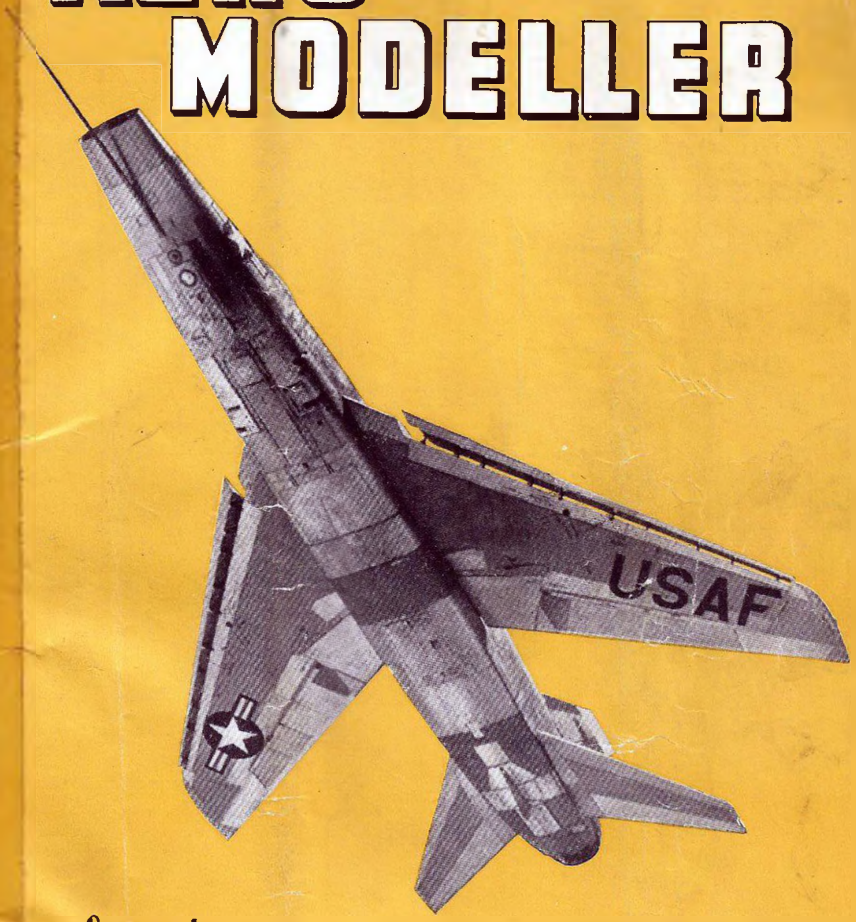
AERO MODELLER

JANUARY 1955



Special
SUPER SABRE
Feature

1'6

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

Digital Edition Magazines.

AeroFred Gallery Free Plans.

http://aerofred.com/index.php

Hip Pocket Aeronautics Gallery
Free Plans.

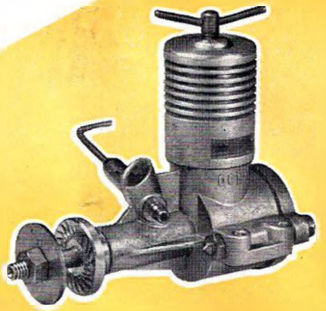
http://www.hippocketaeronautics.com/hpa_plans/index.php

Diligence Work by Hlsat.

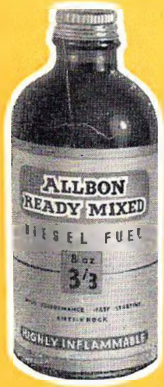
The right Engine

"A wonderful little engine that will do a man-size job, comparable with its 1 c.c. brother." Says Ron Warring in "Engine Analysis," and modellers everywhere are already finding how outstanding the performance of the "Merlin" really is. Designed for beam or radial mounting, it weighs only $1\frac{3}{4}$ ounces, and has a capacity of .76 c.c. or .046 cu. in. Undoubtably the *right* engine whatever your class of modelling, and certainly one that will last you a modelling lifetime.

and only 47/6



ALLBON MERLIN



There are many fuels but only one Allbon Super Fuel! Special additives give this five part blend of quality ingredients the characteristics that model engines need most. Easy starting, power, smooth running, and cleanliness are its main virtues, and for this reason we recommend it for our own engines. Ask your local dealer for a bottle and note the immediate improvement in your motor's performance. Nothing has been left to chance with this Super Fuel, which is bottled in special dark glass. This excludes light from the ingredients, thus ensuring that shelf life in no way causes deterioration. Any modeller experiencing difficulty in obtaining supplies should contact the manufacturers direct who would appreciate hearing from him.

Price 3/3 from your Local Model Shop

DAVIES CHARLTON LIMITED
Barnoldswick via Colne Lancs
Tel. Barnoldswick 3310

and the right Fuel

WORLD WIDE MAIL ORDER Service

NEW LINES FOR THE NEW YEAR

Your Kit List

A selection of today's popular sellers. (Prices in brackets are for P/T and must be added by purchasers in Great Britain and N. Ireland.)

FROG

Zephyr F/F	9/– (1/6)
Vantage C/L	17/3 (2/9)
Vandiver Mk. II C/L ...	12/6 (2/–)
Mirage C/L	9/– (1/6)
Tarquin F/F	10/9 (1/9)
Mamba Rubber	6/3 (1/3)
Witch Mk. II	11/3 (1/9)
Vespa Sailplane	7/6 (1/–)

SENIOR SERIES

All models, rubber, each 4/2 (9d.)

MERCURY

Texan C/L	13/4 (2/2)
Jnr. Monitor	19/9 (2/9)
Magna 30" F/F	11/–(1/10)
Matador 50"	21/6 (3/7)
D.H. Tiger Moth (Scale)	28/6 (4/9)
Aeronca ...	57/– (9/6)
Marauder A/2	14/6 (2/9)

SKYLEADA

Hornet C/L	8/11 (1/7)
Jetmaster Series 7	5/11(3)
Star Series	3/– (6d.)
Silhoujettes	2/2 (4d.)

VERON

Sabre (D. Fan)	25/– (4/2)
Spitfire C/L	27/6 (5/7)
Sea Fury C/L	23/6(3/11)
Panthor C/L	25/– (4/2)
Hi Climber	25/– (4/2)
QUICKYS, SOLIDS, LAUNCHES, Etc.	

Paramount

Sunanvind Glider	10/–
Moose 69" Glider	22/6

JETEX

Skyray ...	8/– (1/6)
Hawker Hunter Swift ...	18/– (3/–) 18/– (3/–)

Keilkraft

Scarer Minor	8/– (1/5)
Scarer Major	11/6(1/11)
Slicker 50"	25/– (4/2)
Southerner	40/– (6/8)
Piper, Super Cruiser, Cessna 170 Luscombe Gipsy 40"	18/6 (3/1)
Rubber	10/6 (1/9)
Competitor 32"	7/– (1/2)
Pixie 23" ...	4/– (8d.)
Bandit	20/– (1/7)

WEBRA PICCOLO ·8 c.c. DIESEL

A power unit de-luxe for the modeller who really wants big performance in the under 1 c.c. class. Develops .075 h.p. at 14,000 r.p.m. Weight (less tank) only 1¼ oz. Distributed in Gt. Britain exclusively through Arthur Mullett. **55/-**

AVAILABLE ONLY FROM ARTHUR MULLETT

FOR EXPORT ONLY

ELFIN 1.49 c.c.

New twin ball-race engine, incorporating clack valve and new style housing. ... ... 78/–+13/–

ELFIN 1.8

As above but larger capacity ... 79/6+13/6

AEROMODELLER ANNUAL

This year's is the best yet. No modeller should be without. *(Add 6d. postage.)*

Many other modelling books and publications stocked.

JETEX

Available as released by makers.

Model Space Ship

Jetex principles are applied to their logical conclusion in this brilliant SAFE model.

Price complete	47/6
SKYROCKET for Jetex 50B	10/6

JASCO

Already well known for a range of models acceptable to beginners, JASCO have added new ones for powered flight, all characterised by ease of construction.

TRACER

C/L lob for 1.5 to 2.5 c.c. diesels 18/6 (2/3)

TROJAN

Beginner's C/L for .5 to 1.5 c.c. engines ... 9/– (1/–)

TIGER

36" F/F model for .5 c.c. diesels 11/– (1/6)

TRIUMPH

Rubber Duration ... 7/3 (1/3)

TUTOR

Towline Glider ... 4/6 (6d.)

ARTHUR MULLETT GIFT VOUCHERS

Announced in our Christmas issue advt., these highly successful vouchers will be available for ordering up to Dec. 24th, 1954. Minimum value 10/– may be spent up to 4 months from purchase date in person or by post on any lines stocked.

HAVE YOU GOT

plenty of Balsa, tissue, cement, fuel, dopes, etc. I supply everything needed for finishing and flying and the tools as well-

AM-PULL C/L HANDLE

(made under licence) with vernier adjustment For lines 5/6 (9d.)

AUTOMATIC VARIABLE PITCH PROP

For Engines up to 5 c.c. *Automatically* varies pitch to suit engine. Maintains constant engine speed. Self-feathering when engine cuts. With spinner and instructions. 22/- (3/8) Prop diam. 9". Spare Blades 2/8

FROG NYLON PROPS

6"—4" ...	1/3½ (2½d.)
8"—5" } ...	2/6 (5d.)
8"—6" }	
8"—8" } ...	3/– (6d.)
9"—6" }	
10"—6" }	

Frog Plastic also stocked.

CELSPRAY GUN

Model No. 3. With 5 years' guarantee ... 8/6

X-ACTO TOOLS AND KNIVES

Full range stocked as advertised.

BONDAGLASS

Today's miracle building material (all surfaces). Wonderfully tough and light. Can be sanded, coloured, etc. Complete kit with 72"x2" "Bondaglass" strip, Polyester Catalyst and instructions, 5/– (11d.)

"DROME" AIRWHEELS

2" wheels 3 oz. per pr. 7/–
22" wheels 11 oz. ,, 8/9
32" wheels 22 oz. ,, 10/6

Wolf Power Tools available Details on request.

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ENGINES

FROM BRITAIN'S LARGEST RETAIL STOCKISTS

E.D. Baby .46 c.c. ...	45/– (7/3)
Frog .5 c.c.	43/– (7/–)
Allbon Dart Mk. II ...	54/–(10/2)
Mills 0.75 c.c. with cut-out ...	55/–(8/10)
Mills 0.75 c.c. without cut-out ...	50/– (8/–)
Frog 50	42/9 (7/3)
Mills P.75	50/– (8/–)
Allbon Merlin 0.76 ...	42/– (5/6)
E.D. Bee I c.c. ...	47/6 (7/3)
E.D. 2.46 c.c. Racer ...	72/6 (6/–)
E.D. Hunter 3.46 c.c. ...	72/6 (6/–)
Amco 3.5 B.B. ...	78/8(14/9)
Amco 3.5 P.B. ...	60/–(11/3)
D.C. 350	66/–(12/5)
D.C. 350 G.P. ...	66/–(12/5)
Frog 500 G.P. ...	61/6(10/–)
Frog 500 I.C. ...	70/–(11/6)
Allbon Spitfire I c.c.	54/–(10/2)
Mills 1.3 c.c. ...	75/–(12/6)
E.D. 1.46 c.c. ...	52/6 (4/6)
Frog 150	42/9 (7/3)
Allbon Javelin ...	55/–(10/4)
E.D. Comp. 2 c.c. ...	57/6 (4/3)
Allen-Mercury 25 ...	57/–(9/6)

WEBRA

A limited number of these famous engines available also for the home market.

RECORD148	65/–
WINNER 15	70/–
MACH 1, 2.46 B.B. de luxe	90/–

A.M. SERVICE MEANS guaranteed goods to ALL buyers at home and abroad, prompt despatch and a fair deal always. Overseas orders acknowledged at once by air mail.

RADIO CONTROL

ALL E.D. and E.C.C. EQUIPMENT including

E.D. Boomerang including Escapement ready wired	106/8 (20/–)
E.D. Boomerang Rx only	89/– (16/–)
E.D. Mk. II 3-valve	184/– (34/6)
E.D. Mk. IV Reed	24/– (45/–)
E.C.C. 951A Rx	68/– (11/4)
E.D. Mk. III Escapement	18/6 (3/3)
E.D. Mk. I Escapement	47/6 (9/6)
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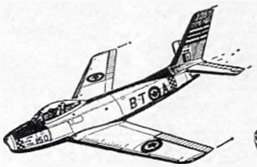
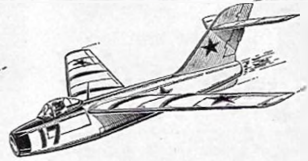
YOUR HOBBY WILL BRING YOU A YEAR OF PLEASURE !

"VERON" BOATS and AIRCRAFT are unsurpassed for performance and realism and whether you are an experienced model maker or a newcomer to this fascinating pastime you will find just what you require from a really wonderful range of kits.



SABRE



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Powered by the "IMP" Ducted Fan method of propulsion. These two kits give the nearest approach to real jet flight. Kits include READY-MADE IMPELLER and STARTING PULLEY and everything to complete a first-class job.

Ideal for motors up to .9 c.c. such as the Allbon "Dart" .5 c.c. and Frog 50. No undercarts are supplied as the models are hand launched. **BOTH KITS 29/2 EACH (incl. P.T)**

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PROVOST Trainer

18" Span Control-line Super "Quicky" Kit Prefabbed and pre-decorated. Suitable for motors of .46 to 1 c.c. All parts complete with "3D" plan. Easily built in an EVENING. Price inc. P.T. **8/9**

Photo courtesy "Flight"

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MARINE CRUISER

SPECIALLY DESIGNED FOR RADIO CONTROL. (Length 36".) Veron are proud of this slick-looking cabin cruiser for 1 to 5 c.c. power units or electric motors (12 volts). This boat is of unsinkable construction and a removable cabin top gives access to the commodious radio well. Kit includes stage by stage plan and instruction leaflet. **Kit Price £3/12/11 incl. P.T.**

LONDON RIVER POLICE LAUNCH

Here is the Ideal Companion for the Marlin. A 26" replica of the famous prototype used by London's River Police. Suitable for up to 1 c.c. Diesel or 6-volt Electric Motors. Unsinkable construction. No shaft or propeller is provided, thus you can fit the propulsion of your choice. **Kit Price 42/- incl. P.T.**

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DESIGNED FOR ELECTROTOR 240 MOTOR (or similar) driven by 4½-volt flat batteries. 12-in. Speedboat. Simplified balsa and ply construction. Kit has complete shaft and rudder assembly. **Kit Price 10/6 inc. P.T.** "ELECTROTOR" MOTOR 9/11 incl. P.T.

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SOLIDS!

METEOR 8 (*illustrated above*) 4/1 (inc P.T.)

Every aircraft enthusiast has his own particular favourites—why not pick yours from our wonderful range of solids at prices varying from 2/5 to 7/2 incl. P.T.

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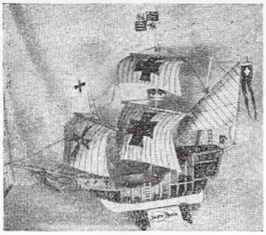

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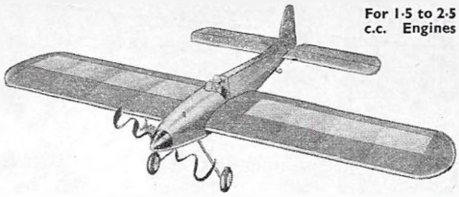
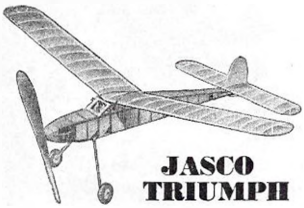


For 1·5 to 2·5 c.c. Engines

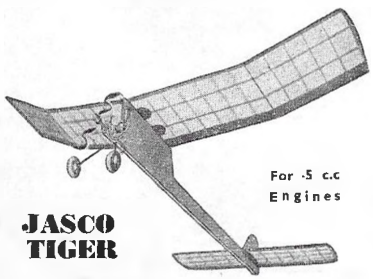
JASCO TRACER

FLY WITH JASCO

JASCO TUTOR



JASCO TRIUMPH



For ·5 c.c Engines

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

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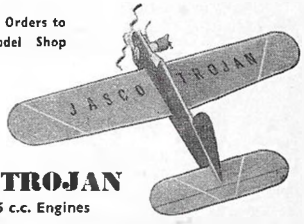
JASCO TIGER Contest Power Model for Beginners that wins the Comps! Span 36 in., for engines ·5 to 1 c.c., sidewinder mounted, built-up fuselage, high pylon wing, all parts stamped ready to assemble, comprehensive building and flying instructions. Price inc. *P.T.* **12/6**

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/-**

Send Individual Mail Orders to your favourite Model Shop



JASCO TROJAN
For ·5 to 1·5 c.c. Engines

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MERCURY Mac

An exciting new Class 'A' Team Racer

MERCURY MODELS TRADE MARK

Designed by Sid McGoun.

Conforming exactly to S.M.A.E. specification, the Mercury Mac incorporates many specially developed features to ensure its individually styled appearance and outstanding performance. Its simple rugged construction commends it to newcomers to team-racing; seasoned T.R. flyers welcome it equally for the way in which it handles. The Mercury Mac is for use with the Allen-Mercury 25 and similar 2.5 c.c. diesels. As with all Mercury Kits, only the finest quality pre-printed and shaped Solarbo Balsa is used, together with full-size easy-to-follow plan and comprehensive instructions for building and flying. **ASK TO SEE THIS EXCELLENT KIT AT YOUR LOCAL MODEL SHOP.**

- **Easier to build**
- **Rugged all-balsa construction**
- **Two-part fuselage for easy access to power unit**
- **Contest winning performance**

17/6

ALLEN-MERCURY 25

Right for beginners — Right for experts

● **The "Aeromodeller" says of this now-famous engine (Oct., 1954): "Very definitely a modeller's engine . . . . performance is in the excellent class . . . . should be an excellent team-racing engine."**

MERCURY FUELS FOR DIESELS

The only range of specialised fuels graded for all types of diesels. Whatever diesel you fly, there is a Mercury fuel to give it livelier performance, more flying hours, and longer life.

MERCURY No. 3 Standard Diesel Fuel 3/3 per bottle

MERCURY No. 4 (Specially recommended by Mills Bros.) (requires ether) All-in-One, ready to use 2/9 per bottle

MERCURY No. 6 Castor Base, ready to use 3/3 per bottle

MERCURY RD. The sensational new and exclusive racing diesel fuel (special formula) 3/3 per bottle

Mercury helps in World's R/C Duration Record

H. L. O'Hefferman chose Mercury No. 3 for his Mills 1.3, Mk. II to establish his World Record R/C-Control Duration Record on 7th Oct. (2 hr. 31 min.!). Thank you for the confidence you showed in using our product, Mr. O'Hefferman. We are delighted to have helped you.

Now that the Allen-Mercury is being flown by modellers everywhere, its early promise of outstanding performance has already been fully realised. With its high power/weight ratio, economical fuel consumption and genuinely easy starting, the AM.25 is particularly popular with team racers. This engine develops 0.181 b.h.p. at 12,000 r.p.m. (new Aeromodelling rating) giving peak performance just where it is most wanted. Can be used for S.M.A.E. and international contests, also for R/C and F/F.

66/6

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AERO MODELLER ANNUAL 1954-5

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RADIO CONTROL EQUIPMENT

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

P-100 Polarised Relay ...	29/6
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E.D. Boomerang complete	239/6
E.D. Mk. III complete ...	215/-
E.D. Mk. II 3-valve unit ...	351/6
E.D. Mk. IV Tuned Reed ...	475/-

All the above E.D. sold separately, send for price list.

The New MERLIN .76 c.c. ENGINE

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

SPECIAL COMBINATION OFFER

The NEW MERLIN .76 c.c. ENGINE, PROVOST TRAINER KIT plus SUITABLE PROPELLER, ALL FOR 56/- post free.

