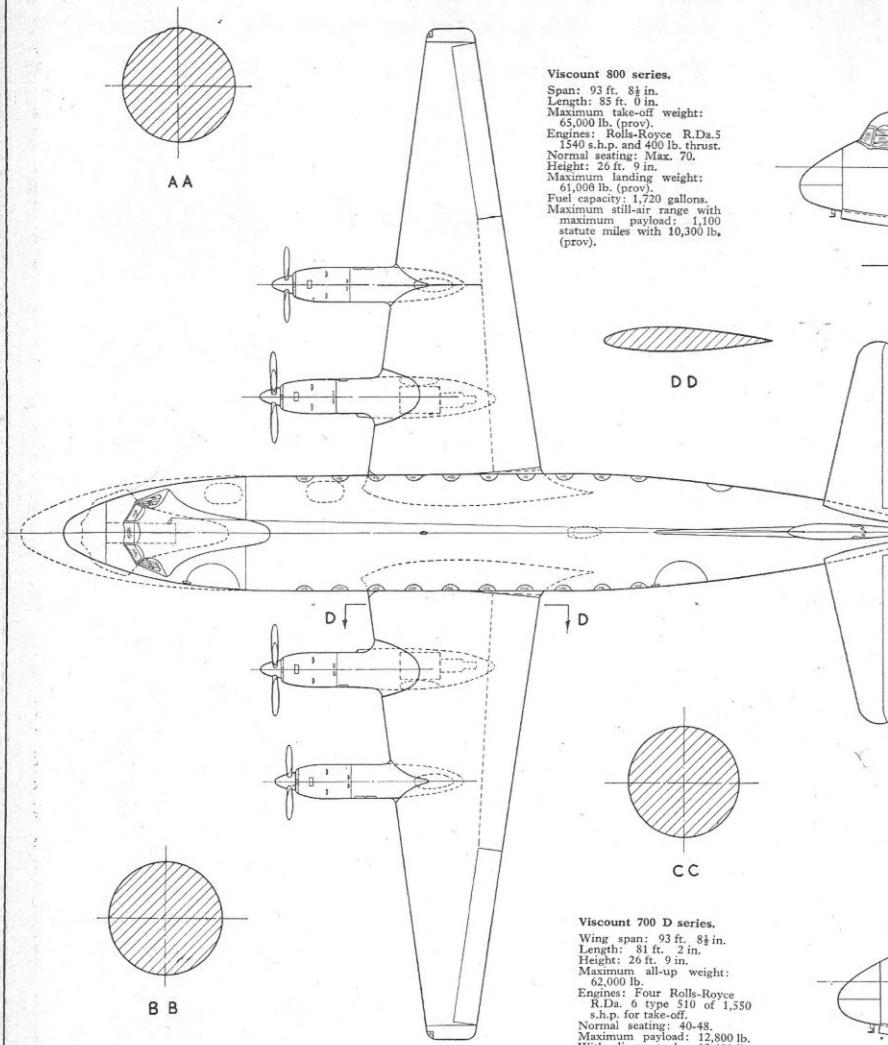
Fuselage construction is conventional, consisting of closely spaced open frames, carrying the stringers to which the skin is flush riveted, except at joints on the pressure skin, where mushroom headed rivets are used. The fuselage is fully pressurised except for the nose wheel well, and rear fuselage aft of the pressure bulkhead. A freight hold is situated under the floor in the forward fuselage, access to which is gained by two rectangular doors on the starboard side. Two oval entrance doors on the port side are for crew and freight (forward) and passengers (aft). The large elliptical windows provide excellent visibility for passengers and can be used as escape hatches in the event of an emergency. The cockpit was designed with careful attention having been paid to crew requirements. Large area windows allow extensive vision (wing tips and engines can be easily seen), individually adjustable seats and rudder bars permitting maximum comfort with efficiency and a minimum of fatigue. Dual controls are standard, each pilot having a full blind flying panel, with engine instruments centrally grouped. Ancillary controls and instruments are disposed above and below the main panel with all radio, a comprehensive amount of which is provided, grouped in the roof. Although the aeroplane can be flown by a crew of two, a separate Radio Operator is required by many airlines.

The tail unit is of straight forward spar and rib construction with double skin leading edge to provide a duct for the de-icing hot air.

The twin wheel undercarriage units are of Vickers design, hydraulically operated with two stage air compression damping, allowing very "soft" landings. Retracting forwards, each unit actuates the closing of its respective door(s). Duplicated non-skid brakes, hand or foot operated are utilised. Separate hand wheels for each pilot control the hydraulically steered nose-wheel.

Control surfaces are actuated by push-pull tubes, with torque tubes to transmit movement through the pressure skin. Trimming surfaces of rudder and elevator are by way of cable and tie rods from hand wheels in the cockpit, aileron trim tabs are electrically operated.

The co-operation of B.E.A. and Vickers Armstrong is gratefully appreciated.



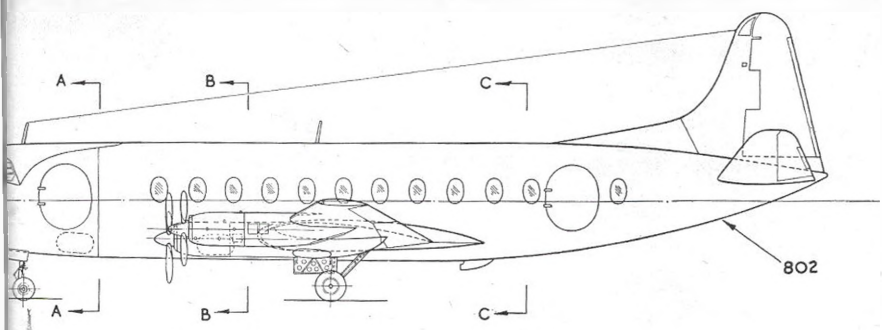
Viscount 800 series.

Span: 93 ft. 8½ in.
Length: 85 ft. 0 in.
Maximum take-off weight: 65,000 lb. (prov).
Engines: Rolls-Royce R.Da.5 1540 s.h.p. and 400 lb. thrust.
Normal seating: Max. 70.
Height: 26 ft. 9 in.
Maximum landing weight: 61,000 lb. (prov).
Fuel capacity: 1,720 gallons.
Maximum still-air range with maximum payload: 1,100 statute miles with 10,300 lb. (prov).

Viscount 700 D series.

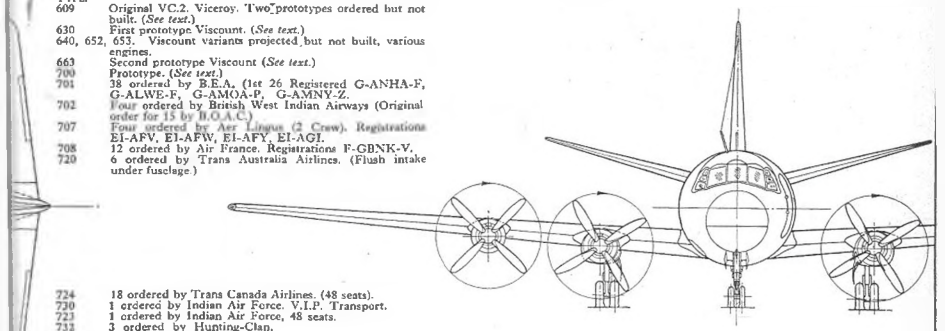
Wing span: 93 ft. 8½ in.
Length: 81 ft. 2 in.
Height: 26 ft. 9 in.
Maximum all-up weight: 62,000 lb.
Engines: Four Rolls-Royce R.Da. 6 type 510 of 1,550 s.h.p. for take-off.
Normal seating: 40-48.
Maximum payload: 12,800 lb.
With slipper tanks: 12,400 lb.
Maximum still-air range with maximum payload: 1,450 statute miles.
Average cruising speed: 320 m.p.h.

VICKERS VISCOUNT 700 & 802

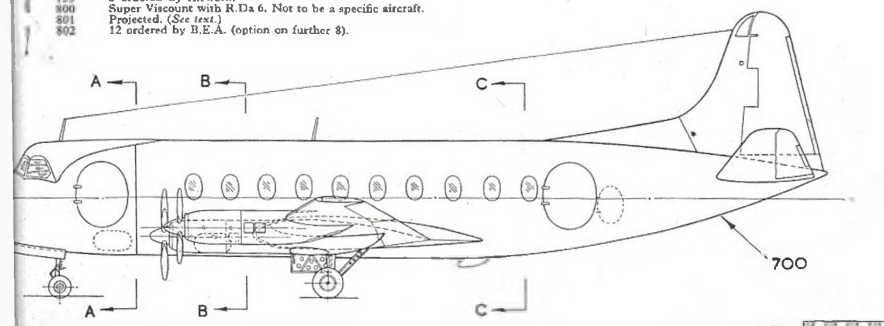


VISCOUNT TYPE NUMBERS

Type.	
609	Original VC.2. Viceroy. Two prototypes ordered but not built. (*See text.*)
630	First prototype Viscount. (*See text.*)
640, 652, 655.	Viscount variants projected but not built, various engines.
663	Second prototype Viscount (*See text.*)
700	Prototype. (*See text.*)
701	38 ordered by B.E.A. (1st 26 Registered G-ANHA-F, G-ALWE-F, G-AMOA-P, G-AMNY-Z.
702	Four ordered by British West Indian Airways (Original order for 15 by B.O.A.C.)
707	Four ordered by Aer Lingus (2 Crew). Registrations EI-AFV, EI-AFW, EI-AFY, EI-AGI.
708	12 ordered by Air France. Registrations F-GBNK-V.
720	6 ordered by Trans Australia Airlines. (Flush intake under fuselage.)



724	18 ordered by Trans Canada Airlines. (48 seats).
730	1 ordered by Indian Air Force. V.I.P. Transport.
723	1 ordered by Indian Air Force, 48 seats.
732	3 ordered by Hunting-Clan.
735	3 ordered by Iraqi Airways.
736	2 ordered by Fred Olsen Airtransport.
737	3 ordered by Canadian Dept. of Transport.
739	3 ordered by Misrair. S.A.E.
742 D.	1 ordered by Braathens Airtransport.
744 } 745 D }	40 ordered by Capital Airlines, First British aircraft ordered by U.S. operator. Option on further 20.
747	2 ordered by Butler Air Transport.
748 D.	5 ordered by Central African Airways.
749	3 ordered by L.A.V. (Venezuela).
750	Projected, as 700 but with R.Da5 engines.
755	3 ordered by Airwork.
800	Super Viscount with R.Da 6. Not to be a specific aircraft.
801	Projected. (*See text.*)
802	12 ordered by B.E.A. (option on further 8).



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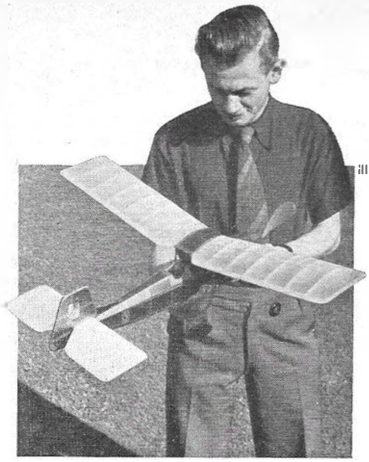


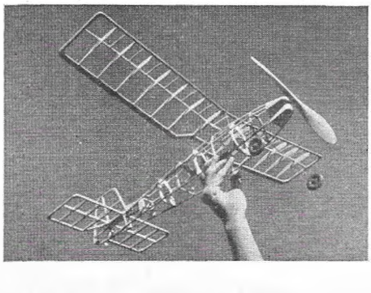
Your full

RUBBERDUB

by Brian Lewis

REPRESENTATIVE of a class of aircraft quite popular in the 1930's "Rubberdub" makes a change from the usual run of high wing sport models and is quite an attractive proposition for beginners or expert. Its semi-scale lines with simple parasol wing mount and use of a standard 10-inch Obeche commercial prop make it ideal for a "one design" club contest where everybody is required to build the same model and with all club members working on the same basis, a lot can be learned from the different approaches to flying trim. Very often in contests of this kind the beginner gets his chance of ousting the so-called expert, so why not try it this winter in your club? "Rubberdub" is a small-field flier with average duration hovering around the 90-second mark to give a maximum of fun per flying hour.

Simple construction, a standard Keil Kraft prop and wheels, attractive appearance, add up to make Rubberdub a model that should be popular with all sport fliers. Brian Lewis is seen with the blue and white prototype at top, whilst uncovered frame below reveals the structure.