POWER BOAT KITS

NEW RANGE AEROKITS, all resin-bonded plywood parts accurately cut to shape. Really detailed step-by-step 4-page instruction leaflet, accurate plan, complete easy to build kits.

SEA NYMPH L.O.A. 18", BEAM 6½". For diesels .5 to 1 c.c. price 21/-.

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Veron Marlin 2 to 5 c.c. ...	72/11
Fisherman, 27" Cabin Cruiser	42/6

MARINECRAFT GALLEONS

H.M.S. Bounty, 12" ...	29/2
Victory, 20" long	70/-
Ark Royal, 19" long ...	59/6
Cutty Sark, 17" long ...	42/-
Mayflower, 18" long ...	35/-
Golden Hind, 24" long ...	56/-
Santa Maria, 19" long ...	47/3

Send for FREE coloured brochure featuring all MARINECRAFT KITS.

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THE BURLINGTON Hobby Chest price 84/-. A complete workshop in itself in magnificent moulded cabinet. Send for illustrated price list.

No. 77 WOOD CARVING SET... ... ... 23/-
No. 5 Heavy duty X-Acto knife 6/6
No. 2 for normal cutting knife 3/6
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Other sets and complete range of spare blades and gouges in stock.

New "SKEETER" speed boat

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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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. 3/2d., BONDAGLASS at new 5/10d. price. DRONE AIRWHEELS, 2" dia. 7/- per pr., 2¼" dia. 8/9d., 3½" dia. 10/6d., SWANN-MORTON CRAFT TOOLS 2/6d., with 3 blades. SWANN-MORTON HANDITOOL with 4 blades 5/-.

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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
Amco P.B. 3.5 c.c. ...	45/-
E.D. 1.46 c.c.	37/6
D.C. 350	45/-
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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Supermarine S6B	5/7
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S.E. 5A	5/7
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Spitfire Mk. V	5/7
Tempest	5/7
Mustang	5/7
Hurricane	5/7

Send 3d. in stamps for illustrated folder.

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K.K. Champ 1 to 1.5 c.c. ...	12/3
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AERO MODELLER

"Covers the world of Aeromodelling"

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

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Regular features

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Within your rights

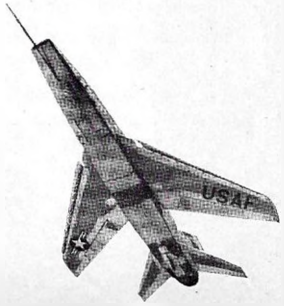
MOST READERS will remember the furore created a few years ago when the establishment of Model Bye-laws was first discussed, but it becomes increasingly evident that many newcomers are not aware of these regulations, or the implication of such locally-imposed restrictions.

After long negotiation between the various Ministries, in which the S.M.A.E. played a major part, it was agreed that local authorities are not empowered to ban or restrict the flying of model aircraft in public places unless the Home Office has agreed to the imposition of bye-laws dealing with the particular subject. What is more to the point, any Council wishing to ban or restrict such activities must publicise their intention, and give those interested in the subject—usually the local model club and/or aeromodelling enthusiasts—full opportunity to have their views considered. When the full facts are placed before the appropriate authority a decision is made which can result in either the total banning of model flying, or restrictions on such activities. Conversely, the Home Office can—and has in a number of cases—indicated to the applicants that no restrictions should be imposed.

It should be remembered that the Home Office bye-laws only apply to the flying of power-driven models, but it should not require emphasis on our part that the flying of any category of model aircraft must be within the discretion of the individual. Common sense indicates whether it is safe or not to put a model into the air, and unfortunately it is the occasional lack of such a quality that has brought trouble in its wake.

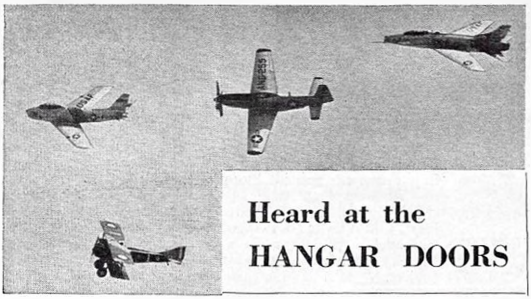
Whatever the conditions or restrictions under which one flies, it is up to every aeromodeller to ensure that he is carrying on his hobby with due regard to the rights and feelings of others, and discretion should be exercised at all times. Much valuable work and time has been negatived by the thoughtless actions of a few individuals, and many suitable flying grounds are no longer available to aeromodellers through a lack of understanding of the other person's point of view.

Finally, we enter a New Year with every confidence that we and our aeromodelling public will go from strength to strength and the fervent hope that summer will appear in its proper perspective, and perhaps remain with us a little longer than in 1954! We trust that our future editorial offerings continue to please you, and sincerely hope that 1955 will prove a huge success in your aeromodelling activities.



On the Cover

Symbolic of the modern supersonic fighter, a production N.A.A. F.100A Super Sabre displays its profile in a climbing roll. Seen here with leading edge slats extended for better low-speed stability, the Super Sabre is also current holder of the World speed record with a 755.149 m.p.h. average over two runs at Salton Sea on October 29th, 1953.



Heard at the HANGAR DOORS

Co-operation—as we like it

With the F.100 Super-Sabre selected by contributor John Enoch for this month's Aeroplane in Outline, we cabled North American Aviation with a request for a suitable cover photo. The cable was sent late one Thursday afternoon. At 9 a.m. on the next morning came the reply cable indicating that photo's were on their way and on Monday morning we found a selection awaiting us in the morning post. In the short space of 84 hours we had requested and received just what we wanted from a company half way around the World from Watford! Sometimes it takes us longer to get an immediate reply from around the corner!

We mention this admirable co-operation because in the same package with the F.100 pictures came the remarkable aerial circus seen above. Four generations of fighter aircraft are seen as a 110 m.p.h. SPAD is passed in turn by an F.86F, P.51 and Super-Sabre, quite a feat in both formation flying and photography.

High Tension and YOU

One would think that after all the warnings that have been issued and the tragic fatalities that have occurred, modellers would refrain from trying to fly a control-line model under high tension overhead powerlines. Another accident, this time involving an American Sergeant stationed in Britain, but not, most fortunately, involving serious injury, was reported in the last few weeks. Remember—the shortest distance twixt you and the devil is only the length of those steel wires if you but once make contact with an overhead line.

F.A.I. Agenda

The forthcoming F.A.I. Models Commission meeting, to be held in Paris on 11-12th December, will discuss the possibility of limiting model box sizes in order to avoid travel difficulties experienced in the past; the postponement of rounds in International contests (present regulations do not allow a stoppage for weather or other causes); and the British proposal that future Control-line World Championships shall be decided on all three classes of speed instead of a different capacity class each year. If possible, the introduction of stunt flying will be pressed.

In addition, the S.M.A.E. delegate has been instructed to table a resolution that the R.O.G. rule shall be abandoned in all future events, this requirement having outlived its usefulness. Retention of rise-off-ground will of course continue in such contests where points are allocated for such a manoeuvre, radio-control and precision events being examples of the type of contest where this requirement can serve a useful purpose.

Scrubbing the R.O.G. rule will ease the flying field situation for many individuals and groups, for hand launching can be undertaken on any part of an airfield, but suitable facilities for rising from ground are restricted. Chobham Commonites will probably welcome this relaxation if ratified!

Binders for Aeromodeller

We are pleased to announce that we have concluded arrangements for the supply of the famous **EASIBIND** Binders to our readers. These patent binders are quarter-bound in maroon and are supplied complete with wire retainers and locating rods, to enable any number of copies from one to a dozen to be held securely in place. Whilst firmly fixed copies can be instantly detached. The name "AEROMODELLER" is embossed in gilt on the spine. Price including postage, 10/6d. (*You do NOT have to send us your copies!*)

For the benefit of readers who desire to continue with the conventional binding, we can still arrange this work for them. Copies should be sent to us, when they will be bound complete with Index. Delivery approx. 3 to 4 weeks. Price including postage 12/6d.

Model Aircraft Byelaws

With present shortage of flying grounds, particularly in heavily populated areas, many aeromodellers are turning to local parks and other open spaces controlled by local councils. Which, no doubt, accounts for the greatly renewed activity on the part of local authorities in relation to byelaws governing the flying of *Power Driven Model Aircraft* in public parks and pleasure grounds.

Invariably such action by a local council is precipitated by complaints from local residents, either about the noise created, or danger to young children which the models impose. In few instances have a local council applied the byelaws purely as a matter of routine, or because misguided individual-

on the council consider all models a menace.

Let us first examine the Home Office's published comments contained in their circular on byelaws:—

Developments in the size and speed and the recently increased availability of those types of model aircraft to which the model byelaws are expressed to apply have made them potentially dangerous, and also capable of creating a nuisance through noise, so that it may often be desirable to regulate their flying in some degree. On the other hand, local authorities will recognize that through the construction and flying of model aircraft a real contribution may be made to the science of aviation; that they help to stimulate interest in national aviation; and that, under suitable conditions, they offer to many young people a legitimate pastime and good hobby. **The byelaws are not intended for the restriction of flying, but to make it possible to permit flying in areas where permission for this pastime would otherwise have to be withheld.** *Any restrictions should be limited, therefore, to what is really necessary under local conditions to protect the community at large from danger or nuisance.*

Note the words in bold letters which are the crux of the whole situation, which mean in effect that the byelaws are framed for the sole purpose of assisting aeromodellers in circumstances where there might have otherwise been a complete ban.

The final paragraph in the Home Office circular concerns the method of submission of the byelaws:—

All byelaws proposed to be made should be submitted to the Home Office in draft in the first instance, accompanied by a completed form C.22A. The Secretary of State thinks it desirable that any proposal to make such byelaws should be brought to the notice of any local model aircraft clubs, and their views considered, before the draft is submitted.

From the above it is obvious that if the problem is approached in the proper manner, and with the right spirit by aeromodellers and local councils alike, then the need for the byelaws need never arise.

Our duty, therefore, as the country's leading aeromodelling magazine is to give guidance to both clubs and individuals who may, either now, or in the future, be concerned with this problem.

Firstly clubs and individuals should get together when they desire the use of a local park, and make a common approach to the local council. This approach should firstly be in writing, and certainly should be made *before any flying takes place.* Remember that not all open spaces controlled by local authorities are necessarily subject to local byelaws, and may be controlled by local authorities under common law. In these particular cases the Home Office have no jurisdiction, and the aeromodellers no redress if the council impose a ban Hence the need to make a proper approach.

Assuming the flying ground in question is suitable not only from the aeromodelling viewpoint, but also in relation to noise nuisance, and the public safety angle, then the majority of councils will be co-operative, *providing they are approached in a civil and proper manner by the aeromodellers concerned.*

The suitability of the parks and open spaces should be carefully examined in the particular locality, bearing in mind the factors we mention above, and then a letter of application should be sent to the Council naming the flying grounds considered most suitable, and also suggesting stipulated times during which models may be flown.

In the majority of cases the Council will make grounds available between reasonable hours, and all concerned are satisfied.

Where the application results in either a complete or partial ban which the interested aeromodelling parties consider unreasonable, then, *and only then* will the need for byelaws arise. Even at this juncture the aeromodellers have an additional safety factor in that the byelaws must be published in the local press. Following publication they have the right to object, which will automatically bring the matter before the Home Office, whose principal task is to protect the rights of the citizen, in this case the rights of the aeromodellers concerned.

Finally, we state without hesitation, that in nine cases out of ten the aeromodellers are to blame when restrictions are applied, usually because of the "fly first, and ask afterwards," policy that unfortunately prevails. Let us hope that a saner and more rational approach to the problem will prevail in the future, to the benefit of all concerned.

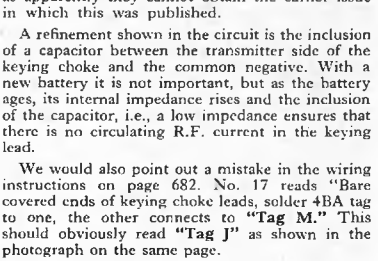
(Copies of Home Office byelaws relating to model aircraft may be obtained from the Editorial Offices on application.)

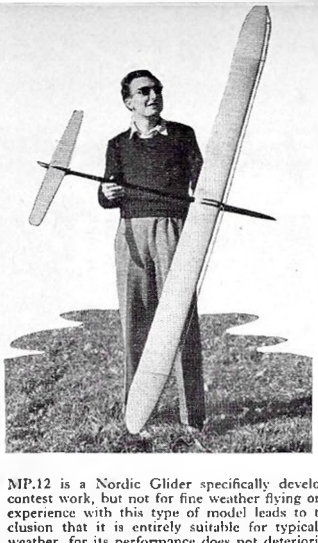
AEROMODELLER TRANSMITTER

Several readers have requested the circuit drawing for the transmitter we featured last month, as apparently they cannot obtain the earlier issue in which this was published.

A refinement shown in the circuit is the inclusion of a capacitor between the transmitter side of the keying choke and the common negative. With a new battery it is not important, but as the battery ages, its internal impedance rises and the inclusion of the capacitor, i.e., a low impedance ensures that there is no circulating R.F. current in the keying lead.

We would also point out a mistake in the wiring instructions on page 682. No. 17 reads "Bare covered ends of keying choke leads, solder 4BA tag to one, the other connects to **"Tag M."** This should obviously read **"Tag J"** as shown in the photograph on the same page.





Max Hacklinger's

MP. 12

——an aristocrat among A 2 sailplanes, this design scored a five-maximum total to win first place in the 1954 German Team Trials.

MP.12 is a Nordic Glider specifically developed for contest work, but not for fine weather flying only. Our experience with this type of model leads to the conclusion that it is entirely suitable for typical British weather, for its performance does not deteriorate with strong horizontal and vertical gusts. To achieve this, smaller aspect ratio and dihedralled wing-tips were preferred to Max's former still-air design, and particularly the tail moment arm was shortened, as this improves thermal longitudinal stability.

The still-air duration of MP.12 (still air obtained in a hall) is 27.5 ± 0.5 cm/sec. or 180 to 185 seconds from a height of 50 metres, providing the wing is unwarped.

At first glance, the construction may seem complicated because it is unconventional. However, by carefully following the building sequence, the model can be built in quite a short time without trouble.

One point should be carefully noted. Stability in flight improves if we concentrate the whole weight around the centre of gravity, especially in relation to the distance from the lateral axis. 0.1 oz. spared at the tail is far more valuable than 1 oz. spared at the c/section!

The stick type fuselage consists of three hard balsa sheets glued together corner-wise with a hard drying cement. Pin sheets into position, and fill the open corners with cement until the illustrated section is achieved. This is most important, as these cement "longerons" take up most of the torsion.

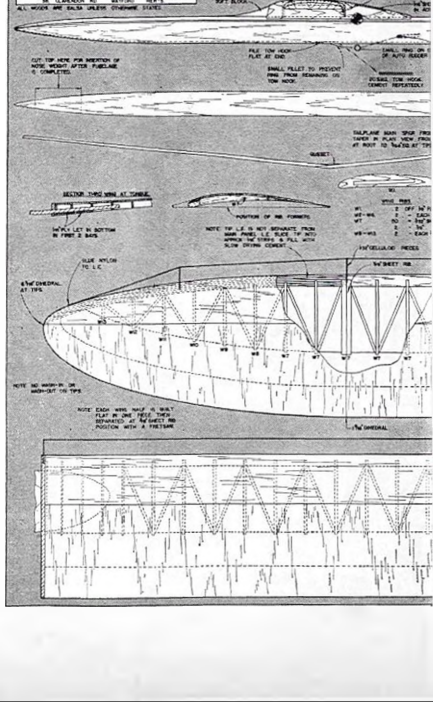
The wing tongue is steam bent into shape, taking hold of the tongue so that only the centre area is free, and the upswept parts are exactly flat. Dry the bent tongue over heat until set. Glue the tongue carefully into place on the fuselage seating block, adding root ribs and fairing later, when the complete wing can be offered up on the tongue.

Fin is slotted to take the tailplane tongue, this being excavated with a fine file as on the original, an alternative scheme being bent to laminate with a ⅛ in. centre core and two outer 3/32 layers. When all parts of the fuselage are installed, and not before—sand to shape.

Tailplane ribs are formed by block method, using root and tip rib templates. Build in two halves, slotting ribs into trailing edge, then adding leading edge. Remove from board and fit the main spar, finishing with top spar. T/E camber is bent in about five minutes after doping, when the balsa is softened. Note 3/32 in. washout at the tips when laying in the diagonals.

A board with formers under each main rib guarantee-ing the correct airfoil camber, is indispensible for building the wing. Wing root ribs are cut in pairs from ply, cut main ribs using a ply pattern and the ribs for the elliptical tips. Cut slots in the root ribs so that the wing tongue is a hard push fit, these being relieved later when the wing is assembled.

Lamination of the tip leading edge portion is accomplished by slitting the wood at about ⅛ in. intervals, filling with slow drying glue, wrapping with elastic bands, and setting into final shape.



Begin construction with the ⅛ in. trailing edge "wedge", and the rectangular leading edge over the rib formers on the board. Add ribs, and sand lightly so that the sheet covering has a clear sweep. If necessary join sheets for top covering, over a waxed paper base and sanding inside smooth before application. Use a slow drying glue for this sheeting, or divide sheet into a number of narrower strips for ease of application. Allow to dry for some hours, lift from the board, then sand leading edge with a long sanding block, finishing the whole with Durex 400 abrasive (Wet and Dry).

Lay diagonals in between ribs, ensuring that there is no warp, as this cannot be corrected afterwards.

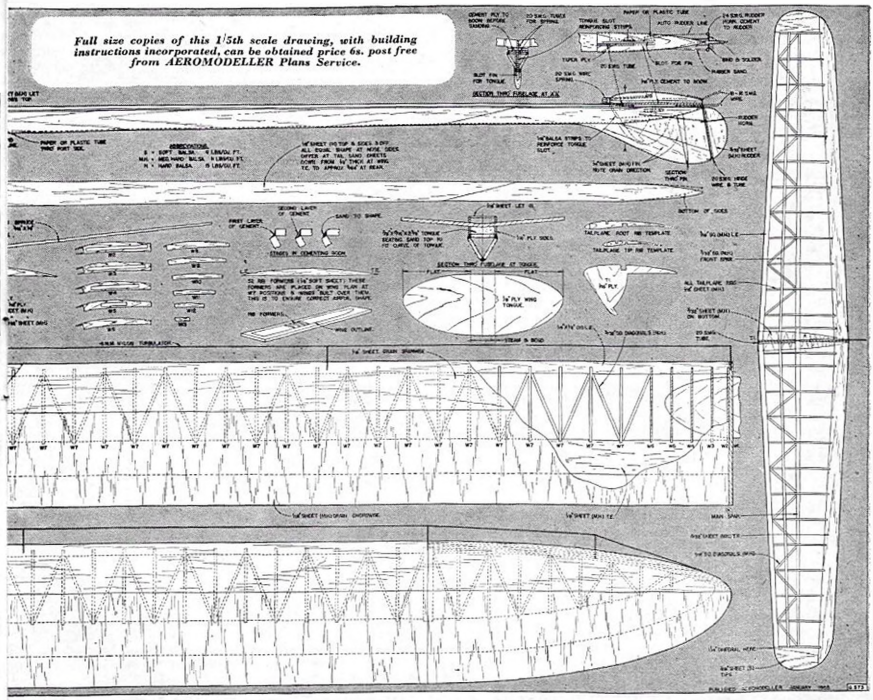
Cover tailplane with lightweight Modelspan, and the wing only on the underside over the ribs. All balsa parts are left uncovered. The original model had two coats of dope and a grain filler for the fuselage, finished with one coat of clear lacquer (Ducolux) which makes the model absolutely waterproof.