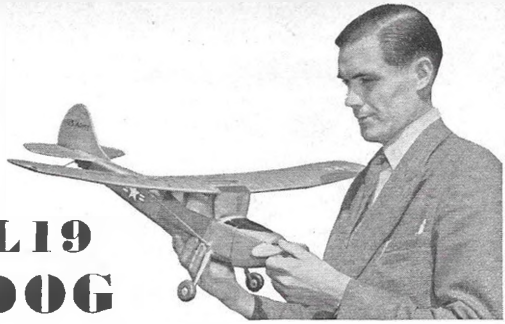
Commence by building two basic *Fuselage* side frames flat on the plan, one over the other. When dry join together, using Former F3, and pulling together at tail then inserting Formers F2, 4 and 5. Insert spacers at nose and add F1. Fit $\frac{1}{16}$ in. sq. stringers and add $\frac{1}{16}$ sq. spacers on bottom and the decking. Sew 18 g. cabane struts in place. Bind undercarriage and tailskid where needed and apply cement liberally. Add sheeting and gussets. Bind 18 s.w.g. wing mounts in place with fuse wire and solder. Note that the strut fairings are not added until after covering. Mark cockpit on sheeting and cut out carefully. Start the *Wing* with the leading edge, cement 1 mm. ply brace in position. Pin one leading edge to plan, add trailing edge, trips, ribs and spar in that order. Remove from plan and "rock" the assembly to build the other half, and then "neutralise" back for centre section to be flat on plan and add trailing edge and $\frac{3}{32}$ in. sheet brace to spars. Reinforce trailing edge joints with pins. Cement riblets in place after sanding. Pin tailplane leading edge to plan. Add tips, gussets, $\frac{1}{16}$ in. sheet at centre, $\frac{1}{16}$ in. x $\frac{1}{8}$ in. rib strips and $\frac{1}{8}$ in. sheet ribs. Cement $\frac{3}{16}$ in. x $\frac{1}{16}$ in. spar in place on top of lower rib strips and then add $\frac{1}{32}$ in. x $\frac{1}{8}$ in. rib strips. These are best cut slightly oversize. Cement to trailing edge and spar first, bend over to leading edge, cut to correct length and cement. The *Fin* is built flat on plan from $\frac{1}{8}$ in. sq. and $\frac{1}{8}$ in. sheet. Carve the nose block from hard balsa and sand to shape while in place. Drill and fit brass brush and complete the prop assembly. Note that the rear cup washer is soldered to the shaft.

The fuselage should be covered with lightweight Modelspan and given two coats of dope. Wing and tail are best covered in Jap tissue and given one coat of dope. After covering, the cabane strut fairings, $\frac{1}{8}$ in. sheet fin strake, $\frac{1}{8}$ in. sheet tailplane key and windscreen can be added and the fin can be cemented to the tailplane.

Flying

Balance model under main spar, plus or minus $\frac{1}{4}$ in. Trim for glide by adding packing under tailplane, approach maximum turns carefully, adding downthrust if necessary. Properly treated the motor will take 1,200 turns, plus 100 turns for pre-winding which will give flights of 90—120 seconds. If greater durations are desired the designer recommends using a balsa prop carved from a $1\frac{1}{2}$ in. x 1 in. x 12in. block, powered by six strands of $\frac{1}{16}$ in. x 1/24 in. strip 30 in. long. This, however, will necessitate a slightly longer undercarriage to give the necessary ground clearance.

size plans



Cessna L19 BIRD DOG

36-inch span flying scale for ·5 c.c. by Eric Fearnley

THE L-19 BIRD DOG (Cessna 305) was chosen for a flying scale model because it appeared to be a "natural" for modelling. This has been proved true of our prototype, which combines the aerodynamic proportions of a flyer of inherent stability with the ruggedness of the sport model, yet retaining a true scale appearance with very simple construction. If this be your first scale effort, you have an ideal model, capable of being flown in a small field, in all but the roughest conditions, with the best possible chance of keeping it in one piece over a long period of flying activity. The prototype has had some months of flying, and to date, no repairs, major or minor, have been executed on it, and it retains its new appearance.

Any of the modern ·5 c.c. engines can be used. Ample power will be available, and it is suggested that a rather larger prop than usually employed on this size engine will make for scale flying appearance, and also simplify trimming. A 7 in. by 4 in. should replace the normal 6 in. by 4 in.

Start construction with the *Fuselage* by cutting out two sides from medium $\frac{1}{4}$ in., matching them for strength to simplify later assembly. The formers are cut from $\frac{1}{8}$th sheet balsa, except F3, F4 and F5, which are from light plywood. Form the undercarriage as shown, and sew to the ply former F3.

Assemble the ply formers on the sides and when true and dry, add F1, F6, F7 and F8. Fit the $\frac{1}{16}$th sheet pieces under the motor mount, and make sure they are parallel with the thrust line. Cut out the motor mount to suit your engine, and cement this in place, adding the $\frac{1}{8}$th upper pieces, hollowed bottom, nose, and the tailskid blocks. When dry, carve to final shape, and sand smooth. Make the detachable cowl top from laminated $\frac{1}{16}$th. Cover the rear of the fuselage with pliable $\frac{1}{32}$ in. sheet. Avoid hard, brittle wood. Cover the bottom using strips at the front end where compound curves are indicated, and in one piece at the back. Steam if any trouble is experienced.

Root ribs F9 and dowels are added, making doubly sure that the incidence is true, and then add celluloid, window frames, and tube to take struts for wings, etc.

The *Wing* tapers from the halfway mark, so it is best to assemble in two stages—the root, straight section, and when dry, the tapered tips. The cut-out spar shows this change in taper. When removed from the building board, fix the strut fasteners, make the struts from dowel and sand smooth.

Nothing could be simpler, than the flat plate *Tail* surfaces. Small trim tabs are an aid to trimming to allow for small errors in setting the tail incidence.

Cover the fuselage with lightweight and the wing and tail with heavyweight tissue, using sanding sealer on the fuselage and two coats of clear on the flying surfaces. Cement the tail surfaces in place after covering. European Bird Dogs are khaki with white lettering while those in the U.S.A. are aluminium with black letters.

Trimming should be easy, but don't be careless with it. Balance where indicated, after fitting motor with outside holes to allow side thrust to be adjusted. A small washer should be placed under the back of the motor lugs for temporary downthrust. If a sharp left or right flight is indicated, apply sidethrust to correct, leaving the rudder alone at this stage. After a power flight, watch the glide. Too steep a glide is caused by not enough longitudinal dihedral—in other words, put up the tail tabs a little. If a stall follows this on power flight, add downthrust. Alternatively, a stall on the glide calls for the reverse—less tail tab angle: and less downthrust if it is not climbing on power. The original model is so foolproof that it has been flown with many different trims, and with engine sidethrust either way.

A DAY AT THE RACES AS SEEN BY "RUSS"

— its a nice inexpensive hobby —

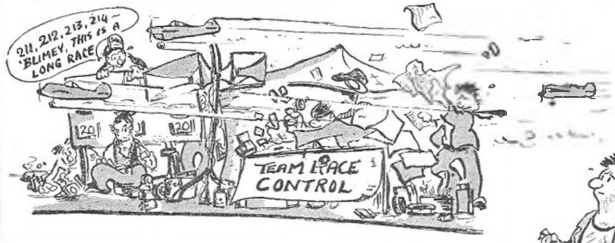
— the boys are 'mixing it' in the centre

— some pit crews carry water pistols, extinguishers----

— pit stops can be made in 7 secs

– with few formalities, and hardly any rules

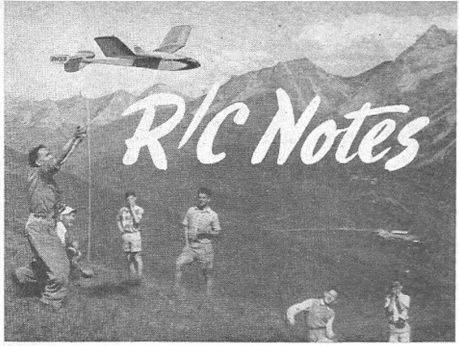
– except for small items like tanks, models, lines etc.



– while control keeps a tally on laps, speeds, fair play etc.

– and the erks sweat it out.

– some take a little longer – and some MUCH longer!



conducted by H. Boys

THIS MONTH we have some details of the radio equipment used in Switzerland.

Aeromodelling is taught in Switzerland as a school subject, and every year Mr. Arnold Degen organises an instructional course lasting a week, at which a number of school teachers learn aeromodelling as a subject that they can teach. A number of other people also attend, the object being to foster a generally high grade of design and workmanship throughout the country. It was to this school that the writer was invited, and one Swiss radio-controlled model was there for demonstration.

The radio equipment and model were built by Mr. Alfred Bickel of Zurich, and made a very impressive flight. The transmitter was stationed on a flattish piece of ground about half the size of a football pitch and the model launched from about 200 feet higher up the mountain. It was headed out across the valley and gained height. A little manoeuvring and the model had soon climbed more than a thousand feet. It began to look impossible to get the model back, but after more manoeuvring the model was steered into a downdraught and was landed safely a few yards from the transmitter after a flight of about 40 mins.

The model had a wing span of 83 inches, chord 10½ in. with a total weight of 3¼ pounds. It had a pylon mounting for an Elfin 1·49 c.c. engine, but the engine was removed. The actuator was motor driven giving three rudder positions, right, left, and centre, and operates on 1·5 volts.

Mr. Bickel had built the receiver to a design of Mr. E. Nievergelt of Zurich. The circuit diagram is shown in *Fig.* 1 with the component values.

L1. 19 turns 20 s.w.g. on 12 mm. dia. (½ in.) former with dust iron core. L2. Radio frequency choke. The valves are V1, IT4, V2, IS5, V3, IS5, V4, IS4. The aerial was a piece of wire about a foot long, held vertically by a thin wooden rod. Relay E.D. polarised. The receiver was enclosed in a balsa box, the total weight being 6 ounces. Anode current through the relay is 0·5 ma. without signal and rises to 5 ma. with signal. The original receiver was tested for range with a transmitter of 2 watts input, representing not more than 1 watt output, and the receiver was still giving full current rise at 1¼ miles. The transmitter needs to be modulated at a frequency of about 100 cycles per second. Mr. Bickel's transmitter used a 3A5 RF valve operated from a 2 volt accumulator and vibrator pack, and the vibrator itself was used to produce the modulating frequency. Using the same circuit another receiver was built using four DL 66 subminiature valves using 45 volts H.T. and E.C.C. relay. The dimensions were 3 in. × 2½ in. × 1⅜ in. and weighed just under 2½ ounces. Tested at a range of 1,000 yards with the 2 watt transmitter, the relay current change was from ·4 ma. to 2·5 ma. In this receiver the output valve is a bit over run. These receivers can be used with the carrier wave either on or off, in the no signal condition, the signal being modulated carrier wave.

Another circuit which finds favour in Switzerland is the Lorenz using two XFG1 valves. It is shown in *Fig.* 2 with the component values.

The relay can be anything from 5,000 to 10,000 ohms. resistance, the E.C.C. polarised being suggested. There are not many radio-controlled models in Switzerland yet, but interest is on the increase.

The writer took two power models with radio, not knowing anything of the flying conditions. When it was discovered that the flying ground was 6,000 feet above sea level it was not surprising to find the engines not developing enough power to take the models up. That possibility had been foreseen and equipment for a glider had been taken. It was 44 in. span, 8 inches chord, and weighed one pound all up. After launching it climbed two or

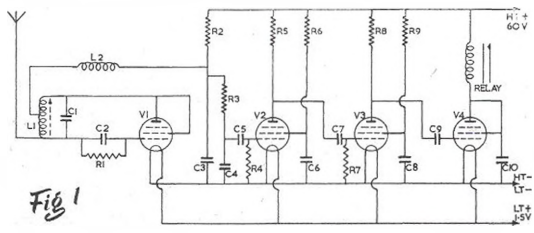
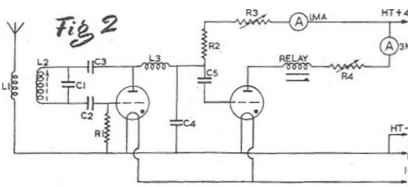


Fig 1

Component Values

R1	2.2 Megohms.	C1	5 pf.
R2	100 K. ohms.	C2	100 pf.
R3	1.5 Megohms.	C3	.002 mfd.
R4	5.5 "	C4	.002 "
R5	0.5 "	C5	.01 "
R6	1.5 "	C6	.05 "
R7	5.5 "	C7	.005 "
R8	0.5 "	C8	.05 "
R9	1.5 "	C9	.1 "
		C10	8 "

Arosa, high in the Swiss mountains is a most beautiful place, and we envy Arnold Degen as he launches Alfred Bickle's R/C glider from the mountain slopes for a lengthy flight.



Component Values

C1	15 pf.	R1	2.7 megohms.	
C2	100 pf.	R2	3 k. ohms.	
C3	47 pf.	R3	20 k. ohms.	variable
C4	.01 mfd.	R4	10 k. ohms.	variable
C5	.005 mfd.			

L1. 3 turns round the centre of L2.
L2. 17 turns 20 swg. on ⅜ in. diameter dust iron cored former.
L3. 100 turns 34 swg. on ¼ in. former.

three hundred feet, was spiral dived twice in an attempt to loop, circled, and eventually brought down safely. It was great fun and so pleasant to fly the model around in such a way without any engine noise. It is no wonder the Swiss modellers concentrate so much on gliders.

The transmitter used was the AEROMODELLER No. 1, built into the end of the model box. The H.T. requirements being known, Messrs. Ever-Ready were consulted regarding a suitable battery for the purpose. They recommended the B107. The writer had not come in contact with this battery before, but it was found ideal for the job, being 8½ in. × 5¼ in. ×1½ in. and was also easily carried in the model box.

Some doubt was felt regarding the range of this equipment as no earth wire of any sort was fitted. The box was upended so that the transmitter was two feet six inches above the ground with the batteries there as well. Putting the H.T. battery in the bottom had been considered but a trial was decided on with short leads. No range tests were made but the model kept in range all right. On one occasion the model was still properly under control when it was about three hundred feet almost vertically *below* the transmitter.

L.S.A.R.A. model

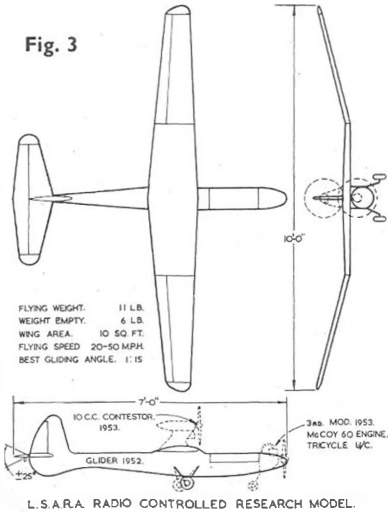
The Model Aeronautical Conference organised by the Low Speed Aerodynamics Research Association contained some information of interest to the radio-controlled modeller. Mr. W. A. Crago of Saunders Roe said that for their dynamic model tests he went to the electronics department and asked for:—"A little black box about so big, weighing about a pound, that could be put anywhere in the model for ballast." He also required that:—"The engine cut out *really* must work reliably." It was astounding to see from the film that the receiver used was a commercial type that has generally been considered the least reliable on the market.

The L.S.A.R.A. equipment was on show and Mr. D. W. Allen described its development and tests. Photographs were shown of the machine used for tests, see *Fig.* 3. It was flown as a glider first and has since been fitted in turn with special Jetex units under the wings, an engine on top, and later an engine in the nose. The equipment which has already been described in these columns, has now been fitted in a OQ3 target aircraft, the landing parachute and launching ramp being dispensed with. A tricycle undercarriage has been fitted using Chipmunk tailwheels.

The Association has a government contract for developing a method of testing scale models of full-size aircraft. The equipment is such that the control surfaces on the model can be positioned to great accuracy from the transmitter. The accuracy is greater than can be obtained by telemetering the position back to the ground. The type of control now favoured is a small box on a handle with a tiny joystick that is thumb operated, with a knob to turn for the rudder. Release of these returns all control surfaces on the model to a pretrimmed position, which is normally neutral.

It is amazing to think that a pair of spare time modellers, Mr. Allen on the electronics, with Mr. N. K. Walker to back him up, should produce a radio equipment which is lighter, cheaper and far more satisfactory than any other comparable equipment.

Fig. 3

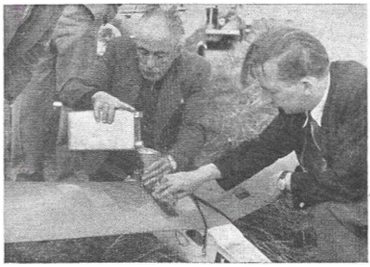


L.S.A.R.A. RADIO CONTROLLED RESEARCH MODEL.

Channel Crossing Technicalities

THE technical aspect of the successful Channel flight by George Redlich and Sid Allen will be of interest to many readers. The radio equipment was the prototype E.D. miniaturised 3-reed outfit, and the receiver batteries were made up as follows:—H/T—two Ever-Ready B110, L/T—one Ever-Ready D18. Two of the reeds were used to operate a Redlich-designed pivoting, two-coil actuator, which is shown in the photograph below. Each reed energises its respective coil, and there is a light return spring for neutralising when the current is off. The actuator battery was a 6 volt American Willard accumulator, which is available as a surplus item. The third reed was used to operate a rudder trimmer, via an orthodox 4-pawl actuator, which had its own battery pack made up of four Pencells. As it happened this trimmer was not used, as George found it simpler to correct drift by normal rudder movements. In the light of subsequent experience the trimmer would have been more usefully employed as an elevator trimmer, as spinning the model down when they reached Calais Aerodrome was not all that easy, and it did in fact drift so far downwind during this process that it was lost to sight, although plainly within earshot.

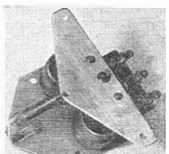
We understand that the radio equipment was kept as simple as possible. Firstly, because simplicity spells reliability, and secondly to keep weight of payload to a minimum. They were, after all, only using a 3½ c.c. E.D. "Hunter" diesel to fly a seven foot model weighing some 7½ pounds! It will be noted from the photographs that this engine was wisely fitted with a locking bar to the compression adjustment screw, which is a point ordinary fliers might well bear in mind. Another interesting feature is the special exhaust stack to deflect unburnt fuel away from the model. On a long-distance flight such as this there would have been a considerable build-up of castor oil on the tailplane, which would eventually affect the trim. Yet another



safety feature was the fitting of nylon tapes in addition to normal wing-bands.

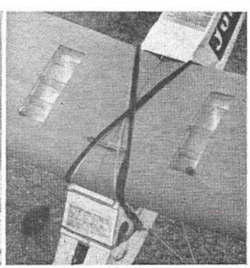
The fuel system consisted of two celluloid wing tanks, each holding about 12 ounces, and divided up into four compartments by baffles. Connections between compartments was by means of $\frac{1}{16}$th holes in the baffles, which sound small, but there is no doubt that the system worked perfectly in practice. Fuel leads run from each tank to a junction pipe, connected to the float chamber of a "Minimotor" carburettor, which proved ideal for the job. "Tanking up" as portrayed by Sid Allen looks a most "full-size" process, even to the extent of using a funnel.

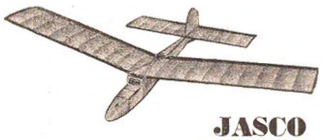
The system of control in flight was to fly behind and underneath the model, viewing it through the transparent canopy of the Auster, which, incidently, had to circle to lose speed. Short straight legs were then flown on the correct bearing, during which the "model" pilot was able to correct the course of the "Channel Queen."



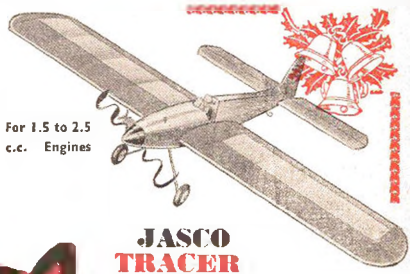
Photos below show, left, "Hunter" installation with extended exhaust stack. Centre, Trimmer actuator in being wound, the rudder itself being connected externally to the pivotting 2-coil actuator shown on the right. Right, top view of wing tanks which are filled via Gits filler cap.

The type written notice was executed in both French and English, which as it happens was a wise precaution.





JASCO TUTOR

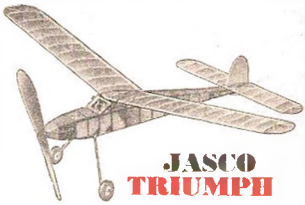


For 1.5 to 2.5 c.c. Engines

JASCO TRACER

FLY WITH JASCO

Who wish all Aeromodellers a very happy Christmas



JASCO TRIUMPH

JASCO TRACER Latest stunt control liner designed for beginners, but enjoyed by the experts too! Elegant eye-catching design that will go through the book. Book yours right away. Price inc. P.T. **20/9**

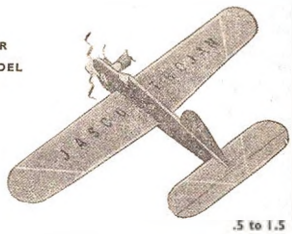
JASCO TUTOR Beginner's Towline Glider, 30-inch span, ready cut or stamped parts, detailed instructions, high performance. Price inc. *P.T.* **5/-**

JASCO TRIUMPH Beginner's Rubber Duration. Parts machine stamped ready to assemble, finished prop., wheels, thrust washers, screwed bush, etc. Price inc. *P.T.* **8/6**

JASCO TIGER Contest Power Model for Beginners that wins the Comps! Span 36 in., for engines ·5 to 1 c.c., sidewinder mounted, built-up fuselage, high pylon wing, all parts stamped ready to assemble, comprehensive building and flying instructions. Price inc. *P.T.* **12/6**

JASCO TROJAN An attractive "willing horse" of a beginner's control line model. Span 18 in., for engines ·5 to 1·5 c.c., wire or thread lines, profile fuselage, solid sheet wings. You can't go wrong with it. Price inc. *P.T.* **10/-**

FROM YOUR LOCAL MODEL SHOP

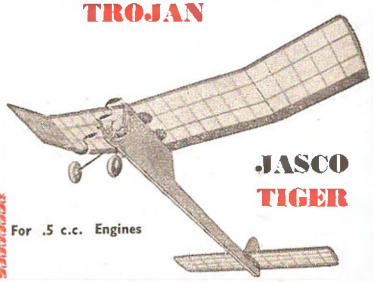


.5 to 1.5 c.c. Engines

JASCO TROJAN

Other Jasco Specials...

For Christmas presents why not make up our miniature **GALLEON** and **PIRATE SHIP** which retails at only 2/11. Look out for the beautiful **SANTA MARIA GALLEON** kit which will be available shortly. Your kid brother will like **JASCO SCOUT** or **JASCO SABRE** ready-to-fly gliders displayed in all the best shops . . . Then there is **PUK-KA DOPE** in 24 colours . . . **H.M.G. FUEL PROOFER** . . . **PUK-KA BALSA CEMENT** . . . Shrinking Dope, Banana Oil, Sanding Sealer . . . H.M.G. Heat and Waterproof Adhesive.



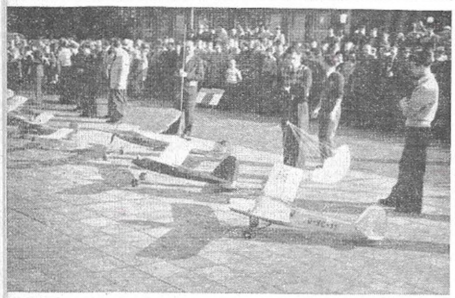
JASCO TIGER

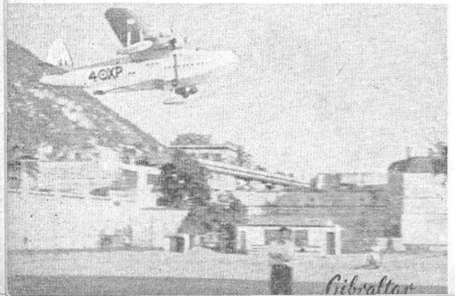
For .5 c.c. Engines

ENTER THE JASCO COMPETITION

We are offering a five-guinea cash prize to the first three modellers to win a National Competition during 1955 with a JASCO model. There is no entry fee. Entrants should merely send details of the contest together with their name and address to JUNIOR AIRCRAFT SUPPLY CO. LTD. KAY BUILDINGS 129a EASTBANK STREET, SOUTHPORT, LANCS.

World News





LAST MONTH the office highlight was receipt of a postcard direct from Moscow—outcome of which is the article beginning page 633, and this month it was our pleasure to meet none other than Denny Davis, all the way from San Diego, California. Denny says he has retired from active contest modelling now that his fabulous "Hogan" series of high performance power models has reached the "Ultra" stage: but he was very interested in the Swiss Miss plan our drawing office had just completed, and he reckons that it looks like a "Fine airplane". He should know, for Denny is the leading light in design of pylon models of this type and his opinion is to be valued. Trend in the **U.S.A.** is toward higher engine mounting he tells us, rather on the style of Mexican De Cosio's model illustrated in the FAI write up, October issue.

Other U.S. news includes a suggestion for Western Associated Modellers to tighten up spot landing rules for radio-control. A fence line is erected across the runway, short of the landing spot, and all landings must be over the fence to score points. This induces a tendency to over-shoot on landing and makes life more difficult for the man on the button. Incidentally that corn we mentioned before as being ten feet high around the U.S. Nationals site, really was as tall as that, being American corn, known here as maize. No wonder some hundreds of models were lost!

Politically, the **SAAR** is right in the news, and it isn't very often that we hear of aeromodelling in that country except for their now regular participation in the A/2 Championships. This year they ran an International event for the Europa Cup, and Germany, Switzerland, Denmark, Sweden, France and Monaco sent along teams for F.A.I. power and Glider. Presumably as hosts, the SAAR did not compete, and the question of expense prevented a British team being sent by the S.M.A.E. Winner of the A/2 was Rudiger Franke of Germany, flying against an entry that read like the cream of European A/2 fliers. Rolf Hagel won power for Sweden with a Webra. Another International contest, that for tailless at Braunshweig in **Germany** was held on September 11/12th with Germany and Holland as lone participants. H. Kron, who was third in last year's event, placed top this year with a total of 6 : 42 for five flights of which his best was 1 : 45. J. Osborne of Holland was second with a total of 6 min. 40 sec., only two seconds behind the winner.

In **Gibraltar,** the main interest is scale and combat controlining, with a small team racing section. Floatplanes have been seen out in the bay; but most flying takes place on a Royal Navy football pitch as seen at bottom left. Mac McBride built this 6 ft. Sunderland from plans scaled up from the A.P.S. solid drawing, and fitted four sets of bearers "just in case." Two E.D. 3.46's lift the 6 lb. airframe off its wheeled beaching gear in one lap and it actually flies down to a safe landing with either engine cut.

Australian news naturally concerns the Wakefield 1955. "We are waiting,"—states one letter received—"for the decision of the F.A.I. or S.M.A.E. as to the venue for next year's Wakefield. Although it will be a long way for your chaps to come out here, we feel that

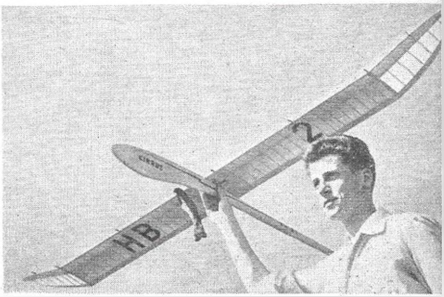
Top: Wong Choon Sen of Selango launches Javelin powered model in Pan-Malayan contest to admiration of the locals. Next: Radio-control contest at Brunswick attracted these entries from east and west zones. Upper photo shows Lichius's scale Storch being refuelled. Bottom: Two E.D. 3.46 diesels power this scale Sunderland flying boat for builder B. McBride, weight is 6 lb., span 6 ft. and line length 40 ft. We bet it pulls!