Keep wing on the building board as long as possible before applying the last coat of lacquer, placing it in a position where differences of temperature and humidity can equalise any tension inside the structure. Face the alternative; either be patient during the building period and have a sound model, or be hasty and have trim alterations for a whole season!

Separate the wing tips when everything is free of tension, sanding the correct angle and glueing into the stated dihedral angle.

Finally, trimming the model. Cut out a strip of the top nose sheet on the fuselage weight the model up to the required weight of 14½ oz. Cast a lead weight so that it fits into the fuselage, final displacement being so that the C.G. is at 62%. If you have built very light, the excess nose length may be shortened back to the weight. A C.G. position further back than 65% is fatal for thermal flying with this model, but in still air you can gain a few seconds with a 70-75% position.

Flight adjustment is made with rudder and tailplane only, and note that a rudder angle alteration of 10° is compensated by 3/64 in. packing under the tailplane trailing edge. Towhook position is fixed and good for all conditions. Moving it forward creates weaving and difficulty in getting the best height.



Making your own ENGINE

Dave Sugden continues his series with materials and casting

Pattern (rear) and casting (front) are for Dave's next engine, to be described at the conclusion of this series.

Materials

The efficiency with respect to life, power and weight of an engine depends to a large extent upon the choice of materials. All engines depend upon bearing surfaces of one sort or another and the better the bearings the greater the performance. Good plain bearings consist of one very hard surface bearing against another which is tough and malleable. The softer surface then runs in and work hardens to mate perfectly with the opposing part, usually the shaft. This principle, together with other requirements of the parts determines the choice of metal.

Cylinders when run in must have a glass-like surface, so that if they cannot be hard chrome plated or case hardened, a work hardening steel, *i.e.* one containing chronium or nickel, or molybdenum iron must be used. A high tensile steel S82, S96, or such as that used for car half-shafts is very good. With surface or heat treatment a mild steel is the best choice, *i.e.*, S.1, S.15.

Pistons are best made from cast iron because its porosity results in it being very difficult to seize and having long-wearing properties, due to the oil and graphite which its surface retains. Mechanite, having a fine grain structure and globular graphite inclusion, is best. Centrifugally cast iron rod is next best since it has a fine uniform crystal structure but plain cast iron is quite good enough.

Crankshafts must withstand high stresses due to the piston and crash loading and require to be strong and tough. They must be capable of being bent without cracking and must work harden. A high tensile steel is called for, *i.e.* S96 or a piece of car half-shaft. Case hardening is not recommended because of the uncertainty of the depth of the brittle surface. Hard chrome plating would be advantageous but remember to allow for the thickness of the plate, about ·0005 in.

Connecting Rods have to be very strong and light and must possess good bearings. Super dural of about 38 tons/in^2. is ideal, *i.e.* DTD 363 or DTD 683. Pure aluminium is useless but ordinary alloy good enough.

Crankcases are usually cast from DTD 424, a general purpose casting alloy containing silicon used in foundries. It is rather soft and superior metals are Y alloy or RR 56, *i.e.* car or aero pistons.

General parts such as the cylinder head, carburettor and driving disc are catered for by ordinary alum. alloy rod but of course the stronger this is the better. The spray bar can be turned from alum. or brass but since the needle cap is soldered to the needle, brass is used.

Phosphor bronze is a good bearing metal for crankshaft journals and con-rod big ends, but cast iron is just as good for the former. Ground silver steel is the gudgeon pin material. It is also useful for making special tools when hardened and tempered for work on the softer metals. Magnesium is beautiful to machine but is structurally weak. It requires chromate treatment to render its surface inert to the various corrosive chemicals in fuel. Tufnol is light and strong and is highly resistant to wear, especially where no lubrication can be permitted. It may be used for disc valves.

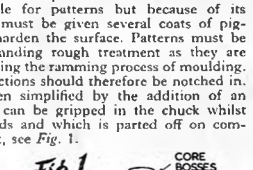
Pattern Making

This should be relatively straightforward for aero-modellers though there are a few points to note. Any part of the pattern which has to be drawn out of the sand in the moulding operation should possess a slight taper to facilitate this, although on castings of our size this is hardly necessary. It would be appreciated at a foundry where the casting was being made and would indicate which way you wished the pattern to be set in the mould.

Balsa is suitable for patterns but because of its absorbent nature must be given several coats of pigmented dope to harden the surface. Patterns must be capable of withstanding rough treatment as they are liable to be hit during the ramming process of moulding. All lugs and projections should therefore be notched in. Machining is often simplified by the addition of an extra boss which can be gripped in the chuck whilst machining proceeds and which is parted off on completion of the part, see *Fig.* 1.

Coring Out

A pattern made for a cored out casting has bosses attached to the faces into which the cores will enter, see *Fig.* 1. The mould is made in the usual way with the cores arranged to lie on the dividing or parting lines. The cores are made from a special sand mixed with a binding agent such as linseed oil and are baked hard before being placed into the mould in the core prints left by the special bosses. This is a rather tricky process best done at a foundry.



One difficulty which comes with using cores is that there is no metal on which to scribe the centre through which the boring and other machining takes place. It may be possible to set the casting up to the outside surface but this will most probably not be true enough for the accuracy of 2 to 3 thou., which is required. Cores are most useful however, for cutting down machining time and for ensuring a sounder casting, when setting up for machining can be accomplished without difficulty.

Casting

The crankcase and possibly the back cover of a rotary disc induction motor are the only parts usually cast. It is most convenient to take the patterns to the local foundry where the castings will be done cheaply, but making the castings yourself can be interesting.

Causes of defective castings. By understanding some of the causes of blow holes and other defects of castings, certain points of moulding and melting will be made readily understood. Uneven cooling of the metal, caused by non-uniform volumes distribution of the casting, results in one portion solidifying before the rest. When this happens the large contraction of aluminium alloy causes cracks or draw-holes at the junction of the regions of unequal volume. Putting cores in a casting brings it to more uniform proportions eliminating the trouble, which is most likely to occur at the junction of the crankshaft housing with the main body of the crankcase.

Blowholes are caused by the inclusion of air that cannot escape due to poor ventilation. The positioning of risers and air vents, made with a knitting needle, is of utmost importance in the production of sound castings and only comes with experience. However, with a bit of imagination the requirements of a small crankcase can easily be catered for.

Porosity may be found in castings made at a foundry due to a cleansing pellet, added to the molten metal for purification purposes, not being allowed to complete its action before pouring.

Arrangement of the mould. The pattern may be arranged in the mould either with the parting line in the plane of the lugs, as shown in *Figs.* 1 and 3, or along the line of the shaft and up the cylinder, or on an ETA type crankcase across the cylinder. Whichever way is chosen the pattern must be capable of withdrawal from both sides of the mould. Porosity usually occurs in the uppermost regions of aluminium castings which should be arranged to be the part which will be machined away, *i.e.* where the cylinder fits. The method shown has been found to give the best results.

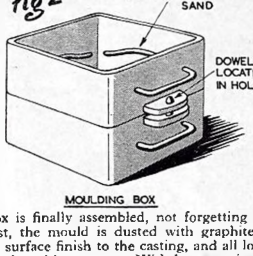
Moulds may be made from black sand (sand and coal dust moistened with sufficient water to make it bind and feel cool), plaster of paris and steel. Steel dies are only used for mass production of accurate castings and will not be dealt with.

Sand Moulds. One half of the moulding box, *Fig.* 2, is packed level with sand and the pattern is pressed in to the level of the parting line. The sand at the edge of the pattern is levelled off and a fine sprinkling of dry parting sand is given to prevent the halves of the mould from sticking. This is the odd side which is not used for casting.

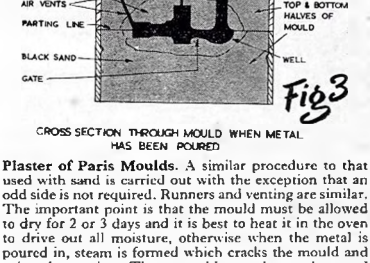
The other part of the box is fitted and twisted clockwise to take up any play. Fine red sand containing a little more moisture than the black sand is riddled into the box to cover the pattern and the remaining space is filled with black sand. This is rammed down fairly firmly with a tool of the type shown in *Fig.* 4, a process requiring skill to accomplish correctly. More sand is added and rammed down until the box is levelled off. This part of the mould is lifted off steadily, care being taken to see that it comes away squarely and does not rotate, and inverted. The edges round the pattern are trimmed and any slight faults are touched up.

The pattern is replaced, parting sand applied, the box containing the odd side knocked out, fitted, and the process repeated to produce the other half of the mould. A runner, down which the metal is poured, is made in the top side by withdrawing the sand in a thin metal tube about 1 in. dia. pushed through the sand. In the other side of the mould a well is made to receive the metal from the runner and a passage, known as a gate, is made to connect this to the mould. All corners in this region are rounded to prevent pieces from being washed away and carried in to the mould with the rushing metal. The length of the runner is governed to a certain extent by the depth of the box but should be as long as possible to create a good pressure head, to enable the molten metal to flow into all corners, driving out all occluded air.

A bush into which the metal is poured is made by packing sand into a metal ring which is placed on the entrance of the runner.



Before the box is finally assembled, not forgetting the clockwise twist, the mould is dusted with graphite to impart a good surface finish to the casting, and all loose particles of sand are blown out. With large castings a heavy weight is rested across the top of the box to prevent the internal gas pressure from separating the mould.

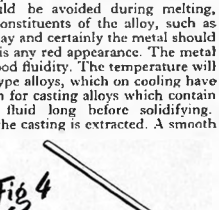


CROSS SECTION THROUGH MOULD WHEN METAL HAS BEEN POURED

Plaster of Paris Moulds. A similar procedure to that used with sand is carried out with the exception that an odd side is not required. Runners and venting are similar. The important point is that the mould must be allowed to dry for 2 or 3 days and it is best to heat it in the oven to drive out all moisture, otherwise when the metal is poured in, steam is formed which cracks the mould and ruins the casting. These moulds can be used several times and give a good finish.

Melting

The melting point of aluminium alloy is about 550°c. whilst the temperature of red heat is almost 650°c. Red heat should be avoided during melting, because some of the constituents of the alloy, such as zinc, may evaporate away and certainly the metal should not be poured if there is any red appearance. The metal is heated until it has good fluidity. The temperature will be higher for forging type alloys, which on cooling have a long pasty stage, than for casting alloys which contain silicon so remaining fluid long before solidifying. After 5 or 10 minutes the casting is extracted. A smooth shiny surface denotes that the metal was too cool, a rough one indicates that it was on the hot side. The latter is preferred since the casting should be sounder.



(To be continued next month).

POWER

(Astral, Trials, Sir John Shelley, Frog Senior, Keil, Hamley and Halifax.)

	Name	Club	Contests Entered	No. of Flights	Flight Aggregates	Flight Average
1	D. Painter	Henley	5	17	51 : 07	3 : 00
2	C. Marsh	St. Albans	3	11	31 : 44	2 : 53
3	P. Buskell	Surbiton	4	14	39 : 25	2 : 49
4	S. Lanfranchi	Bradford	7	25	68 : 38	2 : 45
5	T. Smith	English Electric	5	17	45 : 42	2 : 41
6	J. Bickerstaffe	Rugby	4	12	30 : 43	2 : 34
7	G. Fuller	St. Albans	4	14	35 : 21	2 : 33
8	L. Hancock	Surbiton	3	9	22 : 39	2 : 31
9	J. Lucas	Brighton	4	12	28 : 26	2 : 22
10	M. Gaster	Country Member	4	14	32 : 22	2 : 19
11	R. Lewis	Eastbourne	4	14	32 : 20	2 : 19
12	C. Plant	Stockton	4	12	27 : 36	2 : 18

1954 Contest

THE QUESTION of compiling contest averages gets more and more complicated each year. Not so long ago the same flight maximum applied to every contest, each contest called for three official flights, and everyone knew where they were. The 1954 season mixed three and four minute flight limits and three and five flight contests. It was eventually decided that an overall average should be adopted in tabulating the results, which rather favours individuals who may not have entered contests with a three minute "maximum" but eliminates the necessity of "correcting" figures and gives a true, rather than an artificial flight average.

Three other features were common to the '54 Averages—a general lowering of average performance (due, no doubt, to the poor flying weather experienced throughout the last contest season); the more pronounced "scattering" of the entries; and the disappearance of many of the famous names from the top of the lists. Thus quite a number of the leading contest fliers of a few years back are no longer active, whilst others now come way down, too low to be included. They, quite obviously, have not put in their usual concentrated effort and are no longer the consistent performers that they used to be. There are of course, the exceptions—the real "veterans" like Copland and Chesterton in rubber, Buskell and Lanfranchi in power, and Yeabsley and Brooks in glider. Also the new order of "veterans" like the O'Donnells who now rank as the top all-rounders. (John's activities on the flying field now embrace power, and he is competing in the 1955 Power Elims.)

As regards consistency of performance, the rubber contest averages have always been noteworthy in this respect, largely because the rubber duration model is, inherently, more consistent than its power or glider counterparts.

Top this year, and by a good lead, is John O'Donnell, this being even more noteworthy in view of the fact that he entered every possible contest. John was third last year. Brother Hughie, second in '53 drops this time out of the picture with a less than 2 min. average although, of course, he did well enough on the occasion that mattered to gain a place in the Wakefield team!

That exceptional all-rounder, Ray Monks, places second in rubber, with Bob Copland and Roy Chesterton just behind him. Monks has gained International honours in power and glider and one of these years will almost certainly complete the treble with Wakefields. Copland was a rubber contest star in 1936 and has more International "caps" than any other British modeller (all for Wakefields). Chesterton, last British winner of the Wakefield, pairs off closely with his club companion. Vic Dubery, '54 Trials winner, would have been right up with these leaders but for a poor performance in the Wakefield itself. It will be noticed that the '54 Wakefield team are poorly, represented in the final list.

The power contest averages feature Buskell Lanfranchi and Fuller well up again, but new leaders in Painter (Henley) and Chris Marsh (St. Albans). Dave Painter and his Oliver Tiger VTO models are held in high esteem by S. Midland area. Design is based on an interpretation of New Zealander Frank Bethwaite's original layout, featuring up to 30° downthrust, Isacson section, and a fantastic rate of climb. Like other models in this area, it is not a pylon design. Chris had a really successful season outside of S.M.A.E. contests as well. But with the exception of Lanfranchi and Buskell, the other International power team members had a less than two minutes season's average. Buskell's figures, incidentally, do not include the World Championship since his model (proxy flown) recorded no flights in this event.

Glider events were by far and away the most popular in 1954 and sorting out the large entry lists was a very real problem. In this case it was decided that the field must be narrowed, and so qualification for, and participation in the A2 Trials

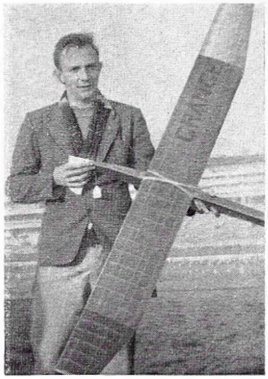
Dave Painter of Henley and his fast-climbing power model are seen in heading. Note large downthrust angle, forward underfin. Timer is in tail end of fuselage to balance

Average Tables

GLIDER

(Pilcher, S.M.A.E., Trials, Thurston, C.M.A., Model Engineer and K & MAA.)

	Name	Club	Contests Entered	Contest Flights	Flight Aggregates	Flight Average
1	R. Yeabsley	Croydon	4	14	40 : 03	2 : 52
2	A. Brooks	Grange	3	9	24 : 28	2 : 43
3	J. O'Donnell	Whitefield	7	23	59 : 41	2 : 36
4	B. Hutton	Northwick Park	3	11	27 : 24	2 : 29
5	S. Smeed	Surbiton	5	14	33 : 45	2 : 25
6	P. Guest	Barnsley	3	11	26 : 33	2 : 25
7	G. Upson	Northwick	4	12	28 : 08	2 : 21
8	H. O'Donnell	Whitefield	6	20	46 : 45	2 : 20
9	J. Hannay	Wallasey	3	11	25 : 39	2 : 20
10	J. Wheatley	By-Pass	3	11	25 : 18	2 : 18
11	J. Rodgers	Birmingham	5	17	38 : 58	2 : 18
12	J. Haneock	Surbiton	4	14	32 : 03	2 : 17
13	B. Faulkner	Cheadle	6	20	45 : 44	2 : 17
14	E. North	Halifax	4	14	32 : 35	2 : 16
15	R. Firth	York	5	17	38 : 40	2 : 16
16	P. Giggle	Brighton	4	14	31 : 39	2 : 15



Tony Brooks, second in Glider tables, with his lightweight at the Bill White meeting, Epsom

was taken as necessary for inclusion. Even so, flight averages tapered off to about 2 : 20 quite early in the list and it is quite possible that a number of names may have been overlooked which did actually qualify for inclusion in this part of the table. We are fairly confident, however, that the top places are filled by the proper people.

Nice to see Roy Yeabsley at the top of the glider averages again. Roy has been quite out of luck in every A2 Trials. The nearest he came to getting in the team was in 1950 when he did actually achieve the required aggregate to place top, but his last flight was not counted as it was made after the closing time for the event (this being caused by a lost model, recovered too late for repairs to be concluded within the time limit for the contest). Yet in National contests, Roy has probably won more glider events than anyone else.

Tony Brooks, who placed first in '53, is right up there again only a matter of 9 seconds behind Yeabsley, with John O'Donnell not so far off a remarkable "double." The O'Donnells placed fifth and sixth in this years' A2 team trials, it will be remembered, just to underline how strong is their case for being ranked as Britain's top all-rounders.

As to club honours, these appear pretty well distributed this year. The London area is quite well represented, in spite of the general falling off in entries since the centralised ground was moved to Chobham Common. Both Midland and Northern clubs are also amongst the honours, but there is not that predominance of any one club which we have seen in some previous years.

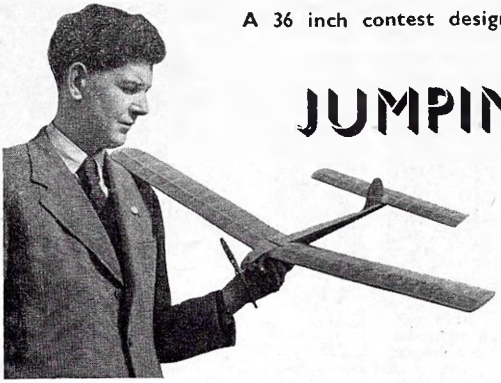
The averages are based on the results of all the '54 S.M.A.E. contests, in the respective classes, together with International results, where applicable. Qualification is a minimum of three contests entered (with the further provision mentioned in the case of gliders).

Sid Smeed, 5th in Glider, looks on as '52 Power Champ., Barry Wheeler holds for Ray Monks (2nd in Wakefield) at the Wittering Trials

RUBBER

(Gamage, Farrow, Weston, Trials, Model Aircraft, Flight and Gutteridge.)

	Name	Club	No. of Contests	No. of Flights	Flight Aggregates	Flight Average
1	J. O'Donnell	Whitefield	7	23	77 : 37	3 : 22
2	R. Monks	Birmingham	5	17	52 : 58	3 : 05
3	R. Copland	N. Heights	5	17	50 : 29	2 : 58
4	R. Chesterton	N. Heights	5	17	50 : 05	2 : 57
5	W. Rockall	Lincoln	3	11	32 : 17	2 : 56
6	G. Thomas	Slough	3	11	32 : 16	2 : 56
7	C. P. Millar	Bradford	3	11	32 : 03	2 : 55
8	J. Blount	Croydon	4	14	40 : 10	2 : 52
9	V. Dubery	Leeds	4	14	39 : 37	2 : 50
10	P. Read	Birmingham	4	14	39 : 06	2 : 48
11	R. Baldwin	Wigan	3	11	30 : 33	2 : 47
12	C. B. Jackson	Ashton	4	16	43 : 11	2 : 42
13	J. Snewin	Blackheath	5	17	45 : 46	2 : 42
14	R. J. North	Croydon	5	17	45 : 11	2 : 40



A 36 inch contest design for .5—.8 c.c.