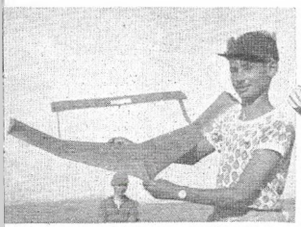
after 20 years of trying by ourselves, and our near neighbours in N.Z., we have earned the right to have the contest out here at least once. We could make a good job of it, proxy fliers and all, and it would be a wonderful boost for modelling out here." And so say most of us.

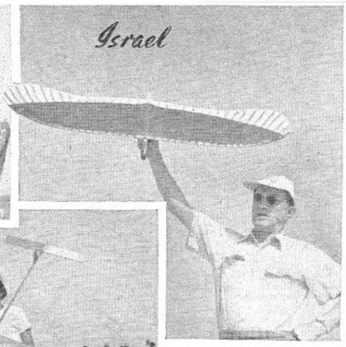
No trees or obstructions, miles of open desert and calm conditions every day for before breakfast flying at 5 to 7 a.m. are benefits enjoyed by the R.A.F. Mefraq club in **Jordan.** Wind blows up at a fair rate of Knots to spoil midday activity. Nearby in **Israel,** the third Nationals were held at the end of August. Highlights of this meeting were the intense keenness displayed by all competitors, including 62-year-old Dr. Martin Sultan who was flying his canard Wakefield with pre WW II rubber (which burst the fuselage asunder) and a 32-year-old, 18 in. Walnut pusher prop! Of the 33 A/2 entrants, 20 were own designs, showing creative spirit amongst Israeli modellers, the winner being Jury member and organiser Naftali Kadmon with his stressed 3/64 in. sheet balsa surfaced Naftinofet design, (see photo.) A peculiarity of Israel modelling is that not only are the officials *active* modellers; but they are also allowed to take part in contests, moreover, they are sufficiently clever enough to place high in the results. Dr. Sultan also hits the news with another experimental model from his workshop, based on the "Zanonia Macrocarpa Seed" which was discussed in our January 1952 issue as an infallible glider.

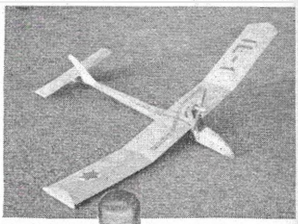
Using the same type of construction as he has employed during some 40 years of aeromodelling, the venerable Doctor made his Zanonia of bamboo and pine, but to be up-to-date, its area and weight are to A/2 specifications. (*See photo.*)

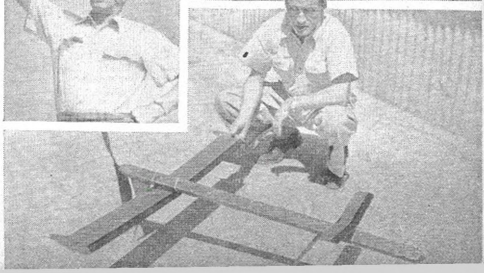
Top: Mr. Lackmann, president of the Aero-Club SAAR, presents the Europa cup to Franke of Germany, left, and power cup to Hogel, Sweden at right. Next: Rudi Lindner, World A/2 Champion shows new angle of his model. Below him is Hans Thomann with his Cirrus model, designed by Schnabel, was 2nd at SAAR, 8th at Odense. Below, left to right: Crescent twin boom A/2 by 16-year-old Martin Mauriver. Lt. Sultan and successful Zanonia glider in centre, and with fabulous canard Wake, below right. Top right: Kadmon's powered A/2, retired from straight gluding, bottom left: Felchermites with Kadmon's stressed skin A/2 winners.











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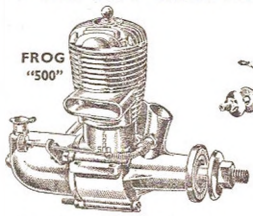

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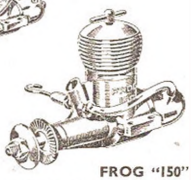

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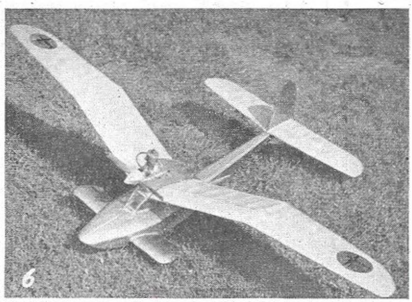
MODEL NEWS

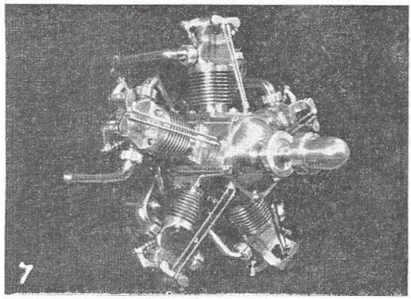
PROOF OF the versatility of the A.P.S. plan for the Douglas Invader is typified by our choice of Model of the Month. Originally destined for plain straight-and-level sport flight, this Invader built by John Ridley of Kilburn, received a few mods during construction, including hatches in the fuselage to enable dummy pilots to abandon ship by parachute, and provision for a nine foot grappling line to snatch a glider from the ground. There was also a device for smoke to issue from the outboard nacelle for simulated crash landings: but a couple of genuine fires put paid to that scheme. Now the Invader has a passenger, as the photo shows, and after a composite take-off on all three diesels, the delta parasite fighter is given full-up elevator which triggers it off to be flown by a second pilot. Invader "Bouncing Betty" is due to be re-named "Maid of all Work" and no wonder!

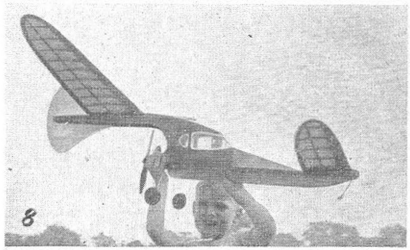
The D.H. Comet III is in the news these days, and professional model maker, F. E. Phelps of Harrow, is contributing to its success by supplying high-class solids to 1/60th scale to the makers for publicity. As photo **1** shows, the finish obtained by these "pro" modellers is to be envied. Something else that might be envied in pic. **2** is a charming combination found by S/Ldr. Brian Lord's camera at Langley. Miss Anne Germaine of London (that's vague enough!) is toting a Mercury Monocoupe L.7A.—Brian didn't appear to ask for the modeller's name!

Smart radio job at the bottom in **3** is the work of F/Lt. Trevor Ware, seen at the recent R.A.F. Championships. Twin rudders and trike undercarriage appear to go well together. We bet Phil Smith, the Stentorian designer will get a kick out of this one—and quite a lot of readers will get more than a jerk out of picture **4**.

Yes, that really is John O'Donnell, and it really is a power model! John is flying in all F.A.I. free-flight classes now, placing fifth in the first area elims with "Welsh Bunny" his Elfin 1·49 Whitefield club design. Already up in the top class of Wakefield and A/2, the Power boys had better look to their laurels when John applies his trimming genius to this and future F.A.I. class models. Jack North and Ray Monks hold the







distinction of being in two different International teams, John *might* make all three.

Pat Healey smiles as she launches Mick King's A/2 in **5** and after her success in beating the boys at Radlett, we fancy that husband Mick is also pleased with newly acquired wife Pat. Our congrats to both of them; please note for future contest place reports, for P. King—understand that the name used to be Healey.

Mrs. Sponsonby is a natty name for the boat we see in **6**, built by J. Warren of Edmonton, with white Clark Y wings on a flamboyant (wonder if this is a pun?) blue fuselage, the lady has a Frog 160 glow motor.

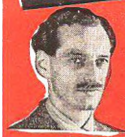
Gull wings give a good water clearance and at the same time allow a reasonably near-scale cabin, while forward sponsons, obviously based on earlier AEROMODELLER Hydromodel articles, give water stability.

During the World Control Line Championships at The Hague in Holland, a number of remarkable Dutch modelling feats were demonstrated, including flights by a detailed Fokker D.21 fighter. But the item which caught our eye was Van der Hoek's amazing engine of 25 c.c. and with overhead valves to each of its five perfect cylinders. Made in only three weeks, it has been tested up to 4,000 r.p.m., and as photo **7** shows, is of reasonably light construction to enable it to be used on, say, a ten foot model.

Who could think that the creator of such a smooth design as the A.P.S. Phoenix, could sit down and design such a radical novelty as the "Gander" in **8**? Bob Woollett of Yalding is the culprit, and it's his approach to 1 c.c. PAAload with a Mills .75 pushing amidships and a pilot situated in the cabin. "Gander" has racked up a lot of flying hours in all weathers to prove the claim that the canard is by no means as "old-fashioned" a layout as some would believe.

Finally, in **9**, a pert profile number by John Kay of Ascot, with an E.D. Baby. Measuring 30 in. span and 20 in. long, the "Red Admiral" is an all-sheet model, robust enough for the rigours of small field flying and in spite of its simplicity, bears a Comperish appearance that is not unbecoming. Happy Christmas! ! !

Mercury Xmas everybody!



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Magpie, 24" beginner's ...	4/8
Gnome, 32" follow-on ...	7/–
Martin, 40" intermediate ...	8/10
Grebe, 49" contest	14/4
Marauder, 65" contest/A.2 ...	16/11

RUBBER DURATION

Mentor, 32" contest	/610

FREE-FLIGHT POWER

Junior Mallard, 34" (0.5–0.75 diesels)	17/6
Mallard, 48" (1.5–2.5 diesels)	21/4
Magna, 38" Cabin (0.5–0.75 diesels)	12/10
Matador. Cabin Model for R/C (for 1.5–2.5 diesels) ...	25/–

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Stinson 105, 42"	33/3
Chrislea Skyjeep, 45"	33/3
D.H. Tiger Moth, 33" bi-plane	33/3

For 1.5–2.5 diesels, with or without Radio-Control

Monocoupe, 64"	66/6
Aeronca Sedan	66/6

CONTROL-LINE

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Mk. I, Class "B" Team Racer ...	26/10
Mk. II Team Racer	22/4
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Gadget Review

HERE'S ANOTHER miscellany of ideas to improve your modelling, and as usual, we have taken care to see that there is something for everyone.

That King of the Gadgeteers, George Woolls of Bristol, opens the field with **A**, his single-blade folding prop idea for use with a pre-tensioned motor. Based on the well-established Garami type free-wheeling clutch, George's gadget is centred on the combination of a free-wheel/clutch/stop arm which pivots in a tube on the side of the prop boss. In operation, the clutch is engaged by the bent end of the prop shaft while the motor is unwinding. When power runs out, the prop free-wheels, the clutch arm reverses itself by rubber band tension, and the prop stops at the pre-determined position.

The Scots have a natural flair for ingenuity, this time with a circle-cutting suggestion by D. McGhee of Glasgow. Take a pair of pen compasses, fit a broken section of razor blade in the jaws of the pen and clamp tight, then you can cut the neatest of lightening holes with the minimum of bother. And why limit it to holes? Rings for built-up cowlings, wheel discs and spinner laminations are easily cut this way. As shown in **B**, the centre should be strengthened with a layer of Sellotape.

Those who find themselves in trouble with park-keepers and irate ear-sensitive neighbours will do well to study John Darnell's silencer shown in **C**.

Astute readers will remember John made the prototype A.P.S. powered Tiger Moth, and to keep the peace with the locals and temper the motor down a bit, he "capped" the exhaust with a Jetex fuse tin and cotton wool plugging. Being diesel, the cotton wool does not disappear in a ball of flame, and the net result is about a ten per-cent power loss, a quiet motor and an extremely clean cowl interior.

Priming an engine through the exhaust ports is easy enough on most sport models, with upright exposed cylinders. But a scale model or team racer with an engine cowling is a different question and trying to get the floppy end of a length of neoprene to the exhaust stack can be tedious process. K. R. Crousdale of Blackpool overcomes this difficulty by taking a length of plastic tube from a Biro or similar ball-point pen re-fill and heating it so that it slips tightly over the Valvespout or Wesco priming can. When warm, the Biro tube can be formed to any curve, **D**, and will thus negotiate the corners and get straight to the engine, no matter how involved the cowl. Mr. Crousdale also suggests using the box label for a kit to decorate the finished model. Steam the label from the box, cut out the parts you want, cement in place and protect with a coat of dope. What better model decor could there be?

D. Mander of West Wickham in Kent flies an A.P.S. Jader 60 glider with the innovation sketched as **E**. Cut from ·030 in. aluminium, this dethermaliser stop allows the angle of tip to be varied at will and also prevents the fin from slewing around if the latter is integral with the tailplane.