JUMPIN' BEAN

by Peter B. Wyatt

About the designer . . .

Aged 23 . . . Mechanical Draughtsman by trade . . . member Ipswich M.A.C. . . . is a contest flier in Power, Glider and Tailless Glider classes . . . Other hobby is his B.S.A. Bantam used for model recovery . . . is a G.I.Mech.E.

THE "GET UP AND GO" characteristics of the Ipswich power model community is well-known, and this example from Peter Wyatt's stable should be just the model many readers have been waiting for. It's a point-fiver with the zip of an open power contest design, capable of giving the bigger boys a run for their money, and yet small enough to pack away in a suitcase.

This particular model layout was first developed in 1.5 c.c. form as an alternative to Pete's usual pylon jobs. The 0·5 c.c. version shown has been designed from a second 1·5 c.c. plane which proved very consistent and easy to trim. Main deviations from the first two models have been to substitute a single fin in place of twin fins and dihedral for polyhedral. This allows "Jumpin' Bean" to almost fit your hip pocket when dissembled and to take plenty of punishment in rough weather.

Fuselage. The construction of "Jumpin' Bean" is quite straightforward and does not depart from normal practice.

First join up $\frac{1}{16}$ in. sheet sides with formers F1 and F9 shown.

Cement in engine bearers using "Durofix" and the rest of the formers to suit the sides. Fix wing and undercarriage box in place, after binding them with thread, then the paper tube to take an 18 s.w.g. wing incidence peg, and sheet top and bottom of fuselage, except for the top of the tank bay. "Durofix" $\frac{1}{16}$ in. ply bulkhead in place and sheet the nose to suit the engine used. Radial mounting bulkheads are given for a variety of suitable American and British engines.

Cover fuselage with lightweight tissue and give 3 coats of dope and one of fuel proofer; not forgetting the inside of the tank compartment, between F1 and F2.

Find a length of fuel tubing which gives 15 second engine run, using a header tank for starting, and coil this tube into its compartment. At the rear a $\frac{1}{16}$ in. diameter aluminium tube is fitted "Ipswich" fashioned to take the forward, unburned section of the dethermaliser fuse. Add the sheet Fin, taking care to insert the cross-grained anti-warp piece.

Wings. Assemble the ribs on the bottom leading edge and lower part of "I" spar, which is suitably lifted $\frac{1}{8}$ in. from the board, and using $\frac{1}{16}$ in. sheet spacers to form the spar web. Fit the trailing edge at the appropriate angle of droop. Place the rest of the spars in position and build up the $\frac{1}{16}$ in. sheet tongue box at the wing root, add the upper leading edge.

Assemble wings onto fuselage and cement root rib into position to suit dihedral angle. Firmly cement the retaining hooks in place, the ply stop for the 18 gauge peg and sheet cover the wing root panel. Cover wings with lightweight Modelspan and give 3 coats of dope. Note that each wing has slight washout into each tip, arranged by the system of shortening the ribs as detailed on the drawing. The wing tongue is from $\frac{1}{8}$ in. Dural, and is completely detachable from the fuselage and wings. Fill in the portion of wing boxes as shown.

Tailplane. Is "I" mainspar construction, assembled as for the wings.

Cover with lightweight Modelspan and give 3 coats of dope.

Trimming. "Jumpin' Bean" has about as much power as it can handle with a hot 0·5 c.c. diesel mounted in front, but there is plenty of tolerance in adjusting.

The model was originally trimmed for left climb and left glide, but this has since been altered to right climb and right glide for queiter performance.

Commence by obtaining a tight-right glide. This can be achieved by placing the T.E. of the right-hand wing about $\frac{1}{8}$ in. to $\frac{1}{4}$ in. lower than that of the left wing and tilting the tailplane until it is almost in line with the right-hand wing. If the nose

shows a tendency to drop suddenly on the glide, increase the right-hand wing incidence slightly.

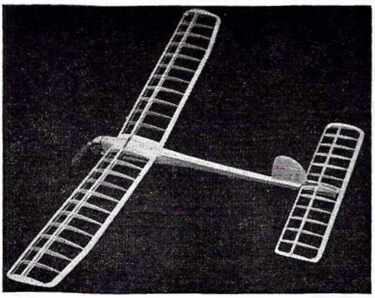
The individual wing incidence is easily changed by moving the locating pin hole in the root rib.

Check the glide from short, low power flights, (with a plastic prop for preference as these appear to provide better power control) as very little shows up from a hand launch. The tailplane must be well keyed after obtaining an approximate trim and before attempting full power.

When opened up, "Jumpin' Bean" should have a tight, right, spiral climb. If necessary use a shade of rudder to keep the tail down, but make sure all adjustments are cemented solid before flying.

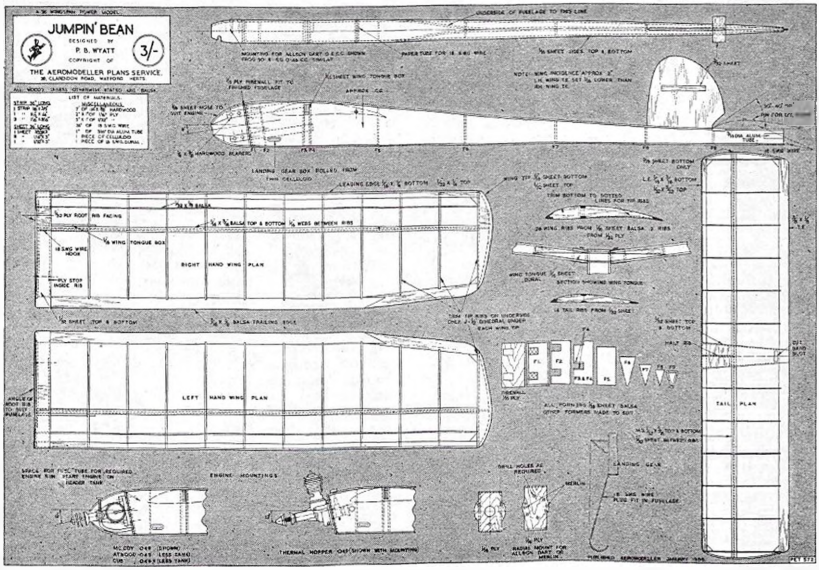
Don't forget the D/T on all test flying as the light wing allows the plane to pick up the least smell of lift.

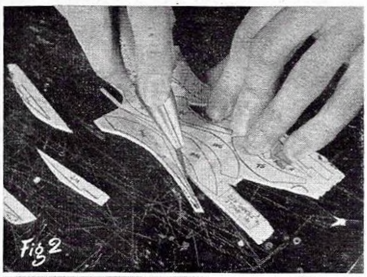
One final tip. If you like to keep your wing surfaces absolutely free from warps for a whole flying season or more, Peter Wyatt offers his pet scheme which was employed on the Jumpin' Bean prototype. Tissue strips of about half-inch width are stretched at approximately 3-inch intervals across the wing and tail. Angle is at 45° to the leading or trailing edge, and if applied before main covering, they not only impart extra strength for little extra weight, but make the flying surfaces positively rigid and free from flexing.

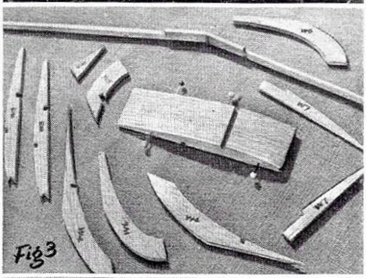


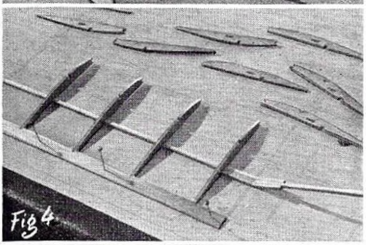
Framework of the Bean is simple, yet light enough for coniest performance with any point-five engine.

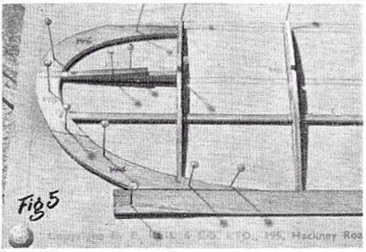
Full-size copies of this 1/5th scale drawing can be obtained, price 3/- post free from the Aeromodeller Plans Service.

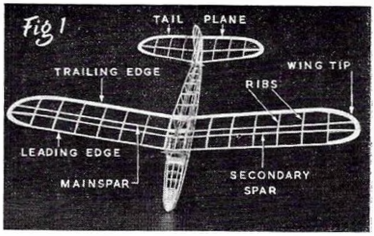












Especially for

Reverend F. Callon continues his instructive feature on how to build a kit model glider

IF THERE is one thing more than another that the beginner at aeromodelling wants to do, it is to get his first model finished and into the air as soon as possible. And who can blame him, for the old hands are just as bad. For this reason it is proposed to push ahead as fast as possible with the construction of the CADET, and to leave many of the theoretical and finer constructional points to be dealt with later on by way of recapitulation. A careful study of the accompanying photographs, taken during the actual building of the model, should help to iron out any little difficulties not yet dealt with for want of space.

Technical Terms

With the fuselage already built, we are left with the wing, tailplane and fin. As can be seen from *Fig.* 1, the wing of the CADET is made up of four spars running parallel from end to end, with fifteen pieces crossing them, and with the tips of the wing rounded off. Of the long spars, the front one is always known as the Leading Edge (LE for short), and the rear one as the Trailing Edge (TE); one leads the way in flight, and the other trails along behind. Of the other two spars the lower one is more important and is called the Mainspar. Some very simple models have no other spars except the LE and TE, while on the other hand there may be as many as half a dozen less important or secondary spars instead of the single one on the CADET.

The fifteen cross pieces are called ribs. The tailplane, just like the wing, is made up of LE, TE ribs and rounded tips. Getting into the jargon yet?

Cutting out the parts

We will start with the wing, and it is a good idea to get all the parts—wing tips and ribs—cut out

right away. *Fig.* 2 shows this being done on a separate flat piece of wood used as a cutting board; it saves wear and tear on the building board or the kitchen table as the case may be. Cut out the parts from the printed sheets roughly to start with, leaving a slight margin all round. The margin can then be carefully trimmed off each piece separately. Be sure that the straight edges which have to be cemented against other components really are straight and cut at right angles to the board; a very sharp blade will make this much easier, and slight inaccuracies can be corrected by use of the sanding block.

Fig. 3 shows some of the components ready for assembly. (In passing it may be noted that the W7

the Beginner

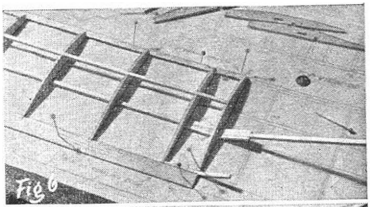
components which taper down to the centre of the wing tips are better left with a slight margin at the upper surface of the sharp end; this can later be sanded down flush with the rest of the wing tip as we shall see.) *Fig.* 3 also shows the twelve W2 ribs (which are all the same size) pinned together into a block and sanded to uniformity. Then, while still pinned together, the notches for the top and mainspars have been cut across the block with a hacksaw and cleaned up with a nailfile. (Full instructions for this method will be given later. For the time being, if preferred, the ribs can be cut out and notched separately in the ordinary way.)

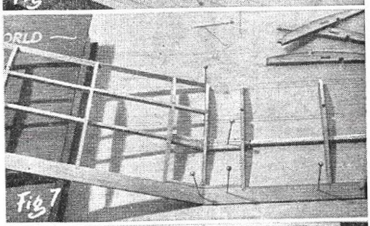
The Trailing Edge

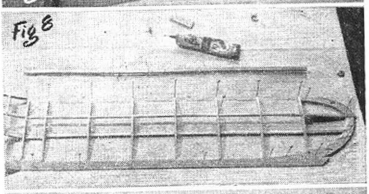
Lay the two lengths of wood supplied ($\frac{1}{8} \times \frac{3}{32}$) over the positions printed for them on the plan, and mark all the places where the ribs meet them. (A biro type of pen is ideal for marking balsa wood.) Cut a $\frac{1}{16}$ in. wide notch at these places, and then carve and sand the spars to the correct "V" section sloping away from the notched edge. To do this, lay the TE flat along the edge of a table or workboard, hold it down firmly with the left hand, and scrub away with the sanding block in your right hand until the rear edge of the spar is about $\frac{1}{32}$ in. thick all the way along.

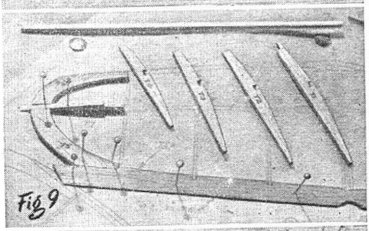
The Mainspar

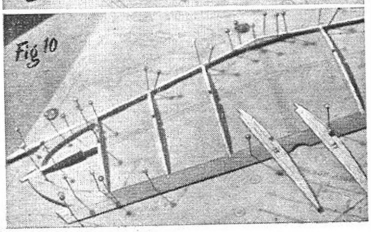
The two halves of the wing meet at a slight angle, called the "dihedral angle" of the wing. One of the best ways of getting this angle correct is to start by cementing the mainspar into one piece, incorporating the correct dihedral angle at its centre, and build the rest of the wing onto it. This particular design calls for a dihedral angle which lifts each wing tip $2\frac{3}{8}$ in. above the centre section of the wing. So if the wing was placed on a table, and one half of it pushed down flat, the other wing would lift a further $2\frac{3}{8}$ in., *i.e.* it would now be $5\frac{1}{4}$ in. above the table level. We will get the same angle in the mainspar if we lay one half of it along the edge of a table, place the other half against it, end to end, and

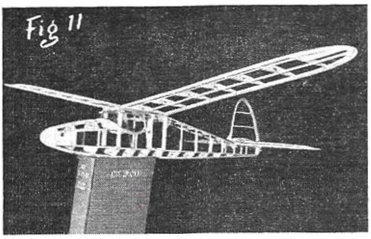












The book title is "The World", and no doubt if this well-built framework of the Keilkraft Cadet glider had the power of thought, it would really feel on top of the world.

then push the outer end of the second half 3¼ in. away from the table edge. Use two of the dihedral braces provided (marked "D" on the sheets), one cemented on each side, to secure the mainspar joint at this angle. At the top of *Fig.* 3 you can see the centre part of the mainspar sandwiched together in this way.

Assembling the Wing

Cover the plan with grease-proof paper and pin down the port (left-hand) half of the TE in position. Lay the port half of the mainspar loosely in place (one pin at the tip and will be enough) and push the ribs dry (uncemented) into place over it and into the notches in the TE—*see Fig.* 4. Now work your way along from the centre towards the tip, cementing each rib to the mainspar and the TE. Add the wing tip part by part. (*Fig.* 5) pinning the joints securely together to dry, and then cement the last rib—W3—in place. (The order here will be W4, W5, W7, W6 and finally W3.)

We now return to the centre of the wing—*see Fig.* 6—and cement the third dihedral brace "D", half against the end of the TE and half sticking up off the plan. Then add the centre rib W1 at the angle indicated by the special template, the top spar, and the LE.

"CONTEST WEATHER" A cartoon from Finland to prove that model flying is the same the whole world over.

COO DAD! THIS ONE'S GOTTA ROOF ON! (sketched from Life 'Nationals' 1954)

When the port half of the wing is dry, prop it up off the plan with a book or small box so as to drop the starboard half of the mainspar down onto the position marked for it, and then repeat the entire process of adding TE, ribs, tip and spars to this half of the wing. *Fig.* 6 shows the beginning of the process, and in *Fig.* 7 all that remains to be added is the LE. Note the pins holding the front of the ribs down flat onto the plan while the cement is drying. You can't use too many pins at this stage.

Cleaning Up

When the completed wing is dry, remove it from the plan and carefully trim off the overlap of LE and TE to follow the contour of the tips. These are then sanded down to a ½ in. knife-edge (like the TE), and the LE is rounded off slightly.

Tail Units

The tailplane (TP) is built like the wing but being flat with no dihedral joint it is a much simpler job. The order is TE, tips, ribs, T2, 3 and 4, LE, gusset T8 at the centre of the LE, the two centre ribs T1 (checking that R4, the lower component of the fin, fits into the space between them), and finally the top spar. Trim round the tips and sand as with the wing. *Figs.* 9, 10 and 11 should speak for themselves.

The fin offers little difficulty. Start by pinning down R4, and cement R1, R2, R3 and the LE in that order. When dry remove from plan and sand the TE down each side to the usual ½ in. knife-edge, and round off the LE. Check the position and angle of the fairing gusset R5 before cementing it; slip the fin into place between the centre ribs of the TP and place the entire tail unit onto the tail platform of the fuselage, slide R5 into position and mark it carefully. The fin can then be removed, and R5 cemented to its LE. Note that the fin should not be cemented to the TP before both units have been covered with tissue—of which more anon.

AEROPLANES IN OUTLINE

Number 19

By J. R. ENOCH

North American F.100 Super Sabre

In 1948, the year in which the F.86 Sabre was put into production, the North American Aircraft Company's design team, ably directed by Ray. H. Rice, began work on the design of a new fighter aircraft, ultimately destined as a Sabre replacement. Of great significance is the fact that from the outset, the aeroplane, then colloquially known as the "Sabre 45" was intended to be a fully supersonic "Air Superiority" fighter, with excellent handling qualities over the transonic speed range. Originally a far sighted private venture, the project attracted the attention of U.S.A.F. authorities, who were sufficiently well impressed to place a contract in October, 1951, for the construction of two prototypes. Over 2,000,000 engineering man hours were expended on the design, including 200,000 on aerodynamic development, eight models having been tested in seven wind tunnels throughout the country. Choice of layout no doubt presented numerous problems; at one stage, flush air-intakes of N.A.C.A. design, as tested on the YF.93A, a Sabre development, and twin wheel main undercarriage units were considered. The configuration finally selected however embodied the essential features of the now well tried and proven Sabre.

The first prototype, designated YF.100, Serial 25754 was completed in May, 1953, and on the fifteenth of that month, was piloted by Senior Engineering Test Pilot George Welch on its maiden flight, during which it exceeded the speed of sound in level flight. A truly remarkable achievement.

Production of the F.100 A, at the N.A.A. Co.'s Los Angeles plant, was commenced in mid 1953, at a rate of twenty-five aircraft per month. Initial orders were later doubled, then on 18th September, 1954, an additional order in excess of 100 million dollars was placed, the Columbus, Ohio plant was established as a second source of production. Delivery of the first Super Sabre to the Air Research Development Command was made in October, 1953, and the intensive test programme which ensued was conducted in roughly half the time expected, due in no small measure to the trouble free performance of the aircraft. Twelve months later, after the successful completion of these trials, the U.S.A.F. Strategic Air Command received its first machines on 29th September, 1954.

The Super Sabre became the fourth N.A. Aircraft to hold the World Air Speed Record, when, on 29th October, 1953, at Salton Sea, the F.100, piloted by Lt/Col. F. K. Everest, established a new record with an average speed of 755·149 m.p.h. Two runs, one of 742·961 m.p.h. and the other of 767·337 m.p.h. were made over the 15 Kilometre course.

Though bearing little resemblance to its predecessor, the design of the F.100 was influenced in many ways by the lessons learned as a result of combat operations with the F.86 in Korea. The most noticeable difference between the two types being the wing with sweep-back increased from the 35° of the F.86 to 45° on the F.100, wing-loadings being 75 lb./square foot, and 85 lb./square foot respectively.

Rigidly attached to the fuselage, the wing, with a thickness-chord ratio of 6% is of aluminium alloy construction with conventional ribs and a single spar located at approximately 60% chord. The tapered skin is integrally stiffened, being machined from solid of 3 in. original thickness. Single piece automatically controlled leading edge slats are employed. When normally closed, a small slot remains near the wing tip which assists in preventing tip-stall. Two piece, irreversible, hydraulically operated ailerons are centrally disposed on the trailing edge, at a point where maximum control effectiveness results with a corresponding decrease in aero-elastic tendencies. An unusual feature of the wing is that no flaps are fitted, these having been dispensed with in order to prevent turbulence over the very low tailplane. On the undersurface, provision is made for the fitting of finned, "Supersonic" drop tanks, such as were evident on the F.100A's recently delivered.

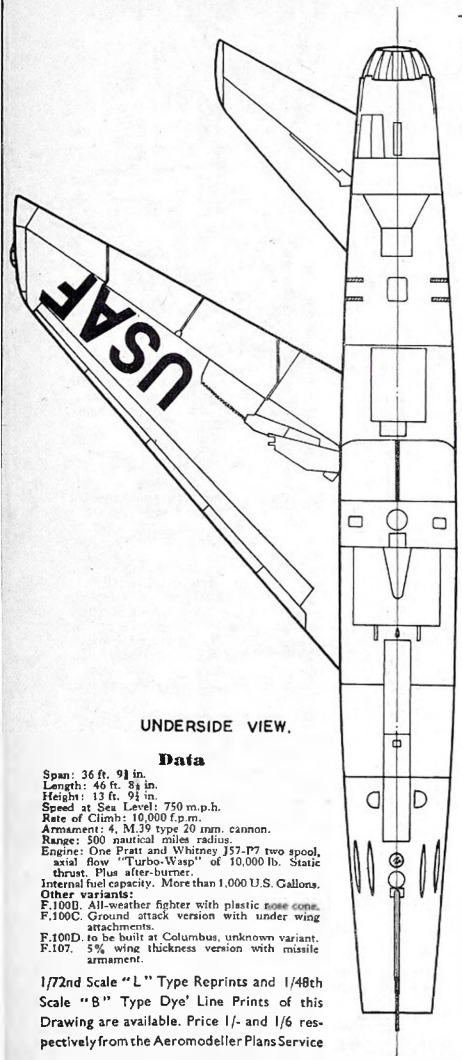
The undercarriage legs are unusually long, in order to permit high angles of attack for take-off. Single high pressure main wheels are carried on long axles of the single shock struts which are laterally braced by side members. The latter are enclosed in separate doors when retracted, the main wheels retracting into the fuselage. The twin wheel nose unit is hydraulically steered and retracts backwards into the fuselage. Main undercarriage doors are normally closed when the tricycle gear is extended.

The horizontal tail plane is a "solid" single surface, hinged at 50% chord and servo operated through an irreversible hydraulic system. Maximum negative angle is approximately 14° and, devoid of elevators and tabs, this surface affords excellent control at the high speeds encountered.

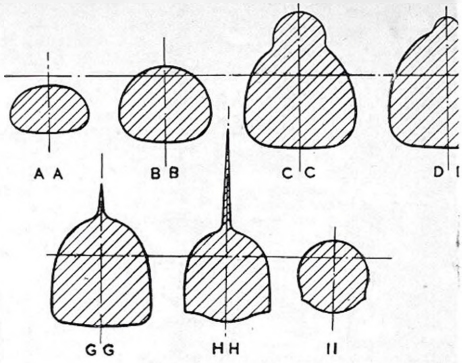
Its large clamshell cockpit canopy is probably formed of toughened glass rather than the normal plastics, resulting in very high resistance to the temperature rise due to friction, experienced at high speeds. Hinged at its rear edge, the canopy is hydraulically actuated. Considerable attention was given to control and instrument layout, to simplify operation in the cockpit which has an automatically regulated air conditioning and pressurising system. An improved pattern ejector seat with local armour plate protection is fitted. Behind the canopy, at the forward end of the fuselage spine is a dielectric aerial fairing.

Adjacent to the dorsal fin-fuselage spine intersection, approximately 13 ft. from the tail pipe orifice, is a break line at which point the rear fuselage is detachable, access to control and electrical system disconnection points being afforded by way of small panels locally situated.

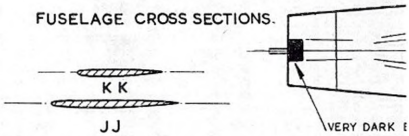
Production F.100-A's are temporarily grounded following three crashes. In the meantime, these photo's indicate its purposeful lines and reveal, at left, the underwing tanks and cockpit hingeing.



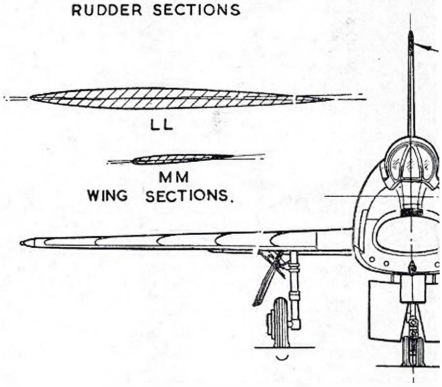
UNDERSIDE VIEW.



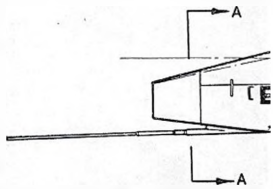
FUSELAGE CROSS SECTIONS.



RUDDER SECTIONS



WING SECTIONS.



Data

Span: 36 ft. 9½ in.
Length: 46 ft. 8¾ in.
Height: 13 ft. 9½ in.
Speed at Sea Level: 750 m.p.h.
Rate of Climb: 10,000 f.p.m.
Armament: 4, M.39 type 20 mm. cannon.
Range: 500 nautical miles radius.
Engine: One Pratt and Whitney J57-P7 two spool, axial flow "Turbo-Wasp" of 10,000 lb. Static thrust. Plus after-burner.
Internal fuel capacity. More than 1,000 U.S. Gallons.
Other variants:
F.100B. All-weather fighter with plastic nose cone.
F.100C. Ground attack version with under wing attachments.
F.100D. to be built at Columbus, unknown variant.
F.107. 5% wing thickness version with missile armament.

1/72nd Scale "L" Type Reprints and 1/48th Scale "B" Type Dye' Line Prints of this Drawing are available. Price 1/- and 1/6 respectively from the Aeromodeller Plans Service

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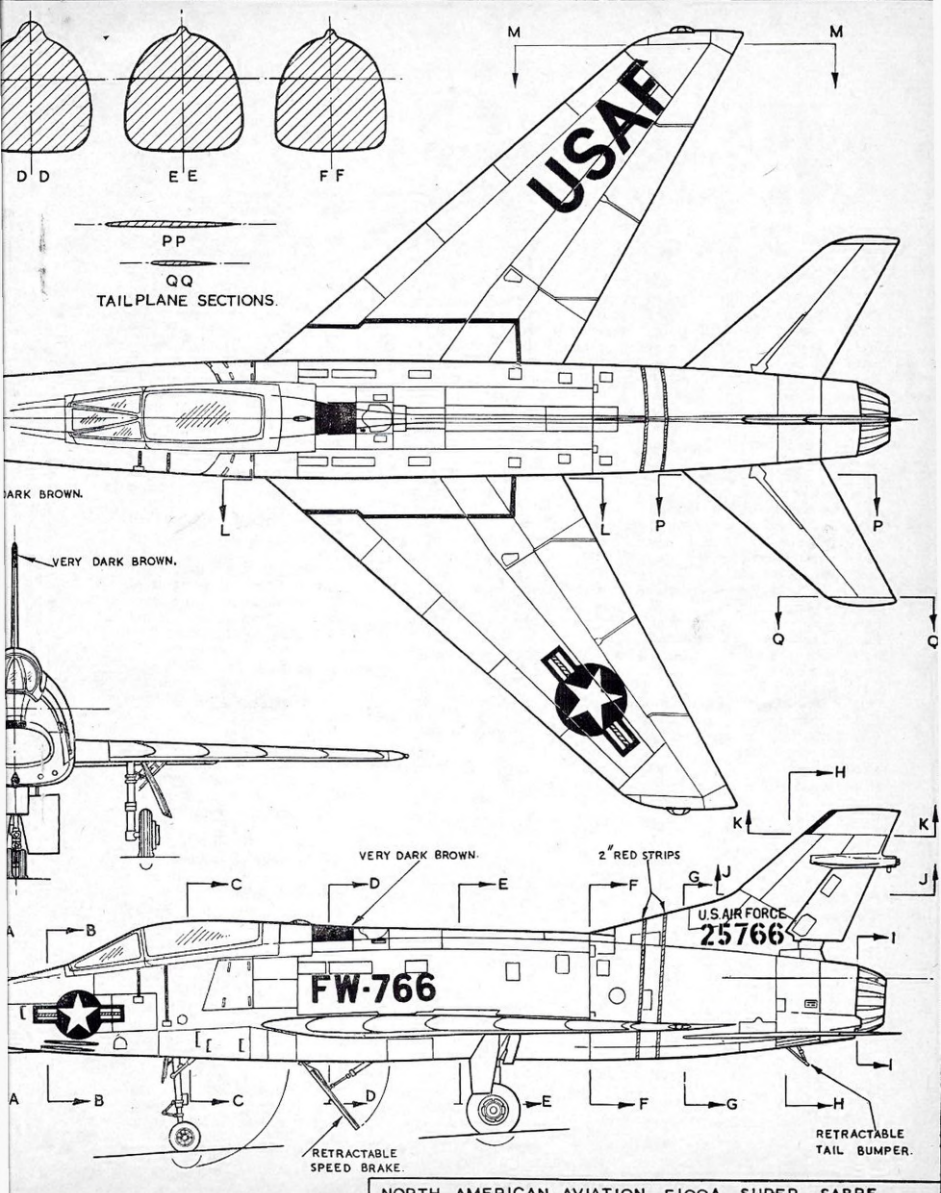


NORTH AMERICAN AVIATION F.100A SUPER - SABRE

TAILLESS Creations

by..... F. C. SMITH

about the author . . .

Aged 24, and a commercial artist by profession, interested in aeromodelling since 1938, preferring free-flight models in the order glider; lightweight rubber; and power. Member Southern Cross A.C. for the last six years, four as Comp. Sec. Interested in photography, philately, cricket and tennis. Is a confirmed bachelor!

THE CLUB of which I am a member has, for a number of years, been interested in tailless models, a factor encouraged by the presentation of a trophy for that purpose in 1946. From then up to the present time *all* the aircraft built by members have been of the sailplane variety, being the easiest to handle, and showing a marked advantage in performance.

These models were mostly of small stature with spans up to 50 in., until, early in 1951, Bill Gravett shook everybody by producing a job with a wingspan of 13 ft., of a plain tapered "vee" planform. The model proved very stable in flight, and he was our first entrant in a national tailless contest—the 1951 Lady Shelley Cup—when he placed second with a time of 9 : 24. In doing so he established a tow-launch record for the club of 8 : 08—which still remains unbroken!

The battle had commenced, and not to be outclassed Grahame Gates literally slaughtered the balsa to appear with a model of 21½ ft. span ready for the Lady Shelley Cup in '52. Topping the club entry with a time of 10 : 28, it placed 3rd in the event. Like the earlier model, it was of V shape layout, although rather less sweep-back was employed, and the area just conformed to maximum F.A.I. requirements in order that International events could be entered if necessary.

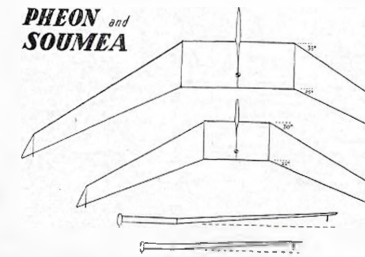
During the winter of '51/'52, a number of medium sized machines took shape, all of different styles, and all of which have left their mark in the annals. First let us look at the success of Tony Nichols, with a cranked wing design of 100 in. span, amassing an area of 900 sq. in. Following a hand launched contest, he decided to make an attempt on the British Lightweight Tailless H.L. record, and succeeded in pushing it up to 1 : 34. Later that year the same model took first prize in the tailless section at the All Herts Rally.

Hot in pursuit came Keith Donald with a flying plank, having an almost straight centre-section using N.A.C.A. 6412 with slight sweep back and much washed-out tips of Clark Y airfoil. A short fuselage incorporated carried two hooks and ballast, and the glide left little to be desired, although some difficulty with longitudinal stability was experienced early on, this being cured by the addition of ailerons. This machine raised the record still further to 3 : 29, a figure that stood for almost two years until recently broken at Clywd by Fred Wilde of Chester, with the remarkable time of 9 : 51.

The foregoing will have given you some idea of the progress made by the club in this aspect of modelling, and the background of knowledge which the writer had at his disposal when his first tailless glider, "Soumea," was built. A mere 7 ft. in span, it was the smallest of the newer models, and gained 6th place in the '52 Lady Shelley with a time of 6 : 11. This model was not flown again until early the following year, when extensive trimming was carried out in order to get a reasonable performance on the newly introduced shorter (50 metre) line. Its ultimate trim was discovered, and this work paid dividends when, with old man weather playing his tricks, the model behaved perfectly in quite a strong wind to aggregate 6 : 27 and to win the 1953 Lady Shelley contest.

Thus inspired, "Soumea" won top honours at the All Britain Rally that year, but by this time it was becoming dilapidated, and a new model was deemed necessary to meet the strong challenge expected at the '54 Nationals. Therefore, production went ahead with a larger and slightly modified version known as "Pheon," being 9 ft. 6 in. in span. Following extensive trimming sessions, luck stayed with me at Waterbeach and "Pheon" returned a winning score of 6 : 33.

My initial efforts were promoted by other member's successes, and the idea for the

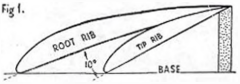


design of "Soumea" sprang from the "V" shaped models of Gravett and Gates, and the plank type of Donald's utilising the desirable features of all these types. It was noticed that, whilst the high aspect/ratio V's were stable in flight, they were prone to flutter if trim was upset in any way, due mainly to the difficulty of building a swept-back wing of sufficient strength to stand the torsional forces at play during a stall, the effect resulting in shattered panels of tissue. A plank has the advantage in this respect, but does not possess the measure of longitudinal stability necessary and better afforded by sweep back. From this it was obvious that the ideal layout was either a low-aspect ratio "V", or that which I finally chose of a straight centre section with well swept tips, this arrangement providing the advantage of a fuselage for ballast and tow hooks; the G.A. drawings show the final layout.

Question of airfoil section does not appear over critical. "Soumea's" centre panels used R.A.F. 32, with Clark Y towards the tips. "Pheon" on the other hand has M.V.A. 301 going into Clark YH with the hope that entry would be improved, better lift from the "mainplane," and increased tip stability. Chief difference in design lies in the ratio of area forming the centre panels and in the amount of sweep back.

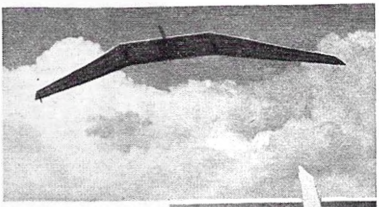
The method of building wash-out is easily accomplished, and one that is common in the club. One simply blocks up the trailing edge to the required amount, and the taper of the wing does the rest! (*See Fig.* 1). When built and covered, the tip fins are added, being of such shape and size that they retain the correct amount of wash-out when the two wing halves are stored.

Fig 1.

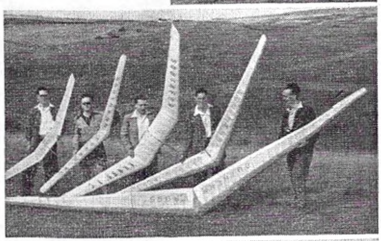


Only a small amount of dihedral was incorporated in both designs, 2½ in. under each tip being ample. C/G occurs in both models on a line equal to 35% of the total area.

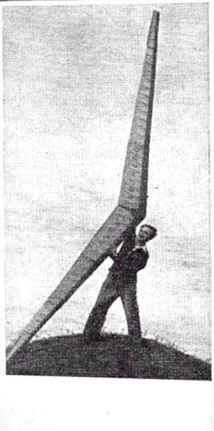
When one considers that approximately 40% of the total area of a tailless machine is given over to the job of stabilising—or acting as a tailplane—the need is apparent for models of larger dimensions in order to retain a reasonably effective lifting area. For example, "Pheon" with a wing of 1,060 sq. in. can be said to have only the equivalent lifting area of about 636 sq. in. This is where the large model scores, also the trim settings are not so sensitive or critical as with a small model. In my opinion, some of the modellers flying in the Lady Shelley at Waterbeach this year would have done much better with larger machines, and I would advise the beginner not to be too timid on the question of size. The tailless glider has one certain advantage over most types, i.e., towline stability, and I have found them to handle well under all conditions whilst on the line. Off the line, I do not worry too much about a set turn, since they will go into circles in either direction quite happily, and will usually turn away off the top of a stall.



Above: Pheon, the 9 ft.6 in. winner of the 1954 Lady Shelley Cup for designer Fred Smith, soars in the upcurrents over the South Downs at Brighton against a beautiful background of inland cloud. At right: Fred displays the planform of his winner with swept tips for better longitudinal stability. See scale drawing opposite.



Enthusiasm for tailless sailplanes is typified by the view above, of a Southern Cross club flying meeting. Left to right, the members are: R. H. Smith with "Soumi," P. R. Rose with "Pterapus," Fred Smith with "Pheon," Keith Donald with "Pteranodon" and Grahame Gates with "Tich Mk.2."

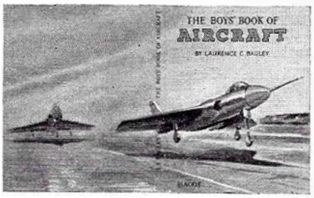


At right: Grahame Gates effectively displays the 16 ft. 6 in. wingspread of his "Tich," which is only slightly smaller than his 1952 F.A.I. maximum size model which was 21 ft. 6 in. and had an area of 16 square feet! Large models like this make quite an impression at a big rally, as will be appreciated by anyone who has seen their scythe-like passage on landing approach.

Owen Thetford

Armchair Aeronautics

a selection of books reviewed for your enjoyment



Old Timers

Aircraft of the 1914-1918 War, (Harleyford Publications 42s.), 234 pages. 80 plan-pages, fully illustrated.

The true aviation enthusiast, with his almost encyclopaedic knowledge of aeroplanes, photographic memory for serial numbers and overwhelming obsession for collecting authentic data, pictures and models, must be an author's nightmare. Any newly published volume inevitably comes under his immediate and hypercritical scrutiny and it must indeed be a good book to win his instant and unqualified praise. The newly reprinted "Aircraft of the 1914-1918 War" undoubtedly falls into this category and is definitely a work of reference which must find a place on the bookshelf of any enthusiast worthy of the name. It is packed from cover to cover with data, illustrations which show great originality of choice and care in avoiding those we know so well, and drawings which are a delight. Factually and artistically it sets a very high standard.

The author has adopted the well-known layout standardised in the "Aircraft of the Fighting Powers" series. For each type of aircraft there is a well illustrated page of historical and performance data faced by superb whole page G.A. drawings to a scale of 1/72 by that master aeronautical draughtsman, the late E. J. Riding. The main body of the work comprises some 82 such pages, after which there are four Appendices amounting to another 44 pages dealing with lesser known types.

Appendix "C" illustrating over 100 experimental and rare types, is alone worth the two guineas, and is without question the finest assembly of collector's pieces of the period yet seen within one cover.

Although the author has handled the vast mass of material with commendable skill, a few errors have crept in, worst of which is the illustration on page 17 which purports to be a D.H.9A. It is in fact the prototype D.H.15. One would have thought that a photograph of that most common of all Cinderellas, the "Nine Ack" would have been easily come by. The Imperial War Museum, which has provided so many of the illustrations used in this book, could certainly have produced some very convincing examples.