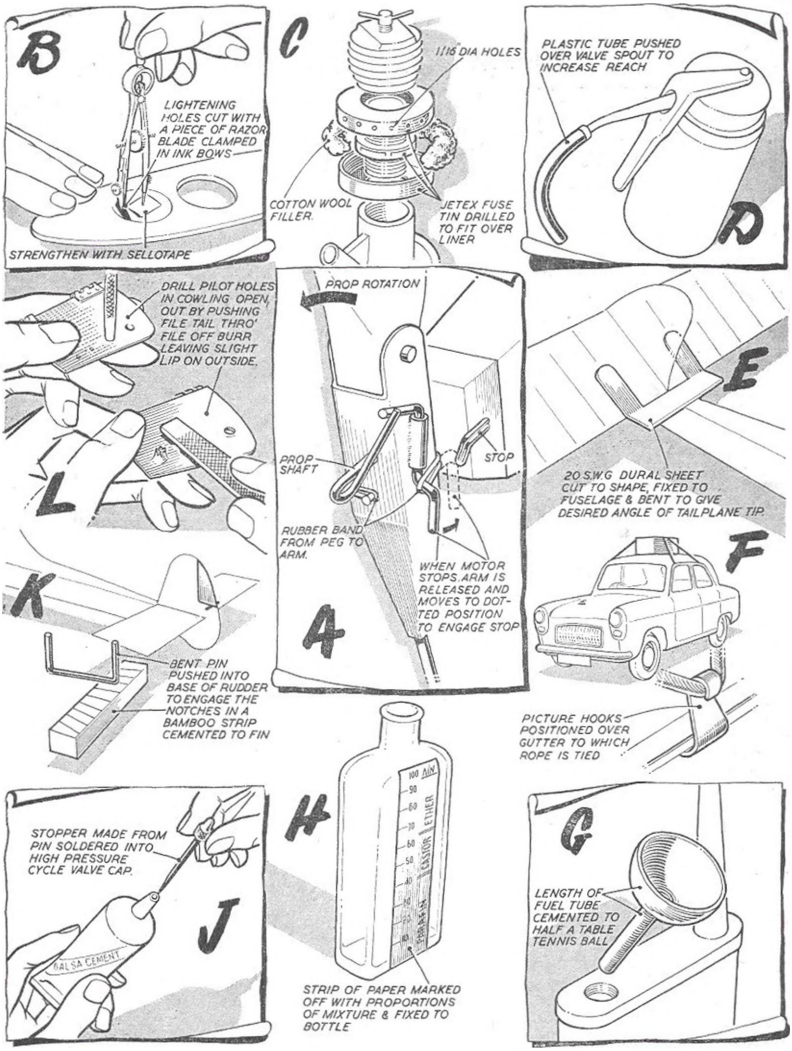
Before he left Kensington for the sunny land of Mexico, Phil Guilmant operated an Austin 7 and as most modellers with similar transport are aware, space is at a premium in these baby cars. The sensible place for the model box is on the roof, and without going to the extent of a special rack, "Gili" found that four ordinary picture books, strategically held by tension on the gutter by the retaining rope, as in **F**, were sufficient to hold the box rigid even after long-hauls with the accelerator flat on the footboards. To show variety, our artist illustrates the box mounting on a late model Ford Anglia for which we suggest roof padding!

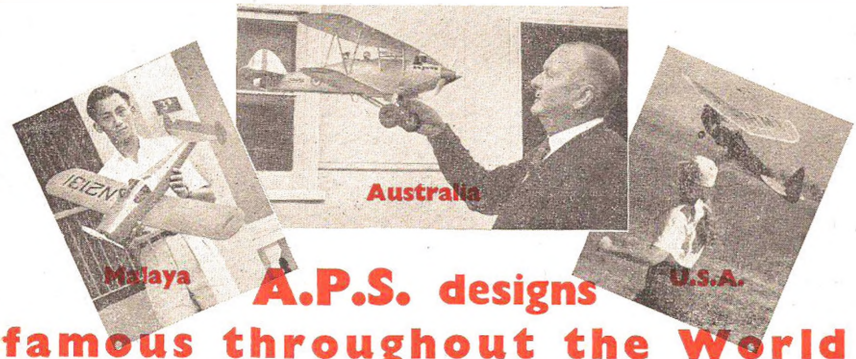
A "quickie" funnel for field or workshop use can be made from half an old table tennis ball and a length of plastic tube, states J. R. Wakeling of Leicester. Shown as **G**, this will save that fuel spillage when topping up the primer. Talking of fuel brings us to **H**, where Mike Rutherfoord, now in Switzerland, submits a measuring bottle made for those who prefer to mix their own. Take a suitable bottle of say, 10 ounces capacity. By testing with various liqueur glasses, find one which will hold exactly one-tenth of the measuring bottle up to about the shoulder. Now pour in ten liqueur glass measures, at the same time, marking off the level at each stage on a strip of paper. When finished, you have a percentage grading for the full bottle, and your pet formula can be indicated on the paper strip. Just fill up the bottle to each marked level with the appropriate fuel constituent, shake well, and you have an accurate mix every time.

Our building board is covered with odd spots of cement that have wasted their way out of tubes, and this in spite of careful replacement of the pin after each job is done. G. F. Martin of Horndean thinks he has a solution in **J**, where a high pressure tyre valve cap and a needle are combined to seal the cement tube nozzle.

Positive trim tab setting for a sport design is suggested by D. H. Cooper of Co. Tyrone in **K**. A strip of bamboo or hardwood is placed across the fin at the base of the rudder and a wire ratchet engages the notches which are cut with allowance for the radius action of the rudder. To change trim, just push the rudder over another notch.

Holes in light alloy plate are not always as easy to make as one might think, and S. Kemp of S. London shows a simple method he uses in **L**. Mark the centre point with a sharp nail, and give the nail a tap so that it pierces the alloy. Support the metal of a piece of scrap hardwood as you do this, and then force the tang of a file through and reamer a hole to the size required. For replica exhaust ports with a slight ridge around the hole, the burr can be filed to leave a slight lip on the outside. Mr. Kemp sent along a sample of his work and for scale models like the Chilton D.W.1, these "portholes" are most realistic.


B
LIGHTENING HOLES CUT WITH A PIECE OF RAZOR BLADE CLAMPED IN INK BOWS
STRENGTHEN WITH SELLOTAPE
C
1/16 DIA HOLES
COTTON WOOL FILLER.
JETEX FUSE TIN DRILLED TO FIT OVER LINER
PLASTIC TUBE PUSHED OVER VALVE SPOUT TO INCREASE REACH
D
DRILL PILOT HOLES IN COWLING OPEN, OUT BY PUSHING FILE TAIL THRO' FILE OFF BURR LEAVING SLIGHT LIP ON OUTSIDE.
L
PROP ROTATION
PROP SHAFT
STOP
RUBBER BAND FROM PEG TO ARM.
WHEN MOTOR STOPS ARM IS RELEASED AND MOVES TO DOTTED POSITION TO ENGAGE STOP
A
E
20 S.W.G. DURAL SHEET CUT TO SHAPE, FIXED TO FUSELAGE & BENT TO GIVE DESIRED ANGLE OF TAILPLANE TIP.
F
PICTURE HOOKS POSITIONED OVER GUTTER TO WHICH ROPE IS TIED
K
BENT PIN PUSHED INTO BASE OF RUDDER TO ENGAGE THE NOTCHES IN A BAMBOO STRIP CEMENTED TO FIN
STOPPER MADE FROM PIN SOLDERED INTO HIGH PRESSURE CYCLE VALVE CAP.
BALSA CEMENT
J
H
100 PARAFFIN
90
80
70
60
50
40
30
20
10
CASTOR OIL
STRIP OF PAPER MARKED OFF WITH PROPORTIONS OF MIXTURE & FIXED TO BOTTLE
G
LENGTH OF FUEL TUBE CEMENTED TO HALF A TABLE TENNIS BALL



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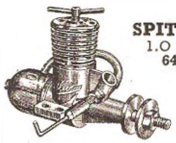

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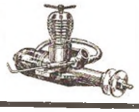

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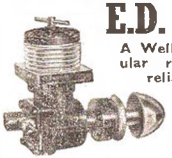

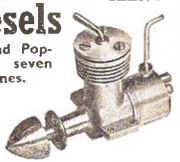

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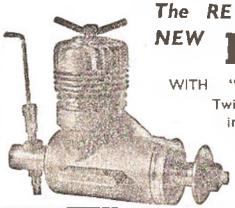

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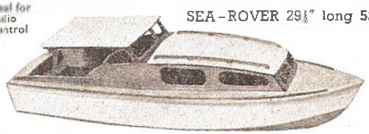

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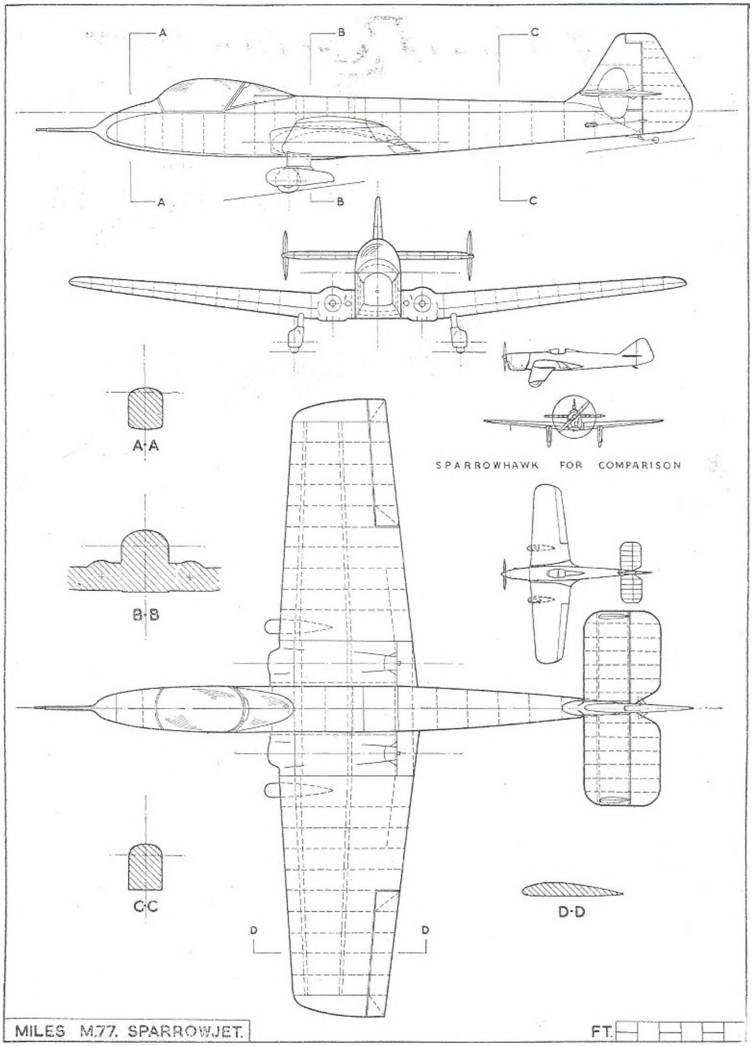

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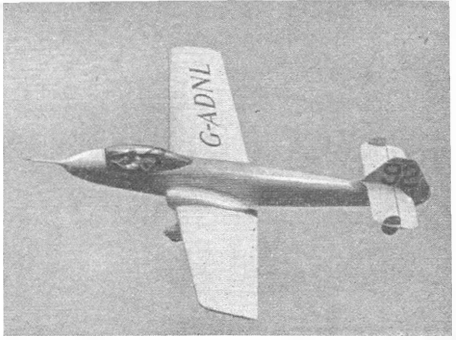
AIRCRAFT DESCRIBED NO. 65

MILES SPARROWJET

By G. A. CULL



THIS YEAR British air racing received a stimulus in the form of a new aeroplane that is remarkable in more ways than one. In these days when sporting aviation is having a lean time, the building of a new racer seemed out of the question but the Sparrowjet is just this. Furthermore, this is the first British jet lightplane, and twin-engined at that, and is purely a sporting project.

In view of the Sparrowjet's newness, it is strange to reflect that this machine originated back in 1935 but the old registration, G-ADNL, is the only clue to this. 'NL came about as the result of F. G. Miles' decision, two months beforehand, to compete in the King's Cup in a new aeroplane to be concocted for the purpose. Mrs. Miles played a large part in achieving this quick piece of work which mostly consisted of cutting-down standard Hawk components. Wing outer panels were re-married to a fuselage which had been shortened by a couple of feet, and a new low undercarriage was fitted. With a standard tail and high-compression Gipsy Major fed from long range tanks, the outcome was the potent little Miles M.5 Sparrowhawk, 'NL. On the first day of the King's Cup contest which was a circuit of Britain, 'NL was first home at 163.84 m.p.h. In next day's short race 'NL did 172.38 to place eleventh.

After the war 'NL belonged to G.C.M. Alington (least known of the original Throttle Benders) who sold her to F. Dunkerley, also of the T.B. Union. With small French jet engines now on the scene, F. G. Miles undertook the transformation of the old machine into a new jet racer to Dunkerley's requirements, and work commenced at Redhill in early '51. Two Turbomeca Palas of 330 lb. static thrust each were to provide power, but until these were available two of the earlier Pimene engines served for installation work. Engine bays were built close to the fuselage and are all-metal, insulated from the wooden structure by air gaps between metal ribs. The original wing roots pick up onto bridge members which span the engine bays while the new undercarriage legs bolt onto the original front spar. With no prop clearance to cater for the u.c. is short and uses Magister oleo legs and disc-braked wheels are a pair of those made for the American Goodyear racers. The cockpit was moved into the lengthened nose to make good the weight of the discarded engine, and from this position the pilot's view for racing turns round pylons is excellent. The cockpit canopy was made by D.H.'s and hinges up and rearwards. Two extra sections of flap are beneath the engine bays and flaps are now electrically actuated. Because of the higher speeds, all control surfaces are now ply-covered and mass balanced and the two small fins are in fact, nothing more than fairings for the elevator balances. The fuselage has been stiffened by additional vertical runners and the wings are now skinned with thicker (5/64 in.) ply forward of the rear spar, and house larger tanks. First flights were made with unchanged wingtips but alloy tips are now fitted which reduce both aileron and wing span. All this re-tailoring was finished at Shoreham in late '53 and G. H. Miles made the first flight on December 14th.