Nevertheless, in "Aircraft of the 1914-1918 War" there is a reference book of unparalleled value of the nostalgic kind which is all too rare in an age where streamlined blowlamps masquerade as aeroplanes—

Specially reviewed by A.J.J.

A Colourful Array

The Boys' Book of Aircraft by Laurence C. Bagley. (Blackie 3s. 6d.), 29 full-colour illustrations.

Laurence Bagley, an aeronautical artist with a rapidly growing reputation for technical accuracy and sensitive appreciation for atmosphere and the appropriate setting of an aircraft, here illustrates a representative cross-section of modern types ranging from the Avro-Atlantic to the Douglas Skyray, together with general descriptive notes and recognition details. Each aircraft is portrayed in an arresting, imaginative composition which brings out its "personality" and is a delight to the eye. Although intended primarily for the junior market, this little book is well worth acquiring by anyone interested in aeronautical art. One small criticism, though. Why not a British aircraft on the jacket instead of U.S. Navy Cutlasses?

Back-Room Stuff for the Layman

Aircraft for All by S. E. Veale (Ward Lock, 12s. 6d.) 256 pages. Illustrated.

In popular, semi-technical language Mr. Veale has attempted to cover the entire technical background to modern aviation. Sandwiched between an introductory chapter, which is the respectful nod at the Wright brothers and other pioneers usual in a work of this kind, and a rather irrelevant chapter on the history of spotting organizations and methods, is a laudable effort to describe just about everything in aviation from a ram-jet to a balloon. It is no mean task and on the whole well done, though the general aeronautical enthusiast for whom the book is presumably intended may well find some of the material on engine design and metallurgy a trifle indigestible. And the aeromodelling expert will probably notice that in the page of wing sections a R.A.F. 30 is mistakenly described as a R.A.F. 31 and the R.A.F. 34 looks much more like R.A.F.15.

From Stringbag to Swift

Mach One by Lieutenant-Commander Mike Lithgow (Allan Wingate, 12s. 6d.), 151 pages. Illustrated.

This fascinating autobiography by one of Britain's most famous test pilots became front-page news on publication because of its alleged disclosures of "secret" information about such matters as the rate

of roll of the Swift jet fighter and the behaviour of aircraft in supersonic flight. If this publicity helps **Mach One** to find a wider readership so much the better, for it is one of the best-written books about military and naval flying to have appeared since the war.

Mike Lithgow, who gained the World's Air Speed Record for Britain in 1953 by flying a Swift at 735 m.p.h. (since raised to 753 m.p.h. by the Douglas Skyray) first learned to fly with the Fleet Air Arm in 1939 and afterwards flew Swordfish from **Ark Royal** and Albacores from **Formidable.** It was whilst on a night operation in an Albacore over the South Atlantic that Lithgow crashed in the sea, floated in his Mae West for five hours and was eventually discovered and rescued by his own aircraft-carrier by a million-to-one-chance.

Mike Lithgow came to test-flying by way of the Aeroplane and Armament Experimental Establishment at Boscombe Down where he was posted to do trials on the Fairey Barracuda. After a period in the U.S.A. where he flew such types as the Bell Airacomet (America's first jet) the Douglas Skyraider, and the entire series of Grumman Naval fighters from the Skyrocket to the Cougar, Lithgow joined Supermarines where he is now Chief Test Pilot. Having as it were, served his apprenticeship on such types as the Seafang (at 494 m.p.h., the fastest piston-engined fighter in the world) and the Attacker, Lithgow reaches the climax of his book and of his own career with the chapters on the development flying of the Swift and the various prototypes which led to it. There is a wealth of information here on such matters as shock-waves. Mach numbers and power-operated controls. Mike Lithgow is just as happy with a pen as at the controls of a jet fighter and it is a joy to find such brilliant, first-hand descriptive writing about modern jet flying. **Mach One** is a book not to be missed!

Victory in the Air

Royal Air Force, 1939-45. Volume III. "The Fight Is Won," by Hilary St. George Saunders, (H.M.S.O. 13s. 6d.), 441 pages, illustrated.

To many readers this final volume of the history of the R.A.F. in the Second World War will prove the most interesting, demonstrating as it does the overwhelming importance of air power in modern war and its decisive contribution to victory. The narrative covers the massive build-up of Allied air power for the invasion of Europe, the hammering of German oil plants and transportation systems, D-Day and afterwards, Arnhem, the crossing of the Rhine and final victory in Europe. Other chapters are devoted to the defeat of the Japanese in Burma, Coastal Command's victory over the U-boats and a great deal of new material on the German "flying-bomb" and V.2 rocket offensives.

As in the earlier volumes, there are errors in the text which simply shouldn't occur in a work of this kind. On page 171 the astonishing statement occurs that "between 8th and 16th August, 1944, twenty rockets arrived in England." The first V.2 landed at Chiswick on 8th September, 1944. Again, on page 184, there is a reference to *ninety* Yorks being available to Transport Command "early in 1943." This is clearly wrong as the first prototype did not make its maiden flight until July, 1942. There is room for improvement, too, in the illustrations and one looks in vain for good air-to-air photographs of the outstanding aircraft discussed in the text. The Appendices, however, are invaluable and include Orders of Battle for the R.A.F. as at 6th June, 1944 (European Theatre) and 1st July, 1944 (South East Asia) as well as official performance figures, armament data and bomb-loads for all operational aircraft of the R.A.F., Luftwaffe and Japanese Air Forces for the period 1944-45.

Comets and Fleas

The Dangerous Skies, by Air Commodore A. E. Clouston (Cassell, 13s. 6d.), 187 pages. Illustrated.

The author, a New Zealander who came to England to join the R.A.F. in 1931, first showed his outstanding ability as a pilot with the famous aerobatic team of No. 25 Fighter Squadron (Hawker Furies) at the Hendon Air Display. In 1935 he became one of the first two civilian test pilots appointed to the Royal Aircraft Establishment at Farnborough and since then has had every kind of adventure in the air, from experiments with ice formation on the wings of an old Heyford bomber to wartime tests on the Douglas "Turbinlite," an aircraft fitted with a powerful searchlight in the nose to seek out enemy night raiders. In another series of experiments Clouston risked decapitation flying a Miles Hawk and Fairey P.4/34 into balloon cables to investigate the effects on the wing! Later in the war, the author commanded No. 224 Squadron at Beaulieu, equipped with Liberators for anti-submarine patrol, and a Beaufighter Strike Wing at Langham.

Of equal interest are the chapters on the author's extensive experiences in civil aviation. How evocative of the 'thirties are the memoirs on the "Flying Flea" craze which swept England following the success of Henri Mignet in France! Although few of them ever got airborne, these diminutive aircraft caught the imagination of the public and attracted crowds at any air display where they appeared.

Clouston is chiefly famous for his remarkable record flights in the original D.H. Comet racer and his account of how, with Mrs. Kirby-Green, he broke the London to Cape record of Amy Johnson in 1937, and later, with Victor Ricketts, established a magnificent London-New Zealand-London flight, makes thrilling reading. This latter record (10 days 21 hours, 22 minutes for the round, trip) still stands after sixteen years.

This book is full of good things and packed with anecdotes (including the story of how the author chased a Messerschmitt Me. 110 in a Whirlwind over Portsmouth *before the outbreak of war*). It can be warmly recommended to all readers.

Many other titles have been received for review, and will be featured in a continuation of Armchair Aeronautics, next month.

BLUE PANTS

A new approach to stunt flying is presented in this thick-wing, short-moment design by HENRI STOUFFS —winner of the aerobatic section at the 1954 World Championships

WHEN HENRI STOUFFS of the Vogelzang club in Brussels won the aerobatic event at the 1954 World Control-line Championships, it was in part a victory for Britain. Henri started his aeromodelling when in England just after the War. Beginning with the faithful Keil Kraft Phantom and a Mills 1·3 c.c. diesel, Henri graduated through every control-line kit on the British market, and was one of the first members of the Ealing M.F.C. Now he is in World class, and in Blue Pants, his simple yet functional design for the E.D. 2·46 or similar, we have a model capable of putting on the best display of model aerobatics in Europe.

Tight looping radius, immediate recovery, and smooth straight and level flight characteristics are not easy to combine in one airframe; but this is one design that fills the bill. For combat we give it full marks and a thorough recommendation, as the simple sheet and block fuselage, thick wing and short moments make it extremely robust.

Start construction with the fuselage by cutting out the basic $\frac{1}{4}$ in. sheet sides. *Do not* cut the wing and tail panels away from the sides at this stage, merely mark the outlines, and keep the sheet solid for easier assembly. Bind undercarriage to F.3 and assemble sides onto F.2 and F.3. Cut bearers to suit tank and engine as on plan, and cement in place firmly after giving a first coat of cement on all four bearer faces. Add F.4, F.5 and F.6, with tailskid attached, (this is long to give better take-off action) and attach $\frac{1}{4}$ in. sheet base.

Cut and shape the tailplane and elevator, hinge together with strong tape as shown and bolt the horn in position.

The thick wing is best assembled onto the two mainspars loosely over the plan, and using the leading edge to give a true line-up. Whilst these joints are cemented and not absolutely firm, add the $\frac{1}{16}$th sheet trailing edge pieces to get a final true wing, without warps. By sighting along the rib leading or trailing edge, one can soon check if the wing is twisted out of line. Add the $\frac{3}{32}$nd sheet tip profiles, then the soft block corner packing, not forgetting the ballast in the right-hand panel.

Now add the spar and trailing edge webbing then sheet cover the leading edge back to the mainspars on upper and lower surfaces. Assemble the bellcrank on the $\frac{1}{4}$ in. plywood platform, and cement this between the centre rib and nearest port rib. Make sure that the pivot point is exactly as on the plan, and pack the space between rib contour and platform with scrap $\frac{1}{16}$ in. Pass the 20 s.w.g. lead-outs through slots in the Port ribs, and solder cup washers as shown to lock onto the bellcrank. Fit the 14 gauge push rod in the same way, only from the underside of the bellcrank, and sheet the whole centre section. Add capping strips on every rib, then sand wing smooth after shaping tip blocks.

Now cut out the wing and tail sections on the fuselage, and slide each component in place. Hook up push rod with controls at neutral and add extra cement through the open top of the fuselage. Fit the tank then the top fuselage block, and fin.

After mounting the engine, fit F.1, and soft cowling blocks, then give all balsa parts a coat of Sanding sealer. Use Yellow Modelspan on the wings and tail, and lacquer the fuselage and Fin bright Blue. Put a good 9 × 6 in. prop on the engine, slip on a spinner to match, and you are ready to air Blue Pants (on what will be the first of many a thrilling c/l session.)

Full-size copies of the 1/4th scale plan opposite can be obtained price 4/6d. post free from Aeromodeller Plans Service.

WINNING STUNT MODEL AT 1954 WORLD CHAMPIONSHIPS

BLUE PANTS

DESIGNED BY
H. STOUFFS

4/6

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED.

MATERIALS REQUIRED

2 STRIPS OF 1/16 x 1/16 x 36 BALSA	1 SOFT BALSA BLOCK 1/2 x 1 1/2 x 5	72 OF 20 S.W.G PIANO WIRE
5 SHEETS - 1/16 x 3 x 36 "	2 HARDWOOD BEARERS 3/8 x 1/2 x 5	6 - 18 " " "
1 " " 1/32 x 3 x 12 "	2 WHEELS 1 1/2" DIA.	19 - 14 " " "
3 " " 1/8 x 3 x 36 "	1 PIECE OF 1/16 PLY. 3" x 4 1/2"	18 - 12 " " "
1 SOFT BALSA BLOCK 1" x 2 1/4" x 15"	1 " " 1/16 " 2" x 20"	12 " 10 OR 12 S.W.G BRASS TUBING
1 " " 1/4 x 2 1/2 x 3 "	6 x 6 OF 5THM BRASS OR TIN	SMALL PIECE OF 20 OR 22 S.W.G BRASS
1 " " 1 x 2 1/2 x 3 "	1 - 3 BELL CRANK	1 3/8 DIA SPINNER

ED RACER SHOWN

SOFT BLOCK DECKING

C.G.

1/16 SHEET SIDES CUT TO THICK LINES

PAINT LINES

1/16 SHEET FIN NO OFFSET

SAND FIN ON PORT SIDE ONLY

1/8 DIA SPINNER

TANK

CUT OUT FOR WING

TOP & BOTTOM COWLING FROM SOFT BLOCK

18 S.W.G WIRE TAILSKID CEMENT TO F6

1/16 SHEET BASE

BAFFLE

TANK FROM 5THM BRASS OR TIN

1/2 DIA WHEELS

3/8 x 1/2 BEARERS NOTE THAT BEARERS ARE 5/8" BEHIND F2 THIS IS TO BRING TANK CENTRE LEVEL WITH ENGINE JET

1/16 SHEET REINFORCING PIECES

18 S.W.G WIRE U/C

3/16 DIA U/C TO FORMER

1/16 PLY

F1 1/16 PLY

F2 1/16 PLY

F3 1/16 SHEET

F5 1/16 SHEET

1/16 PLY

SOFT BLOCK TOP DECKING

1/16 SHEET SIDES

1/16 SHEET REINFORCING PIECES BETWEEN F2 & F3

1/16 SHEET BOTTOM

SECTION THRO' A-A

1/16 SHEET C/S SHEET

1/16 PLY BELLCRANK PLATFORM

1/16 SHEET WEBS. CENTRE 2 BAYS ONLY

BELLCRANK ENDS BENT UP

SECTION THRO' WING AT BELLCRANK

1/16 SHEET WEBS. CENTRE 2 BAYS ONLY

WING RIB 1/16 SHEET 12 OFF

SLOTS CUT IN PORT WING RIBS TO TAKE LEAD-OUTS

SECTION THRO' WING TIP

TAILPLANE AND ELEVATOR FROM 1/16 SHEET

ELEVATOR HORN

LINEN OR SILK HINGES

NOTE: TAILPLANE AND ELEVATOR ARE ASYMMETRICAL

ELEVATOR HORN 20 - 22 S.W.G BRASS

SCRAP SOFT BLOCK

1/16 SHEET TOP & BOTTOM

CUT OUT & BEVEL RIB TO TAKE TANK END

1/16 SQ SPARS

1/16 SHEET WEBBING

1/16 SQ L.E.

SCRAP SOFT BLOCK

NOTE WING IS ASYMMETRICAL

20 OR 18 S.W.G TUBING

20 S.W.G LEAD-OUTS

1/32 SHEET (SEE SECTION)

1/16 PLY BELLCRANK PLATFORM

1/16 SHEET SANDED & GLUED TO BOTTOM C/S SHEET

SLOT BOTTOM C/S SHEET TO CLEAR PUSH-ROD

14 S.W.G PUSH-ROD

1/16 SHEET C/S TOP & BOTTOM

1/16 SHEET WEBBING

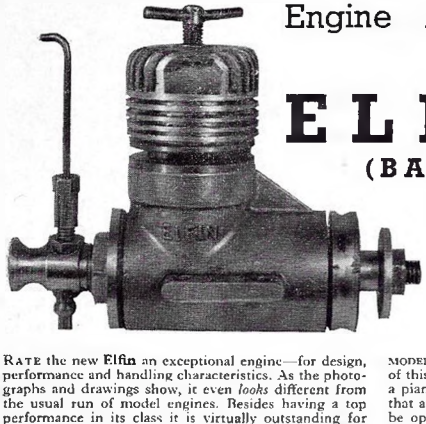
1/16 x 1/16 CAPPING STRIPS TOP & BOTTOM

1/16 SHEET T.E. TOP & BOTTOM

1/2 - 3/4 OZ. OF LEAD

NOTE: PUSH-ROD IS OUTSIDE FUSELAGE

PUBLISHED AEROMODELLER JANUARY 1955 C.L. 574



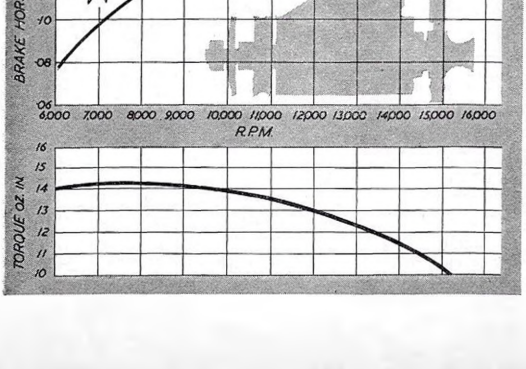
Engine Analysis Number 7

ELFIN 1·49
(BALL BEARING)

Reviewed by
Ron Warring

RATE the new **Elfin** an exceptional engine—for design, performance and handling characteristics. As the photographs and drawings show, it even *looks* different from the usual run of model engines. Besides having a top performance in its class it is virtually outstanding for ease and flexibility of control, starts at a flick with almost any size of propeller and can throttle down by choking to smooth, consistent running at low speeds. But, oh! four ounces total weight for a 1.5 c.c. motor is more than some 2.5 c.c. engines.

Chief new design features of the Elfin are the twin ball races carrying the crankshaft, and reed valve induction. The latter, a simple flap valve of phosphor bronze (or possibly beryllium copper?) is essentially similar in design and construction to the unit employed on the American Thimble Drome (February, 1954, AERO-MODELLER). As a matter of interest the natural frequency of this valve, as near as we could judge tuning it against a piano, is of the order of 26,000 cycles per minute so that at half resonant frequency, 13,000 r.p.m., it should be opening and closing with maximum amplitude. In this respect 13,000 r.p.m. could, theoretically, be a "best" operating speed for the induction system, or alternatively a "critical" speed. Nothing of this showed up on test and we would say that, in practice, about the only effect of operating at 13,000 r.p.m. continuously would be to shorten the life of the valve. What the fatigue life of the material is cannot be guessed, but it is certainly high, although not indefinite. Being a non-ferrous material fatigue strength will gradually and continually diminish, until eventually it will fail. Quite probably by this time the rest of the engine will have



Specification

Displacement: 1.49 c.c. (.091 cu. in.)
Bore: 0.503 in.
Stroke: 0.460 in.
Bore/Stroke ratio: 1.075
Bare weight: 4 ounces
Max. B.H.P.: .158 at 13,600 r.p.m.
Max. torque: 14.3 ounce-inches at 7,500 r.p.m.
Power rating: .105 B.H.P. per c.c.
Power/weight ratio: .04 B.H.P./oz.

Material Specification

Crankcase: Pressure die-cast
Cylinder: Nickel Steel
Cylinder jacket: Dural
Piston: Cast iron
Contra-piston: Cast iron
Connecting rod: Dural
Crankshaft: Nickel Steel
Crankshaft bearings: Two Hoffman ball races

Manufacturers

Aerol Engineering, Henry Street, Liverpool 13.
Retail price: 91/- (including tax).

been worn out anyway! Reed valves of this type are extremely practical and will quite possibly become more popular. They are almost a "standard" on American outboard engines.

Reed Unit

The reed unit is held in a 7/16-in. deep backplate (locked in position with a spring circlip), the whole screwing into the crankcase. The crankcase itself is unique in that it is cylindrical throughout, giving the whole engine a most solid appearance. Actually the extra mass of metal involved is quite small, there being only some 5/16-in. spacing between the two ball races. The crankcase unit weighs 1 ounce and the ball races 5/16 ounce each.

Mounting lugs are cast in on either side of the crankcase mid-section, symmetrical both fore-and-aft and vertically. Thus, when mounted, the actual thrust line is 1/16-in. above the top surface of the mounts. It was suggested by an observer that the lugs might have been positioned farther aft, in view of the overhang of the induction tube, to shorten the length of bearers required. The lugs are, however, disposed about the centre of gravity of the engine, which seems a more logical solution. What we would have been inclined to suggest, however, is that with such a crankcase separate lugs might have been employed at each end of the crankcase to give wide spaced four point mounting, rather like a full-scale engine. This would have given even more positive hold-down characteristics—an advantage, particularly in view of the fact that the Elfin does have an appreciable amount of vibration at all running speeds.

The crank disc is not balanced, being quite plain; the shaft, disc and con-rod pin being machined from a single piece of nickel steel. The shaft is relieved slightly just in front of the disc. Main diameter is 1/4 in. tapering down to a 3/16-in. thread. The backplate is wide and machined with a pulley groove—presumably for cord starting, although this would be difficult to achieve with a propeller due to the risk of fouling the propeller with the starting cord. The backplate is also bossed, 9/16-in. diameter for a projection of just over 1/8-in., which means that the centre hole in commercial propellers must be reamed out to 9/16-in. to fit. Also the length of threaded portion available is too short to accommodate propellers of more than 6-in. pitch. If larger pitch propellers are used, they must be cut back at the hub.

A relatively massive steel cylinder is employed (weight 3/4-ounce) which screws into the crankcase casting. Three by-pass ports are machined in the outside, transfer to the cylinder being through upward raked holes in the cylinder walls. Port opening overlaps the exhaust to an appreciable extent. Exhaust porting is by the now conventional "360 degree" milled external slots in the cylinder wall.

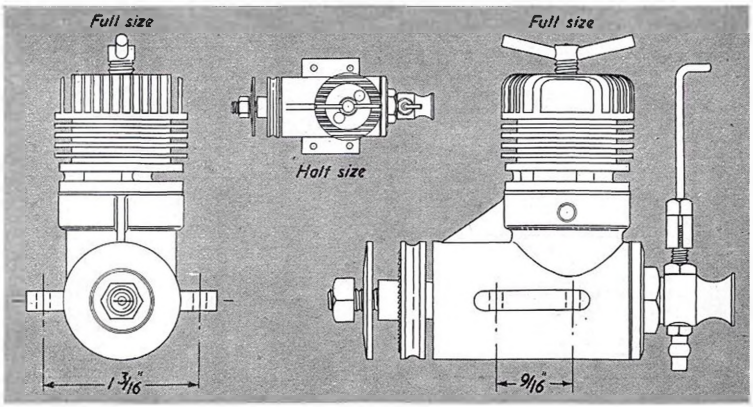
The light alloy cylinder jacket is a sliding fit over the cylinder. This is held down by a separate light alloy head which screws on to the top threaded part of the cylinder, the head subsequently bedding down flush with the top fins of the cylinder jacket. The contra-piston screw is mounted in this head member.

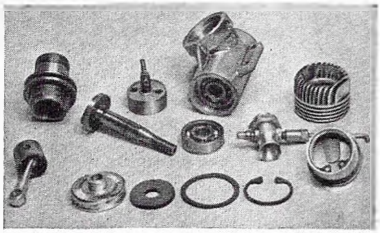
Dismantling . . .

It was suggested by the AEROMODELLER staff when the engine was sent down for test that it might be as well to design and describe a couple of simple tools to remove the crankcase backplate and cylinder head. These do not appear necessary, however. If the rim of the backplate is gripped in a vice, it is readily loosened by unscrewing the engine. Similarly, to remove the head, round-nosed pliers located in the keying holes and twisted perform the job quite satisfactorily, and without damage. Dissembling the rest of the engine may not be so straightforward, however.

. . . best left alone

Frankly, unless you know what you are doing, we would suggest leaving well alone. If you must be inquisitive, by all means unscrew the crankcase backplate and have a look at the reed valve. Take this to pieces, if you will. You should be able to get it back without much





Dismantled Elfin reveals twin races, fine cylinder finning and reed unit. Bypass channels are now outside Elfin cylinder.

bother. But don't try messing about with the crankshaft or you may well get into trouble. The front ball race is a tight (and we mean tight) drive fit in the crankcase, blanked off with a fibre disc locked in place with a circlip. The rear race is a drive fit on the crankshaft itself and is a press fit in the crankcase casting. Races are by Hoffman, and they have seven balls in a bronze cage—conventional, single row, high-speed races.

Handling

Handling characteristics of the Elfin we found remarkably good. Being a ball-bearing engine, a minimum of running-in time is necessary to bed down working surfaces to minimum running friction. The test engine was, in fact, given some 35 minutes running-in time, which was at least twice as much as was strictly necessary. The most noticeable characteristic at this stage was the pronounced sensitivity to needle valve position. The engine would run quite satisfactorily over quite a wide range of settings, but there was a definite best setting at which peak r.p.m. was achieved with any particular load. With many diesels of this size needle valve control is very much less marked.

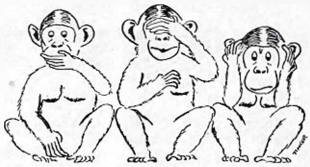
Also, the Elfin is quite remarkably easy to start. A single finger choke is all that is necessary, followed by a sharp flip. This worked equally well with 10-inch and 6-inch diameter propellers, and there was a definite absence of any "kick" with the latter. However, with high-speed propellers the Elfin may quite easily start *backwards*, which is a point to watch. Best practice was found to be to start with the needle valve opened up an extra turn. Then, with the engine running, simply close the needle valve down gradually until peak r.p.m. is reached. Compression adjustment is non-critical and you have all the time in the world to find "best" settings without fear of the engine suddenly stopping on you—unless you have closed the needle valve too far.

We have mentioned vibration as an inherent characteristic, and this was actually the cause of a lot of trouble. During one high speed run the tommy bar worked out, hit the propeller—and vanished! You need to keep your

PROPELLER TEST FIGURES

Propeller dia.	pitch	r.p.m.
8 × 6	(Stunt)	8,000
7 × 6	(Stunt)	11,800
6 × 6	(Stunt)	13,700
6 × 4	(Stunt)	15,200
8 × 4	(Stunt)	11,000
8 × 6	(K-K)	9,300
7 × 6	(K-K)	10,750
8 × 6	(Trucut)	8,250

Fuel used: Allbon diesel fuel



Oh !—What a model ! !

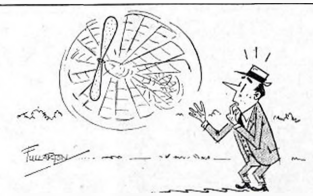
fingers away from the cylinder head after the engine has been running for a few minutes for it gets pretty hot. But contra-piston adjustment was quite smooth and positive at all running and starting temperatures. Starting characteristics, incidentally, remain equally good, hot or cold.

Fuel selection

We found performance somewhat variable on different fuels. One or two fuels did not seem to suit the Elfin at all well. A majority, however, gave satisfactory and essentially similar results. All test runs were eventually conducted on Allbon diesel fuel as apparently showing superior hot running characteristics. With Mercury No. 8 re-adjustment of the compression was necessary after warming up to running temperature. Initial performance with No. 8 tended to be very slightly better and final (hot) performance slightly inferior. Either can be considered as quite satisfactory for the Elfin, also R-M fuel.

Our summary: a wonderful new contest engine in the 1.5 c.c. class, provided the weight is no handicap. For a "formula" duration model this would be no disadvantage and, in fact, the short nose resulting could be an advantage from the stability point of view. But for an event like Clipper-cargo where every fraction of an ounce counts, then we would plump for a lighter engine, even if it did not develop so much power. For the *same* power, there are larger capacity engines of the same weight. But few will have the easy operating characteristics of the Elfin.

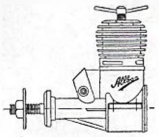
To get the best out of the Elfin it has to be operated at moderate to high speeds. Below about 7,500 r.p.m. torque is falling off and running characteristics deteriorate. At 12,000 r.p.m. and above it is really happy. Also it is one of those all too rare engines which will take a "casual" flick start with a propeller size giving those speeds. It costs more than the average 1.5 c.c. motor, but you certainly get something for that extra cash. And it looks an engine you would find very hard to damage. It could still further be improved—by lightening, reducing the vibration, and making sure that the tommy bar stays put!



Too much Torque?

ENGINE ANALYSIS (Revised)

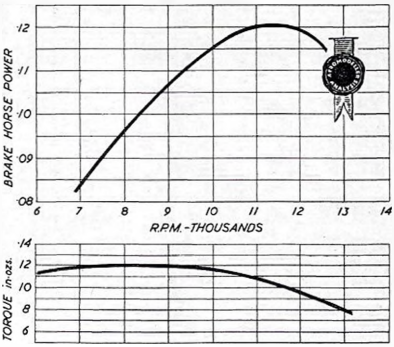
ALLBON "JAVELIN"

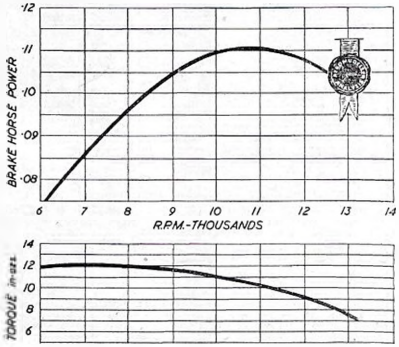


Specification

Displacement: 1.49 c.c. (.0909 cu. in.)
Bore: .525 in.
Stroke: .420 in.
Weight: 3 oz.
Max. B.H.P.: .121 at 11,000 r.p.m.
Power ratine: .081 B.H.P. per c.c.
Previous Test: January, 1953

Test engine was run in with care, giving smooth, sustained torque well beyond 10,000 r.p.m. Probably represents higher than average figures. Older Javelins, or those badly treated, tend to give an indifferent performance. The Mark II model represents a definite improvement over the original production, which had an output of ·07 B.H.P./C.C.

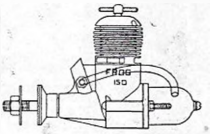




FROG "150"

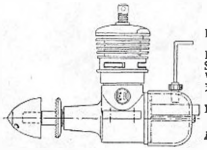
Specification

Displacement: 1.48 c.c. (.0903 cu. in.)
Bore: .50 in.
Stroke: .46 in.
Weight: 3¼ oz.
Max. B.H.P.: .111 at 10,800 r.p.m.
Power rating: .075 B.H.P. per c.c.
Previous Test: September, 1951



New engine tested which, despite initial motoring to loosen up and normal break-in period, still showed high spots. Upper end of performance curve suffers as a result. Run in carefully for maximum performance, when a peak B.H.P. of ·12 should be attainable with a good specimen.

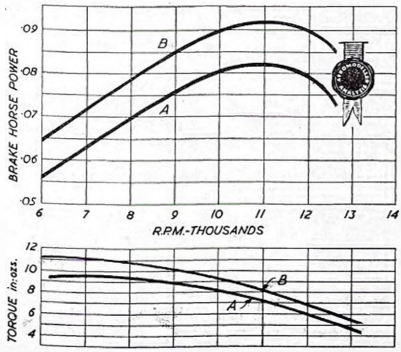
E.D. "HORNET"

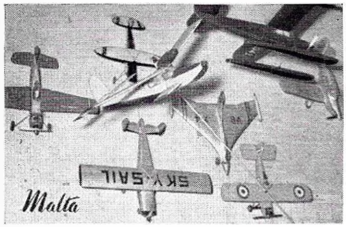


Specification

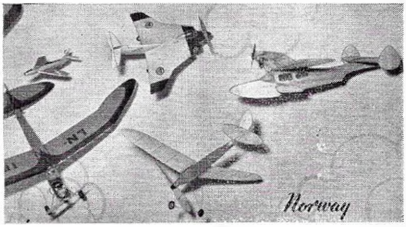
Displacement: 1.452 c.c. (.0885 cu. in.).
Bore: .531 in.
Stroke: .400 in.
Weight: 3¼ ounces
Max. B.H.P.: .092 at 11,200 r.p.m.
Power rating: .063 B.H.P. per c.c.
Previous Test: February, 1953

E.D. Hornets appear to show considerable variation in performance between apparently identical production models. Prolonged running-in would undoubtedly benefit the "stiffer" specimens. Feature of the performance curve is good torque developed at low speeds. Curves A and B both for new motors with similar running time.



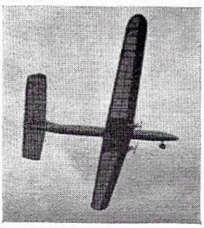


Malta

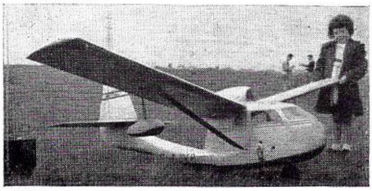

Norway

World News

Australia



Heading: Shows two exhibitions at Sliema, Malta and Stavanger, Norway, with striking similarities in model design. Above, Arthur Gorrie fuels up flying boat at Sandgate, Q'land, J m Herlihen at back has a Sea Nymph. Left, massive twin by M. H. King, 7 ft. 6 in. span with two .8 c.c. McCoys and below, huge r/c Seabee with Anderson Spit by Dick Teychenne, both from Victoria. Right: Swiss Champs, Leichti in Wakefield and Maibach in power taken at recent eliminators




Switzerland

VISITOR of note this month hailed from **Yugoslavia** when Razumenic Slobodan, who provided us with much of the gen on Yugoslavian tip fin trends, came to tell us the latest about modelling in his country. He has been working in England on an exchange basis, and being an aircraft man, and employed in connection with D.H. Venoms, much of the time has been spent in absolute irony. Balsa, so hard to get in his own country, is trampled on, crushed and thrown away in the particular factory where he was working. Used for the fuselage construction of the De Havilland product, the Balsa is selected for the job and wastage fairly high (by modelling standards). How dearly Razumenic Slobodan wished he could divert just a little of it to his home country will be appreciated by all who suffered the wartime balsa shortage.

Another country dependent on the odd liferaft that happens to turn up for its balsa supply is **Israel**, where Naftali Kadmon writes his comment on the recent tip fin feature. He corrects an impression that may have been given of tip fins being used solely to prevent air spilling on a sinking wing. The general reason he states is to prevent the formation of primary tip vortices, and he goes on to tell us that dihedral plus tip fins is to be advised, and that lower aspect ratio wings can be built to make full use of them. Fin shape following the shape

of the pressure distribution curve of the airfoil involved will cover an area where spilling is most likely. Hence, the fins should have most of their area in the forward portion.

The Model Aeronautical Association of Queensland in **Australia** gave some ripsnorting combat displays at the Brisbane Royal National Show. At one time 17 planes were queueing for the circle, fireworks were hurled at the models and balloons held out by stalwarts who liked to feel 'em burst! Two jobs were fixed to burst into flames in the air, and the commentator gave out an appropriate announcement to the effect that they had passed through the heat barrier! Says Arthur Gorrie—"It had the atmosphere of a real aerial dog-fight!"—we bet it did. From further south in Aussie, in Victoria, great excitement and much publicity for the hobby was created by an eight model entry in a radio-control race for the first model to fly across Hobson's Bay at Melbourne.

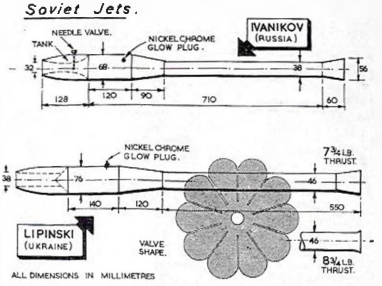
The sea crossing is some 4 miles, and thanks to arrangements with "The Sun" newspaper, high speed R.A.A.F. crash launches were co-opted to carry the operators as they followed their models. Keith Hearn was fastest with 9 min. 1 sec., and it is estimated that more than 20,000 spectators lined the bay to watch the spectacle.

Other news concerning an Australian, now in **Canada** is of Alan King, the '54 Wakefield Champ. Alan is working as a metallurgist for A. V. Roe at Toronto and will stay there a year or so to give himself a chance of a really good try at the U.S. Nationals. At the moment he is working on a programme of high thrust power models.

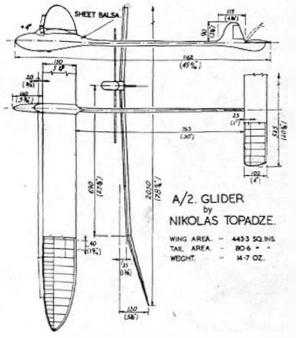
Phil Guilmant, now established in **Mexico** has found a very active movement at Mexico City. Modellers fly on a huge drained lake abounding with thermals. They use A.M.A. rules, and following a visit to the '54 U.S. Nats., big plans are being made with Government financial support to attend European and American contests in '55.

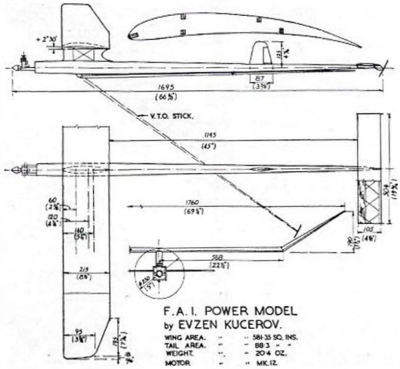
Who should turn up at one October flying meet but globe trotter Frankie Zaic, who agrees with friend Gili

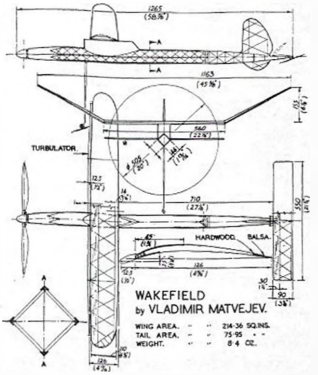
Soviet Jets.

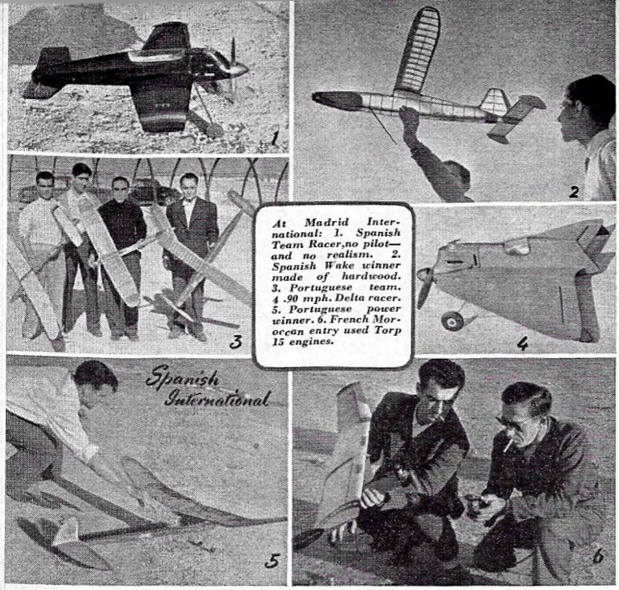


Line drawings on this page show detail of Russia's top A/2, FAI Power and Wakefield designs and dimensions of their low pulse rate jets, claimed to produce enormous thrust.









At Madrid International: 1. Spanish Team Racer,no pilot—and no realism. 2. Spanish Wake winner made of hardwood. 3. Portuguese team. 4 .90 mph. Delta racer. 5. Portuguese power winner. 6. French Morocan entry used Torp 15 engines.

installation of radio and servo equipment. Pointers to reliability.

A contingent from behind the iron curtain also arrived, but with nothing great to show. The East German authorities are helping the clubs with aid and advice on R.C., some coming from Russian sources. Materials, even balsa, are not easily obtainable, therefore the model designs are quite large, probably constructed mainly from plywood and hardwood.

The 1955 International meeting for the King of the Belgians cup which was won by the Germans in Brussels this year will probably be held at Wahn (Cologne airport) early in the year. Any British team will be well advised to get models ready and practised, there will be quite a quantity of Stegemaiers and Lichiuss in evidence by then!

that the Mexicans are certainly learning fast and build very well.