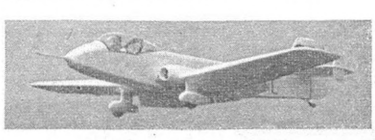
Teething troubles caused the engines to be returned to France for mods. and so the Sparrowjet's debut was delayed until June 18th when she was scratch machine at Bagington in the eliminating race for the King's Cup to be held the next day. After a sprightly practice flight in the morning, tragedy came to Fred Dunkerley on the starting line. To save weight, the engines are started by external 2,000 lb. p.s.i. air bottles, but at the critical moment a blockage in this system prevented a start being made despite great efforts sustained long after the starter's flag had dropped. At Shoreham on August 28th all went well and Dunkerley averaged 210 m.p.h. (5 m.p.h. faster than the Mew Gull in the same race) to place 7th on handicap in the Goodyear Trophy. Later that day in the round-the-aerodrome T.B.U. race, 'NL averaged 185 m.p.h. into 3rd place.

Specification: Span: 27 ft. 8 in. Length (over pitot head): 38 ft. 10 in. Height: 7 ft. 2 in. Wing Area: 156 sq. ft. Empty Weight: 1,578 lb. Loaded Weight: 2,400 lb. Max. cruising speed: 220 m.p.h. at 10,000 ft. Initial climb: 2,100 ft. per min. Rate of climb: 1,400 ft. per min. Stalling Speed: 60 m.p.h.

Construction: All wood excepting engine-bays. Fuselage is a ply box with 4 spruce longerons. Wings have two box spars with ply covering. Tail unit had spruce spars and is wholly ply-covered. Engine bays have detachable alloy cowlings and spars bridge engines. Spars are fabricated; front dural, rear steel. Plates beneath engines act as drag bracing. Oil tanks in L.E. inboard of intakes with cooling air intake leading through middle of tank. Engine cooling air intakes below each engine. 2½ gall. petrol tank (for starting) in decking aft of cockpit 42 gall. kerosene tank in each wing. Wing section is Clark YH modified to 18.8% t/c. ratio at root and 10% at tip.

Colour: Glossy white overall with racing number 92 in black on fin and rudder only. Registration letters are deepest blue and are above star'd wing (20½ in. high letters) and below port wing, and on fuselage sides are 1 ft. high. Roman lettering is used.

The Sparrowjet and the sole remaining Mew Gull have exactly the same colour scheme, being both owned at one time by F. Dunkerley. The use of Roman lettering on the Sparrowjet is very unusual and in the left-hand photo the nose-mounted pressure head is seen without its present fairing. At right, on landing approach, the extra flap sections are visible and neat jet intakes seen at wing roots. Photo of cockpit interior appears in the 1954 "AJM ANNUAL."



The New

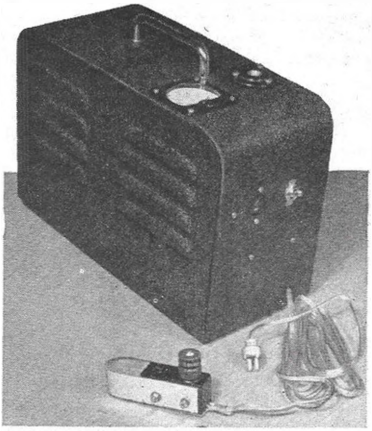
'AEROMODELLER' TRANSMITTER

BASED ON the original circuit described by Howard Boys in the June, 1952, "AEROMODELLER," this simple unit was designed and built by Ted Sills and the Editor in a matter of a few hours. All the components were purchased over the counter at a well-known model shop including the neat and workmanlike case. All are standard, the only "surplus" items being the Air Ministry pattern 0 to 50 M/a moving coil meter and micro switch, which are, in any event, in plentiful supply throughout the country.

It is emphasised that the prototype is a de luxe version incorporating many refinements that can be omitted if economy is necessary. This unit was, however, deliberately built de luxe, as the author feels that a transmitter is an instrument that should last a lifetime, and consequently worth spending a little time and money over. The B136 Batrymax which combines both H.T and L.T supplies for instance, costs a little more than ordinary batteries, but the plastic 4-pin plug that goes with it is already made up complete with colour coded flex. It certainly makes a neat and efficient job, and being designed for portable radio use, is small in size, thus permitting the construction of a very compact unit.

For those who wish to economise the following suggestions are made: The case can be home built or obtained government surplus: the 0 to 50 M/a meter can be omitted, especially if the builder has an All Purpose Meter as described in the April, 1950 "AERO-MODELLER." The leads that at present connect to the meter can then be connected to a polarised two-pin socket, with a shorting plug for when the meter is not connected. A cheaper plastic "on-off" switch can be used, and the micro-switch replaced by a plastic push button switch. The valve screen can be omitted, and the keying choke home built by winding two separate layers of 28 turns each of 22 gauge enamelled wire on a 9/16 inch paxolin tube 2 in. long. The tube should be drilled and slotted for attachment as shown. The Mullard DCC 90 or American type 3A5 valves can sometimes be obtained ex-Government at around 10/- each and there is another surplus valve that can be used, the 3B7/1291. This valve does, however, require a slightly larger valveholder, so the panel must be modified accordingly. It also has eight pins instead of seven, No. 5 not being used.

We are, however, hoping that the reader, after studying the photographs, will be only satisfied with a first-class job, and pass on to a detailed step-by-step description of the prototype. Pausing for a moment to mention that it was tested, using a standard E.C.C. 951A receiver, up to a range of 1 mile, at which distance the receiver was still giving maximum current drop.



Heading photo shows the completed unit with keying lead. Note the modification to the micro-switch which makes for comfortable handling. Right, method of winding aerial coil is demonstrated, showing how wire is kept taut whilst turns are wound on former

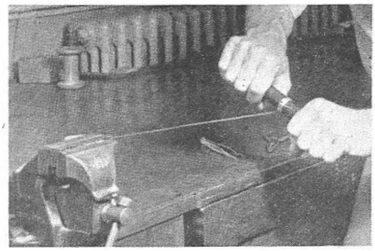
The receiver was only tuned once, this at close range, and no subsequent adjustments were found necessary.

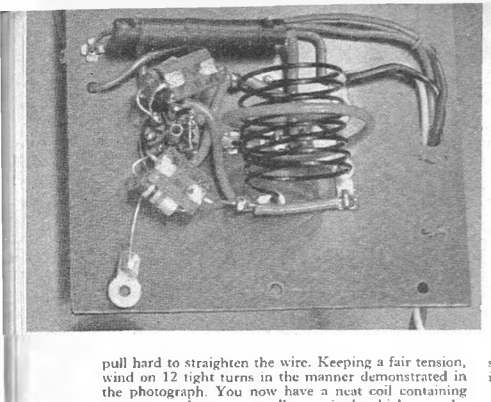
The Case

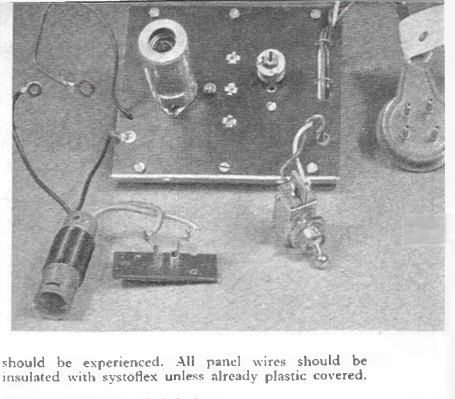
The case involves a fair amount of drilling, so if you can borrow the use of a bench or power drill so much the better. Holes must be drilled to take the switch, the keying lead socket, the meter, and the aerial socket. Again, if you can borrow a press tool for the large holes, you will save time and effort. If not, then they must be cut the hard way by drilling all round the circumference with an $\frac{1}{8}$th drill, and finally snipped out with a pair of snips. Use the actual accessories as jigs for marking out their mounting holes, and be careful with the somewhat brittle plastic of the meter when tightening up the mounting screws. Do not drill mounting holes for transmitter unit at this stage.

The tuning Coil

Find a $\frac{1}{4}$ in. diameter piece of dowel or tubing about a foot long, run a 1/16th drill through the centre at right angles. Take a 40 in. length of 18 gauge enamelled copper wire, thread it through the hole and take on a turn to get a grip. Secure the other end in a vice and







pull hard to straighten the wire. Keeping a fair tension, wind on 12 tight turns in the manner demonstrated in the photograph. You now have a neat coil containing more turns than are actually required, which must be cut down to eight full turns, leaving an additional $\frac{3}{4}$ in. of wire at each end, bent as shown for mounting. These ends must be scraped clean of enamel for soldering, also a small section in the exact centre for the centre tap. Take a short length of the same wire and remove the enamel. Form a small loop and solder this to the centre tap as per figure. The aerial coil is now ready for fitting in the appropriate sequence as given in the wiring instructions.

The Transmitter Unit.

The Panel is cut from 1/16th paxolin sheet, which is marked out on the underside by means of a scriber, as shown.

Firstly, make the hole for the valve holder by drilling round the circumference of the $\frac{5}{8}$ in. scribed circle with a 1/16th drill. Keep slightly to the inside of your guide line, and drill the holes as close together as possible. Using a balsa knife, cut through the divisions between the holes, working from both sides of the panel to avoid splitting the paxolin. Finish off the hole with a round file, followed by emery paper round the file or a piece of dowelling.

Drill the remainder of the panel holes exactly as pattern with an $\frac{1}{8}$ drill, using a pilot drill first so as to obtain clean holes.

Scrape all tags and component connections before fitting, until you have bright metal. This is important as it makes for good soldered joints.

Fit eyeletted tags by rivetting them to the panel, most people do this by means of a centre punch. A good tip passed on by Ted Sills, is to grind faces on the tip of a punch so as to form three or four cutting edges. This then splits the underside of the tag with the result that it locks more securely to the panel, lessening the risk of a tag swivelling and causing a short circuit.

Fit the valve holder, making a special note that the wide space between the pins coincide with that between pins 1 and 7. Add double ended solder tags under each screw. Temporarily fix single ended tag to **M** with a 6 B.A. nut and bolt, this for earth lead connection. Lash the battery lead to the panel with waxed thread, leaving 3½ in. between the edge of the panel and the neck of the plastic plug. *Do not cut* any of the plug leads at this stage. Colour code for the leads, as supplied, is as follows:

H.T	**— RED**	**L.T**	**— BROWN**
H.T	**— YELLOW**	**L.T**	**— BLACK**

Wiring Connections

The diagram shows the underneath of the panel with all the various tags keyed for easy reference. If you follow the sequence exactly as given, then no difficulty should be experienced. All panel wires should be insulated with systoflex unless already plastic covered.

1. Connect **M** to **A1** to pin 4 of valve.
2. Connect **B1** to **H.**
3. Connect **Black** and **Yellow** battery leads to **H.**
4. Connect 10k resistors in turn, one from **A2** to pin 3, one from **B2** to pin 5.
5. Fit 30 pf Beehive by soldering centre pin through tag **G.** Trim off surplus pin. (N.B.—This on the top of the panel.)
6. Connect pin **2** to tag **E** continuing connection to side contact of Beehive. *Do not* solder to Tag **E** at this stage.
7. Connect pin **6** to tag **C**, continuing lead to Tag **G**, again not soldering to tag **G** at this stage.
8. Connect one 100 pf capacitor between pin **3** and tag **C**, and the other between pin **5** and tag **E**
9. Thread Brown battery lead through hole **L** and twist with it a similar length of flexible lead, sufficient to run from the switch to the valve holder. Connect this switch lead to pins **1** and **7**, stripping enough covering to run wire from **1** to **7**.
10. Thread **RED** battery lead through hole **N**, running it alongside the switch lead, and tying it with waxed thread to this lead, and the lead already joining **B1** and **H.**
11. Bend one lead of R.F. Choke at right angles, remembering to scrape ends of both choke leads before soldering. Connect right angled lead to tag **D**, the other end to tag **J.** Cut off excess wire after soldering.
12. Cut 5½ inches of 18 S.W.G. wire, scrape bare 3/16 inches at each end, and insulate with systoflex. Insert one end into centre hole of tag **H**, passing wire under R.F. Choke connection. Form into a single loop of 1¼ inch diameter, and solder other end into centre hole of tag **F.** Ensure that this link coil straddles centre tag **D.**
13. Thread coil carefully through the link coil and solder coil connections to tags **C, D** and **E.**
14. Cut the two mounting brackets to shape to fit Rx panel. Bend in vice and drill 6 B.A. holes. For this particular case, the brackets measure ¾ by 4 inches and 3¼ by 4 inches before bending.
15. Bolt brackets to Tx panel, and offer the Tx chassis complete to the case. Mark position of fixing holes on the inside, using the brackets as a jig. Pip marks with sharp centre punch from the inside which will indicate position of hole on outside of case.
16. Cut switch leads 3½ inches from panel, bare ends and solder to switch. Cut H.T. lead to 5½ inches and terminate with 4 B.A. solder tag. Cut 6 inches of covered flexible wire, solder to tag **F** and bind, this being the aerial connecting lead.
17. Bare covered ends of keying choke leads, solder 4 B.A. tag to one, the other connects to tag **M.** Scrape ends of the two enamelled wire leads, cover with systoflex, and connect to keying socket.
18. Screw chassis to case, also the keying choke, the two-pin socket and the "on-off" switch.
19. Connect red H.T lead to positive terminal of meter, and remaining lead of keying choke to negative meter terminal. Solder aerial connection to tag on aerial mount, remembering to bind with waxed thread. *Keep all leads clear of beehive tuning condenser.*

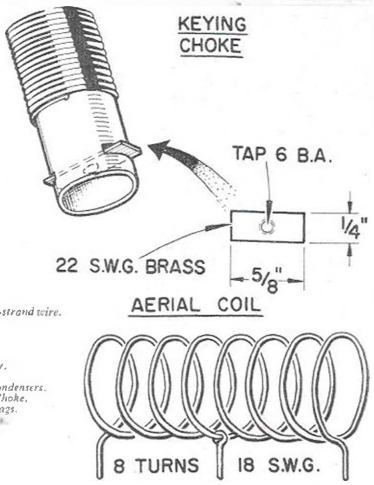
Well, that completes our transmitter as far as construction is concerned, leaving two vital tasks to be completed before it can radiate energy into the ether. Firstly, make a thorough check of all wiring, keeping in mind that fact that valves cost 29s. 6d. per time! If you are satisfied, assemble the aerial, plug in the keying lead, switch on, allow a second or two for the valve filaments to warm up, and press the keying switch. The reading on your milliameter should be 27 M/a approximately with full aerial.

Tuning

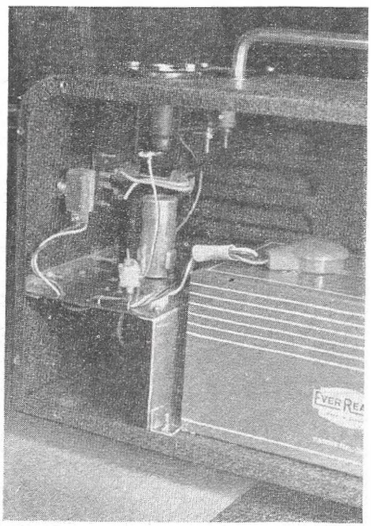
Now we come to the tricky part. Tricky because few people have the equipment for accurately tuning transmitters to the specified G.P.O. frequency. One or two of the larger model shops specialising in radio control, do offer frequency checking services at a nominal fee. We shall be pleased to put readers in touch with their nearest frequency checking service on receipt of a stamped addressed envelope. People who are not in a position to take their transmitters for tuning, and who must send them by post, should make certain that they are very securely packed. They should be well insulated against bumps en route and enclosed in a stout carton. Do not forget to enclose the necessary amount for return postage in addition to the fee.

PARTS LIST

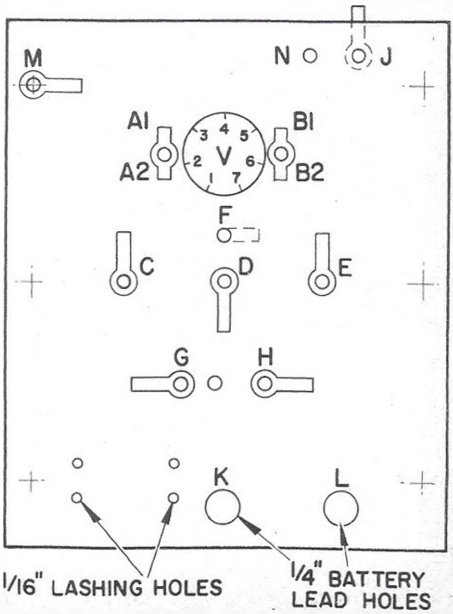
Case
4½ *by* 4 *in. of* 18 *gauge Aluminium Sheet.*
½ *by* 4 *in. of* 1/16*th Paxolin.*
1 *"On-off" Switch.*
1 *Polarised* 2*-pin plug and socket.*
1 *Keying Choke.*
1 *Aerial Socket.*
1 0-50 *M/a Moving Coil Meter.*
1 8 *ft. Sectional Aerial.*
1 *Ever-Ready B.*136 *Batrymax* 90*v.*
1 *Ever-Ready Plastic* 4*-pin plug and lead.*
12 6 *B.A. nuts and bolts.*
3 4 *B.A. nuts and bolts.*
1½ *ft. Systoflex.*
1 *ft. Plastic covered multi-strand wire.*
1 *ft.* 20 *gauge tinned wire.*
1 *D.C.C.* 90 *valve.*
1 *Valve screen.*
1 *B7G valve holder.*
1 30 *pf. Beehive condenser.*
2 10*k Resistors.*
2 100 *pf.* 5 *per cent. Condensers.*
1 *Eddystone* 1011 *R.F. Choke.*
8 *Single-ended rivetting tags.*
2 *Double-ended valve tags.*
1 *Micro switch and lead.*



Pictures opposite show, left, underview of panel, and right, top view with ancillary components connected. Below, the complete unit assembled in case. A wedge of corrugated cardboard is slipped between battery and mounting bracket to prevent the battery moving about when travelling



PANEL LAYOUT shown actual size



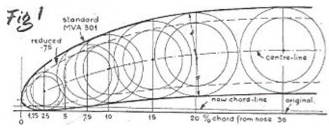
Slimming your Sections

The mysteries of "percentage" airfoils explained by that well-known Dutch authority—

JUST VAN HATTUM

HERE'S how to obtain that thinner section so freely quoted by the experts. Thinned sections are popular for tail surfaces, and are current vogue for A/2 wings—the simple process being as follows.

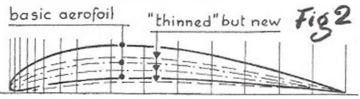
The centre line is the line which contains all the points which are equidistant from the upper and lower surfaces. It can be constructed by drawing inscribed circles in the aerofoil and connecting the centres of these circles by a smooth curve. See *Fig.* 1.



If one draws a new set of circles with a *fixed reduced radius* (*e.g.* 75 or 60%) on the centre-line, the tangential curves drawn to these circles will give us the new reduced aerofoil.

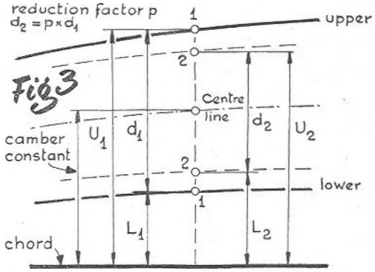
If one reduces the original aerofoil down to the centre-line one is left with the curved plate. The centre-line has become the reduced aerofoil.

This method is reliable, provided the aerofoil is drawn to a large scale, say 20 inches. When the new aerofoil shape has been found, a new table of ordinates is calculated by actually measuring up the dimensions at the usual standard stations. It should be noted that the new aerofoil will have a new tangential chord-line, which usually turns at a slight angle from the tail to the nose. There will be no difficulty in establishing the table with reference to the new chord-line.



It will be clear that a complete table of ordinates is desirable. Unless one has tabulated the ordinates, it will not be possible to use the aerofoil on any desired chord at any time one desires. *Fig.* 2 shows the method sometimes mistakenly adopted (which takes all reduced measurements up from the base line), does give us a reduced section but an entirely new shape. All ordinates have been multiplied by a reduction factor. It will be seen that a new centre-line emerges which immediately stamps it as a different thing altogether.

Apart from a careful construction it is also possible to use an approximation which gives quite good results. There is, however, a slight inaccuracy in the larger ordinates at the pronounced curvature near the nose, which may amount to 0·1% of the chord (6/1000 inch on a 6 inch chord). *Fig.* 3 shows the principle of this method which has been expanded in the table given by *Fig.* 4. The work



appears more involved than it actually is. The reduction factor "p" is multiplied by measured aerofoil depth, above and below centre-line, and the result plotted from the common base-line.

When comparing the two methods by plotting the same aerofoil on an 8 in. chord the error proved

MVA 301 Standard and reduced to 75% thickness.

	% Chord	0	1.25	2.5	5	7.5	10	15	20	30	40	50	60	70	80	90	95	100
MVA 301 standard	upper	1.17	3.90	5.10	6.85	8.20	9.15	10.60	11.50	12.25	12.00	11.10	9.60	7.80	5.80	3.35	2.00	0.30
	lower	1.17	0.15	—	0.25	0.65	0.95	1.45	1.87	2.35	2.50	2.45	2.30	1.90	1.40	0.80	0.37	—
MVA 301 75%	upper	0.7	2.7	3.9	5.5	6.7	7.6	9.1	9.9	10.6	10.5	9.8	8.5	6.9	5.0	2.9	1.7	0.2
	lower	0.7	—	—	0.5	0.9	1.3	2.1	2.6	3.2	3.4	3.3	2.9	2.4	1.8	1.0	0.6	—

% from nose	upper U	lower L	U-L	$\frac{U-L}{2}$	t+p	t-p	(t+p) $\frac{U-L}{2}$ A	(t-p) $\frac{U-L}{2}$ B	A+L upper	B+L lower
0	---	---	---	---	---	---	---	---	---	---
1.25	---	---	---	---	---	---	---	---	---	---
2.5	---	---	---	---	---	---	---	---	---	---
↓	---	---	---	---	---	---	---	---	---	---
15	10.60	1.45	9.15	4.58	1.75	0.25	8.03	1.15	9.48	2.60
	---	---	---	---	---	---	---	---	---	---

Fig 4

to be immaterial and less than the degree of accuracy with which one is able to plot an aerofoil and later transfer it to the actual structure. One can, however, construct the nose portion with the method given in *Fig.* 1. When the table has been calculated, the aerofoil should be drawn again from these figures and adjustments made for "kinks" and irregularities.

The aerofoil constructed as in *Fig.* 3 will again be plotted with reference to the original chord-line and the lower surface will not touch the chord-line except at the tail. This has relatively little significance, and it should not cause anxiety!

Both methods entail rather a lot of plotting and calculating, but one cannot obtain a table of ordinates for future use in another way. If however, one needs to fix a simple rib of a thinned down aerofoil one can use *Fig.* 5. Here the plotting is done entirely "by eye" and is quite suitable for a "one off" job. With some care and patience one can get surprisingly good results, but the new aerofoil cannot quite earn the mark of true reduction.

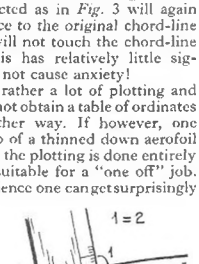


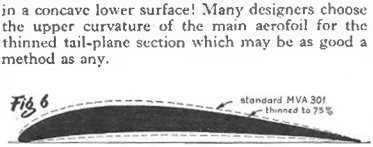
Fig 5

A true centre-line still has to be constructed for use as a basis for symmetry since it is not exactly a simple matter to guess the centre point when measuring off with the ruler for each change in upper or lower camber. For small chords, wanted quickly, the ruler method is good enough.

A table is given of the well-known and excellent MVA 301 aerofoil in standard form and reduced to 75 per cent. It has been constructed according to *Fig.* 1 on a 20 in. chord.

There are a good many aerofoils which will show up well under this slimming treatment, but it will need no underlining that the actual construction of the wing should match the care and accuracy spent on the new aerofoil.

An apparently simple case is the aerofoil with a flat lower surface, but study of *Fig.* 2 will show that true reduction about the centre-line will result in a concave lower surface! Many designers choose the upper curvature of the main aerofoil for the thinned tail-plane section which may be as good a method as any.



Engine Analysis (*continued from p. 643*)

to eliminate such inherent sources of error, as far as possible. The engine itself was radially mounted on a ¾ in. plywood bulkhead, again simulating "normal application" conditions. With beam mounting a somewhat higher vibration level would probably have been present.

Torque output was steady at 5 ounce-inches over the ower range of operating speeds, and maintained down to about 6,500 r.p.m. Below this, torque dropped off appreciably. At the other end, speeds approaching 14,000 r.p.m. were achieved with propeller loads. Hand starting was employed in every case and proved quite easy and quick. (Note: some fuels, notably Mercury No. 8, tended to produce a more vicious start. This was noticeably absent with Allbon fuel.)

A pleasing feature was the Merlin's ability to swing small diameter high-pitch propellers at high speeds, which should therefore make it a very attractive power plant from the control-line modellers' point of view. A 6 × 5 propeller would appear about the best size for control-line stunt and the same, or 6 × 6 for team racing. Fuel consumption checked was 22 seconds per c.c. at 7,000 r.p.m. and 17 seconds per c.c. at 10,000 r.p.m.

For free flight, a 7 × 4 propeller appears just the right size, or possibly a 7 × 3 for maximum climb. An 8 in., diameter propeller appears about the maximum size for useful performance.

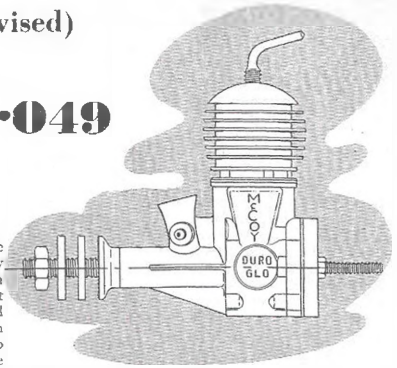
Constructionally the Merlin represents the application of standard mass-production methods allied to straightforward design. The steel cylinder is an apparently slack fit in the crankcase casting, yet beds down very nicely on its thin gasket when the light alloy cylinder jacket is screwed in place. This assembly, incidentally, was very good and showed no signs of unscrewing during running. The 360 degree transfer and exhaust porting is non-directional in the sense that it does not matter in which (rotary) position the cylinder is assembled. Neither, surprisingly enough, does it matter very much how the spray bar is assembled, *i.e.* in which direction the hole is pointing.

The piston appears somewhat on the heavy side and again of simple design. Main crankcase bearing is plain which appears more than adequate for this size of engine, and again makes for simplicity. There is a fair fore and aft play when assembled which can produce a disturbing "clank" as the engine stops, but this again is probably the result of working to *practical*, rather than extreme tolerances. Beam mounting holes are drilled to take 8 BA screws. Main screws bolting the crankcase assembly together are 6 BA—a size which may prove a little difficult to match with an American standard—the nearest equivalents being Nos. 3 or 4 (NC or NF). Our suggestion here—produce the "export" models with American screws, and long enough for use for radial mounting. Also we feel that with all radial mounts, especially where assembly screws also serve as hold-down screws, a lock nut is essential. Yet no engine manufacturer seems to feel the same way and leaves the customer to purchase lock nuts separately.

Our general impressions: a wonderful little engine for 47s. 6d. and of a size which, if not an official British "class," we feel is most welcome. Although production costing has meant the sacrifice of one or two refinements, performance does not appear to have suffered in any way. In fact, the Merlin will give away another quarter of a c.c. and do a "man-size" job directly comparable with its 1 c.c. brother. It is a pleasant and easy engine to handle and looks rugged enough to last indefinitely.

ENGINE ANALYSIS (Revised)

The McCOY ·049 "Duroglo"



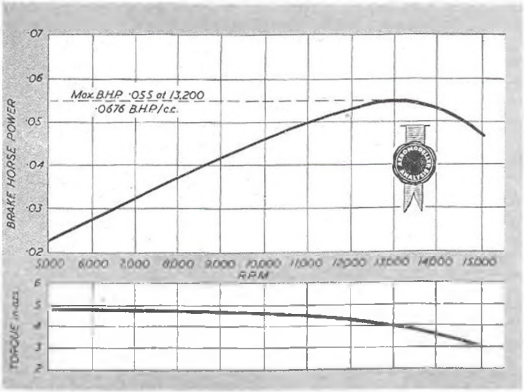
EXTENDED TESTS on a new-type reaction cradle established the maximum B.H.P. of the McCoy ·049 as ·055, at 13,200 r.p.m. Particular attention was paid to obtaining stable and accurate figures at the lower r.p.m. range. Like many other high-speed engines, the McCoy is not particularly happy when loaded down to speeds below about 8,000 r.p.m., so that steady readings below this r.p.m. figure are not readily obtained. It does now appear certain, however, that the torque figure remains appreciably constant over a range of some 5,000 r.p.m. then dropping off steadily, but not rapidly.

Maximum B.H.P. is realised at a speed just in excess of 13,000 r.p.m., equivalent to a propeller size of $6 \times 2\frac{1}{4}$ in. (constant geometric pitch). A 6×3 propeller would, therefore appear to be the correct size for free-flight models.

An interesting feature is that the r.p.m. figure can be extended well beyond the peak horse power r.p.m., the engine continuing to run steadily and smoothly. It was felt advisable to stop at 15,000 r.p.m. as this was obviously well beyond the B.H.P. peak but maximum speed obtainable with a flywheel (no load) would probably approach 17,000 r.p.m. At this speed, of course all the power developed would be used up in driving the engine itself. In other words, torque output would be zero and the engine would not be capable of doing any useful work.

The fallacy of over-speeding an engine is exemplified by the fact that the power delivered at 15,000 r.p.m. is about the same as at 10,000 r.p.m. In other words the "working capacity" of the engine is the same at these two speeds, with wear obviously much higher at the higher speed.

Initial tests were terminated by the breaking of the crankshaft. The new crankshaft featured the same rather loose fit in the main bearing, resulting in some fuel seepage through the bearing. Virtually, no additional period of running in was necessary, propeller-r.p.m. figures checking out identical with those previously established for the run-in engine.



Despite comments from other sources, the McCoy ·049 confirmed the "easy starting" characteristics mentioned in the previous report. The only unusual feature, as compared with British diesels, is the lack of "feel" on the compression adjusting screw, due to the use of an O ring for compression seal and elastic adjusting screw seating. However, compression setting is not very critical for starting and, provided the engine is sufficiently primed, starting is very positive.

The previous test report was published in the October, 1953 issue of "THE AERO-MODELLER."

CLUB NEWS

IT SEEMS that rubber team-racing is becoming a standard indoor activity for the winter months, and great fun it is too. If your club hasn't got in on it yet, take a look at the N.W. Area rules given below; you can knock up a model in an evening and any room giving a clear twelve-foot circle is adequate. It's a contest that everyone can have a bash at—even the juniors can afford it!

South Eastern Area

Still engaged on a new member drive which has included newspaper publicity, window displays, an information sheet sent to anyone interested, and the insertion of cards giving club details into all kits sold by the local model shops, the **SOUTHERN CROSS A.C.** has recommenced its Saturday evening meetings at East Hill House, Portslade. Scheduled are building periods, talks, and educational diversions of various types.

North Western Area

Postponed contests in **CHESTER M.F.C.** have now been flown off. Open power went to C. R. Fittness, with D. Dodd top junior; team race was won by the Wilde/Nichols/Williams combo. flying a tailless pusher. A recent slope-soaring foray into the hills around Clwyd was thoroughly enjoyed.

Thirteen flights aggregating 30 : 23 deservedly earned John O'Donnell the Croydon Gala Championship. Brother Hugh was sole **WHITEFIELD M.A.C.** member with any joy at the Y.E.N., 5th in rubber and 2nd in chuck glider. John placed top in the Area clims. (Wakefield) and also returned top individual time in the M.E. Cup. Same man and place again in the A2 eliminator, and he even entered power, coming around fifth! Area Champion with 37 : 32 aggregate proved to be—need we say? Other club successes include J. Parrott, 1st in the power eliminator with 14 : 38, and J. Trainer, 3rd in Wake.

Rules for indoor rubber team racing have been standardised by the Area Committee, and a league (home and away fixtures—wot, no 12X?) is being formed. D. Cooke, 63 Stancliffe Road, Wythenshawe, will give you the gen, but here briefly are the rules: (i) rubber driven, semi-scale, celluloid cockpit or cabin, fixed two wheel u/c, 1 in. wheels; (ii) max. l.o.a. 20 in. (iii) min. span 12 in.; (iv) max. weight 2 oz.; (v) 6 ft. line, pole to inside tip; (vi) pivot height 3 ft.; (vii) R.O.G. after each winding; (viii) 3 flights per contest, lowest counts, all attempts are flights; (ix) 40 laps, bounce laps do not count; (x) timing commences on release after initial winding and includes all subsequent winding; (xi) Team is 3 from a club, team aggregate (lowest scores) counts.

Southern Area

This certainly seems to be the Area for club magazines. No. 3 of the **FARNBOROUGH M.A.C.'s** "Ceiling Wax"—eight foolscap pages—has just reached us and provided interesting reading. Even has a trade review! No. 4 may be delayed, as the editor is just off for National Service; this fate is also overtaking one or two other members, depleting the active list somewhat.

Flight of 23 : 10 is recorded in a **BOURNEMOUTH M.A.S.** contest—in 1933! This flight, by A. D. Paine, took place on quite a day, for other flights included 7 : 31 and 9 : 50—some going in those days. Such thermals do still occur occasionally, as witness a recent club comp. when four D.T'd jobs were lost o.o.s.!

In the **B.M.A.S.** v. **WEST HANTS A.A.** challenge match the latter club won the second (power) round with Sid Taylor 1st and clubmates 3rd, 4th, 5th and 6th. All now depends on the results of the glider round. West Hants also collected the honours at the S.R.D.E. Team Race Rally, A. Jones winning A and D Seal B, with **AMESBURY** members runners-up in each event. Winter plans include microfilm, chuck glider, and R.T.P. rubber and Jetex.

Luck deserted **SOUTHAMPTON M.A.C.** in the Area eliminators at Larkhill, and at Radlett, where junior N. Worley experienced the mixed emotions normally following a direct hit on an over-enthusiastic camera-wielder!

So many members have enrolled in the **SALISBURY D.M.E.S.** that meetings have had to be broken down to Engineering Mondays, Aeromodelling Tuesdays, Railways Wednesdays, and Cars Fridays. Thursday is open for G.Ms, lectures, etc. A small gauge railway layout and a car rail track are being built.

East Anglian Area

The A.G.M. for this Area will commence at 2 p.m., on November 28th, at **BRENTWOOD M.E.S.** clubhouse, Primrose Hill, Gen. from the Area Sec., 28 Highfield Road, Chelmsford, if required. Tea will be laid on, followed by a film show, main attraction being three colour films of recent Wakefield contests.

South Western Area

Scattered population means high interest in postal contests in the S.W. **TORQUAY** club, flying on a field which is actually a complete headland with water on three sides (cor!) narrowly beat **EXETER** in one such

CONTEST RESULTS

GUTTERIDGE TROPHY, September 19th.
134 entries.

1.	J. O'Donnell	Whitefield	14 : 57
2.	A. Anderton	Cheadle	14 : 22
3.	J. Trainer	Whitefield	14 : 15
4.	R. Bladwin	Wigan	13 : 57
5.	C. Miller	Bradford	13 : 48
	G. Thomas	Slough	13 : 48

MODEL ENGINEER CUP, September 19th.
31 entries.

1.	West Middlesex		32 : 08
2.	Croydon		31 : 44
3.	Northwick Park		25 : 29
4	Surbiton		25 : 12
5.	Chelmsford		24 : 53
6	Belfairs		24 : 48

K. & M.A.A. CUP, October 3rd.
263 entries.

1.	E. Midgley	Barnsley	13 : 29
2.	E. Thompson	Northampton	13 : 12
3.	J. O'Donnell	Whitefield	12 : 50
4.	—. Remington	Loughborough	12 : 34
5.	D. Leech	Northwick Park	12 : 15
6.	E. North	Halifax	12 : 13

HALFAX TROPHY, October 3rd
153 entries.

1.	J. Parrott	Whitefield	14 : 38
2.	D. Painter	Henley	13 : 53
3.	G. Hutton	Wallasey	13 : 35
4.	M. Gaster	C.M.	13 : 27
5.	I. Donald	Dunfermline	13 : 11
6.	G. French	C.M.	13 : 04

PLUGGE CUP

Croydon	1326 : 48
Birmingham	1325 : 133
West Middlesex	1117 : 655
Cheadle	1012 : 723
Leeds	1000 : 930
Whitefield	970 : 908

event; **PLYMOUTH** won the Area Shield in another by a convincing win (16 pts. to 2) which has left the Exeter boys still shuddering.

London Area

Two exhibitions, one at a horticultural show and one at R.A.F. Hendon's "at home," have kept **MILL HILL D.M.A.C.** well in the public eye. Junior members did well at Radlett, P. Carey with 2nd and 5th in seaplane power and open rubber, and R. Thoroughgood, 4th in seaplane rubber.

Filliped by a newly-available stretch of tarmac, **HORNCHURCH M.A.C.** have come out in a rash of C/L speeditis. Dead calm conditions obtained at the latest all-in club comp., giving the rubber stalwarts the inside edge; two ultra-lights, Dave Thompson 5 : 51 and Len Ranson 5 : 18, headed the results sheet. Vote of thanks is moved to Radlett police by R. Bishop, whose large glider is back thanks to them.

South Midland Area

Recent Area results are—Wakefield elim. (9 entries), R. Clements (Luton) 8 : 58, M.E. Cup West Herts, 23 : 36, Power elim. (7 entries) D. Painter (Henley) 13 : 53. A2 elim. (26 entries) P. Larcey (Henley) 10 : 44.

The Colvings Shield, for Wakes in **LUTON D.M.A.S.,** was won by D. Wood. Roy Clements put up one terrific o.o.s. and spent all night making a model for the Gutteridge (see Area results above). Sid Miller put his R/C button down to fly a converted Wakefield in the M.E. Cup, in which the club placed third in the Area.

C/L is the rage—especially combat—in **R.A.F. HALTON M.A.S.** Constant flying enabled the boys to put on a crackling display at the station's "at home." Radio is on the up, plus A2 and F/F aerobatic interest, and an indoor programme is all lined up.

Northern Area

Twenty ounces of amyl nitrate is scheduled to disappear into the crop of Olivers now acquired by **LEEDS M.F.C.** Many other engines are being souped with divers (and diverting) results. Affiliation with Bradford is in the wind.

Successes in the eliminators by **BRADFORD M.A.C.** include C. P. Miller 1st in Wakefield with 13 : 48, with A. Miller 3rd, 12 : 39, and D. Lees 5th, 12 : 12. In Power S. Lanfranchi topped with 11 : 50, despite over-runs causing his *Swiss Miss* to lose a flight, S. Eckersley was 2nd with 10 : 55 and four of the next seven places also went to Bradford clubmen.

MEANWOOD I.M. close their first contest year with 11 1sts and 4 2nds or 3rds out of 15 combat contests entered. Ten of the wins were with the *Ker* design, the other with a *Kombat Kapers*.

Scotland

Friday night is club night for **EDINBURGH M.F.C.,** the venue being Ainslie Park School, Pilton. With an 8 ft.-rising-to-14 ft. ceiling. U. A. Wannop has exceeded two minutes F/F—not bad going.

Well, don't get these flimsies stuck on the holly!

Cheers—

The CLUBMAN.

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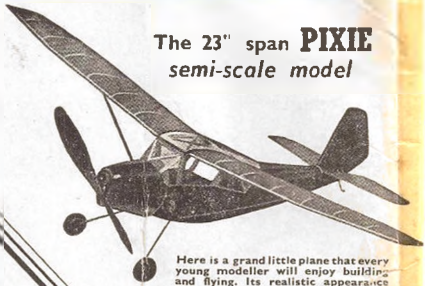

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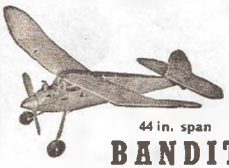

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