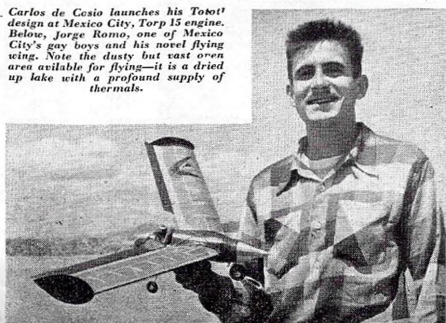
Back in Europe the F.A.I. Calandar meeting at Madrid, **Spain**, was attended by Portugal, French Morocco and of course, Spain. In A/2, Wakefield, Team Race, Aerobatics and Combat, the Spanish teams provided the winners. Power went to Portugal. Most of the Spanish power modellers use the ball race Byra diesel, though an E.D. 2.46 powered the 90 m.p.h. combat winner by Ignacio Amaro which was a Delta.

Correspondent Charles Diamond tells us that the hospitality of the Spanish hosts was tremendous. We particularly like this verbatim extract from his report: "The Spanish modellers are very unlucky because their constructing matirial is nearly all pine and very litlle balsa, but does not mean that their models did not perform, in the contrary very good flights were obtained." —So it would seem.

George Honnest-Redlich attended the **German** r/c Nationals and reports that they have managed to cut the gordion knot and differentiate between multiple controls and single escapement. Using the S.M.A.E. Ripmax and Taplin contest rules at grass covered Brunswick airport, the events were spread over two days and the rudder-only boys (22 out of 24 entries) flew the Ripmax course. Due to low cloud some went OOS at 200 ft. overhead on the first day, but with improved conditions for the second session, Stegemaier earned rounds of applause as he gave faultless demonstrations of inverted flight and consecutive round loops.

Two "works teams" were there to show the new German R.C. equipment, the TEKO and the OMU. One a modulated job, the other a two valve D.C. amplified quench receiver, both of course single channel.

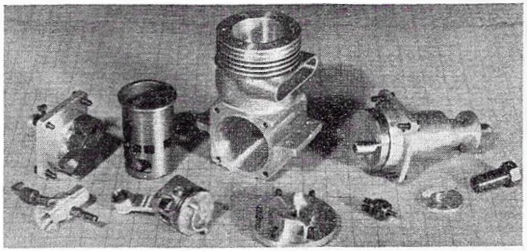
George's general impression was that the beginning of R.C. in Germany shows great promise. The modeller lays value upon a good well-built plane and tidy careful



Carlos de Cosio launches his Totot' design at Mexico City, Torp 15 engine. Below, Jorge Romo, one of Mexico City's gay boys and his novel flying wing. Note the dusty but vast open area avilable for flying—it is a dried up lake with a profound supply of thermals.

MOTOR MART

News and Views on latest engines from all parts of the world



Fastest 5 c.c. behind the Iron Curtain is this Letmo 4.87 designed by Z. Husicka and made by J. Slaiky of Czechoslovakia. Bore 20 mm., Stroke 15.5 mm., Weight 7.4 oz., rated at .45 b.h.p. at 15,000 r.p.m.

WITH THE co-operation of R. Curwen of model power boat and race car fame, the Aeromodeller dynamometer was recently subjected to a series of check tests to investigate possible windage losses. In these tests, the dynamometer was driven by a swinging field electric motor and power input (as measured by the driving motor reaction torque) carefully compared with power absorbed, as measured by the eddy-current dynamometer. Virtually identical agreement was achieved over a whole range of speeds up to 10,000 r.p.m., indicating that windage losses in the eddy current dynamometer are negligible. In effect, this means that any airflow through the machine emerges parallel to the axis, and thus has no effect on measured torque reaction. In other words the eddy current dynamometer measures, accurately, the whole of the input power supplied to it.

McCoy engines are as well-known on this side of the Atlantic as in the United States. After the fire which completely razed the original works some eighteen months back, the present McCoy set up features a new executive and design organisation. Dick McCoy is still actively concerned with the design of new power plants and we understand that the company is quite "sold" on diesels. Already making an "049" in radial and beam mount versions and an "099," they are not likely to stop here. We quite expect an international class (2.5 c.c.) McCoy diesel will be forthcoming before long.

Speaking of "International class" motors, the world champion K & B "15" was nearly an "09" (1.6 c.c.). The original design project was for an "09" glow motor and the prototype "15" was evolved from it. Could account, in part, for the compact size and light weight of the "15."

Incidentally, for those who are wondering, the **K & B "15"** is due for a re-test on the dynamometer in the very near future. The original run was not a particularly fair one—largely because we had to use a "cool" fuel on account of lack of air cooling of the equipment at the time. K & B engines are virtually "tailored" around a particular fuel and the Torp "15" just does not seem to "give" without a heavily nitrated fuel being used. New test figures will undoubtedly prove this statement. Also, for technical reasons, a re-test will be run on the **Oliver Tiger Cub.**

The 15's bigger brother, the **Torpedo "35"** is currently running itself in for a future test, and from the first flick we were most impressed by this outstanding power unit. In fact, apart from out and out racing 10 c.c. engines, we would rate the Torp "35" one of the most powerful units available. More of this anon.

One of the major snags we have come up against when using accurate power measuring apparatus is that, without exception so far, the engines themselves are not perfectly aligned. Clamp the propeller shaft to a true disc face mounted on a shaft, rotate the shaft without letting the engine itself rotate and what happens? The whole crankcase begins to describe an eccentric movement. Sometimes the cylinder nods backwards and forwards. Clamp the engine rigidly and all this eccentric movement would soon wreck the crankcase.

In normal use, *i.e.* with the engine fixed to usual-type mounts and driving a fan-type brake (propeller), this effect is seldom noticed. Most commercial propellers are drilled more out of alignment than line-up variations found on the engines themselves. This particular feature of model engine construction, in fact, has been completely overlooked so far—mainly because nobody suspected that it existed to any marked degree. Physically such deviations from a true line-up are small—a propeller shaft tip .005 in. "out" is the exception rather than the rule. But we have also found cylinders more than a degree out of vertical with respect to the crankshaft, and mounting lugs appreciably more out of true. But, we repeat, the practical significance of such faults, *under normal operating conditions* is virtually nil.

Brighton modellers, with Arthur Mullett and his imported Webras on the doorstep, have a definite liking for the **Mach 1** for F.A.I. contest models. They have found the Mach 1 "indifferent" on a 9 × 4 propeller, but really outstanding on an 8 × 4. Best performance to date is on R.M. fuel. As our test report indicated, at low to moderate r.p.m. the Mach 1 is a very ordinary sort of motor. To get any benefits, it *must* be operated at a very high speed. Besides cutting diameter to 8 inches, we would suggest that a little reworking of standard commercial propellers would show further improvement. Make sure that the undersurface of the blades is really flat or slightly concave—not convex. Also get to work on the upper surface of the blades and remove some of the after camber. Maximum camber should occur between 25 and 30 per cent. of the blade chord for the propeller to really start to show results. And don't bother about a knife-sharp leading edge. Round if off *slightly*. It's more efficient that way, and much less severe on the fingers! Incidentally, there's at least *one* glo-plugged Mach 1 in the right hands in this country for special speed work.

Information on a new German pulse jet unit quotes thrust as 700 grams. (21½ ounces) for a weight of 175 grams. (6.17 oz.). This appears to be of the normal "Dynajet" type unit, though much smaller. It burns ordinary petrol (unleaded) with a consumption of approximately 1 pint per 16 minutes. Length is 33 cm. (13 in.) and diameter 4.5 cm. (1¾ in.).

We visit the Home

WAY BACK IN 1919 a young man in Hull started a small back room business producing cycle oil in small tins, progressing by the early "thirties" to paints, including cellulose, which again were marketed in *small packs* for the home handyman. Proof of the popularity of small packaging was the fact that, within a few years, the young man, Mr. D. S. Barton, was Managing Director of the flourishing Humber Oil Company, producing tins of oil, paint, etc., by the hundred thousand.

Came the last Great War, when in 1941 German bombers reduced the extensive factory premises to a gutted ruin, and one can imagine how well it burned by the very nature of the contents. Undaunted, the Company continued in temporary premises consisting of Army Nissen Huts, until 1947, when a new Humber Oil Factory occupying 2½ acres was completed. It was, in fact, the first new factory to be built in Hull after the war, and at this juncture "D.S." was joined by son Gerald, who like many of us, was a keen aeromodeller.

Considering the Company's activities in nitro cellulose compounds, it was inevitable that Gerald Barton should mix his own balsa cement, which was used with enthusiasm by his modelling friends. They kept asking for more, which encouraged the Bartons to produce cement on a commercial basis.

And so in 1947, after 6 months testing of trial samples, the famous "Britfix" was born, and some 300 gross were produced in that year, followed by 400 gross in 1948. Now, over 3 million tubes of "Britfix" hit the modelling market each year, and production continues to rise.

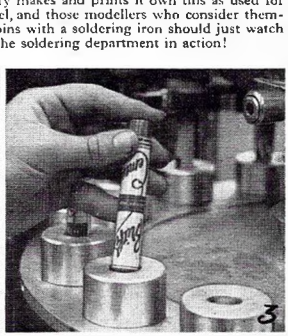

1

Modern automatic machinery makes this colossal output possible, the cement being first mixed in rotating vats, before passing to the ten gallon hopper on the tube filling machine. Contrary to popular belief, tubes are filled from the bottom, which is then crimped through a series of rollers, thus ensuring that the tube is fully airtight. Modellers, who well know the rapid drying qualities of "Britfix," will appreciate the importance of this sealing process, and we noted with interest a letter received by "H.O.C." from a modeller in the Sudan, who said it was the only cement that did not go hard in the tube under equatorial conditions. Two not so well-known facts concerning "Britfix" pointed out to us were, firstly, that it is available in ¼ pint tins for large consumers (forward the 21 foot span glider boys), and secondly, it *is* possible to remove it from Little Willie's trousers Mum! Britfix Solvent Remover is the answer.

With the success of "Britfix" the Company did not have far to look for other products suitable for the modeller, and an extensive range of dopes, thinners, banana oil, fuel-proofer, etc. were produced. Some 24 different shades are available in the coloured dope range, and for those who don't know, colour sample cards can be seen in your local Model Shop. We found the mixing of colour dope a most interesting process, also a very exacting one. Pigments, of which there are 50 to 60 varieties, are ground and blended to match precise colour standards, each batch being tested in the laboratory to ensure accuracy. We show in the photographs one of the refining mills, which grinds the prepared lacquer paste under a pressure of 500 lb. per square inch, to produce the fine film surface so essential in the production of dope. The refined dope paste is then passed to a mixing vat and thinned to the desired consistency. The prepared dope is stored in tanks in the paint department and fed by gravity to the filling machines, which can switch their feed from one tank to another according to the colour required. We watched ¼ pint tins being filled by another automatic process. They are fed on to a platform which lifts and opens an electric circuit, permitting the paint to feed. Scales on the machine are set so that when the contents reach a specific weight the platform falls, cutting the circuit and in turn the paint supply.

The factory makes and prints it own tins as used for "Britfix" Fuel, and those modellers who consider themselves king pins with a soldering iron should just watch the girls in the soldering department in action!


2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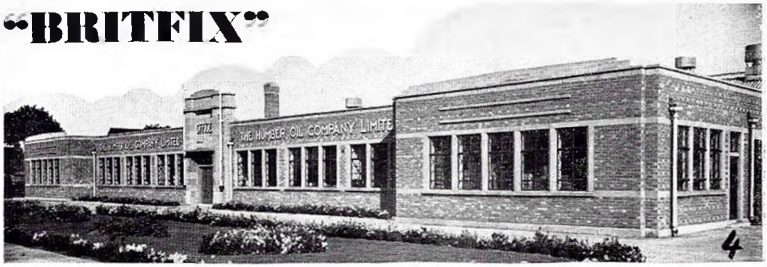
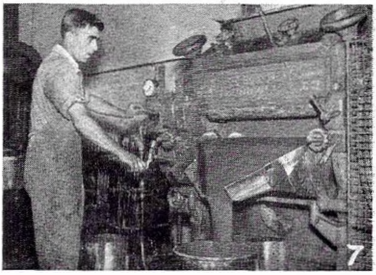
of "BRITFIX"



1. Girls at the end of the production line, packing ½ oz. jars of coloured dope. 2. The "Britfix" production line with the automatic tube filling machine on the left. 3. Close-up of tube-filling machine. Each tube is automatically filled with the precise amount, the end crimped, and the tube ejected on to the conveyer belt ready for packing. 4. The new Humber Oil Factory at Marfleet, Hull. 5. The Export Packing department which ships to 40 overseas countries. 6. The Laboratory in which all products are tested and approved before despatch. 7. A paint refining mill with prepared dope lacquer paste pouring by the gallon into a drum. 8. Bottle filling department with 8 oz. bottles of Britfix Thinners being filled at the rate of 1,800 per hour. 9. The automatic dope filling machine working on ½-pint tins



TRADE NOTES

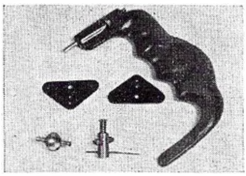
Mike Ingram, left, developed super Skyrocket kit, below right.

AS THIS issue reaches the bookstalls and model shop counters, modellers everywhere will be thinking of Christmas presents—what to give and what to buy. For a modelling pal, perhaps the one who helped you find that lost model back in

April, or the lad who climbed the tree for you in June, why not buy a small gift of appreciation?

A plastic fuel tank, either non-spill or with a sealing cap from the **Model Shop** (Newcastle-on-Tyne) range will cost from 2/2d. to 4/1d.

Or why not a fuel filter at only 2/6d.—a real engine life preserver by **Mercury** that also finds its way into many a team racer since the boys discovered how it smooths the fuel flow and helps for easier starting by retarding "flow-back" to the tank.

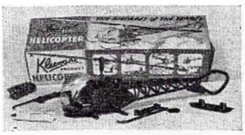


Or perhaps a shut-off valve for free flight at 4/11d. Maybe you can stretch to 6/5d. for one of the famous "Ajustalyne" handles, moulded to suit your hand. New kits to come from Mercury are now christened, the stunter is the Monarch, and the class A racer, the Mac. We've seen both prototypes and they come right up to the standard we now expect in a Mercury line.

Keeping under the price of two half-crowns, the **Swann-Morton** Handi-Tool is value for your silver. In the packet is a handle and three knife blades plus a chisel. Razor sharp for a start, and each a rigid fit in the handle, these blades by the famous Surgeon's scalpel blade company are of the right contour for any aeromodelling job. For half the price, at 2/6d. one can buy the simpler Craft-Tool which comes with three blades of the "slip-in" type and made to the same top quality. Distributors are **E. Law & Sons** of Sutton, and on a recent visit to the works there, we noted the stock of beautiful hardwood they carry, not to mention some top

grade balsa with very accurate cutting. Norman Butcher, the model side manager, showed us some balsa cut specially to millimeter dimensions for an overseas order, and we fancy that some of these intermediate sizes would go down well with the weight-savers. Not generally appreciated is the 6d. packet of cutting mill scrap put out by ELS. It contains a variety of rough cut balsa, just the job for odd fairing blocks or even a solid or two.

Model Aerodrome announce

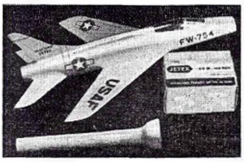


that the price of each of their 2 in., 2½ in. and 3½ in. Airwheels has been raised by 1/2d. including P.T. New prices are 8/2d., 9/11d. and 11/8d. From **F. Birtles** we have a neat sample of his welding repair to an E.D. Bee lug which is so indetectable as to be hardly credible, and also one of his custom made 1½ in. spinners, turned from the solid for about 8/-.

Nomination of kits of the month must definitely go to the **Jetex** Tailored series for the 10/6d. F.100 and Skyrocket. Superlatives for these flying "solids" are hard to find—they are so perfect in every detail and such a joy to assemble. If the pocket allows a half-guinea to be spent on that present for your pal, then don't leave the model shop

without asking to see one of these gems for the augmented 50B Jetex.

A visit to **Kipmax** found us admiring one of the smartest plastic moulded toys we have seen for some time. Representing one of the earlier Bell Helicopters, the Kleeware kit can be made up in half-an-hour, using the special plastic cement provided. Result is smart; but of course non-flying. Reason why we mention this incredibly cheap toy is that for only 4/10d. the aeromodeller can get a perfect



representation of a helicopter fuselage that is light enough to suspend under any of the Schoenky or Jetex type rotor assemblies. The result could be most pleasing, and we suggest the Helicopter men get after Ripmax quickly before stocks run dry. Max also reminds us that his famous glass headed, stainless and almost unbendable modelling pins are still on sale at 6d. per packet of 24.

CLUB NEWS

This month our heading picture shows boys of the active club at Merton House School, Penmaenmawr, North Wales, with some of their o.d. control-liners.

CONSISTENCY, that much-sought after attribute of top-line contest jobs, does not appear to be a characteristic of the average club P.R.O.! One month we receive a mere couple of dozen reports, and the next we are virtually snowed under. This month, does, in fact, see us digging our way through a drift, and gives us an opportunity of introducing a change contemplated for some time—dropping the type size of this feature so that we can use more of reports sent in and more of the interesting photographs we receive. Reducing the column width keeps the eye-strain to a minimum. Let's have your news, then, but remember it's the bod. who never heard of you that has to be interested—Joe and Charlie and your other clubmates saw you do that spectacular flight and could see all the ins and outs, but the bloke at the other end of the country would like the whole picture, O.K.?

London

End of 1954 success came to **WEST MIDLESEX M.F.C.** with the winning of the Model Engineer Cup. The victory was due not only to the four team members (who totalled 32 : 08) but to the splendid co-operation of all club members present. There's no doubt that useful assistance—spotting, retrieving, etc.—by non-team members is the answer to team events. After all, the trophy is awarded to the *club*, and everyone should be keen to help.

Enfield is another town to have an annual Show, and this year **ENFIELD D.M.A.C.** members had fifty models exhibited. Designing and building demonstrations went on and balloon-bursting and combat were shown in a roped-off arena. Around 10,000 filtered through the two-day show, and the club have already been asked to display models at a neighbouring council's exhibition. On the flying side, indoor stuff is picking up, and combat and T.R. are receiving full support. *Tiger Moths* and a *Sopwith Triplane*, 504K, *Super Cruiser*, *Harvard* and *Ercoupe*, indicate the growing scale trend. A recent Bowden type contest was won by member Cooper, whose *Junior* 60 succeeded in R.O.G'ing from the somewhat rutted field, thus gaining an edge over all the smaller jobs.

Bye-laws on flying have affected **PARK M.A.L.**, but beneficially, since sign-posted flying areas have now been allocated in three public spaces and the hours in which flying may take place are very reasonable. Indoor meetings take place in Bond Road School, Mitcham (sorry—not told when).

At the end of its second year, membership of **NORTHWICK PARK M.A.C.** stands at around fifty. Contest successes have been very satisfactory, though a little more support for rubber would be nice. The radio fans are beginning to find their feet and are graduating to the *Sparky* design for a little more manoeuvrability. Club funds have stood the C/L side a 2.5 motor to be fitted in a stunt trainer for club use, which sounds an idea full of potentialities! Sport and indoor flying receive full support to round out the picture of a well-balanced club.

Contest fans will need little reminding of the imminence of the Bill White Memorial Cup and the Winter Glider Contest, to be staged by **BLACKHEATH M.A.C.** on January 9 on Epsom Downs. These are open rubber and glider events, 1/- a time entry or two for 1/6.

East Midland

A new club in this area, **THORNABY PATHFINDERS M.F.C.** has three flying sites and two clubrooms, complete with lathes, drills, etc. At the moment C/L is the buzz, but F/F interest is growing. Nearby clubs fancying an inter-club do in '55 are invited to contact.

Most successful season to date, is the verdict of **FORESTERS (Nottingham) M.F.C.** on 1954. Of twelve team races entered, seven were won and 3 2nds, 1 3rd, and 1 4th place were recorded. Geoff. Pike's radio duration efforts are well-known and he is preparing to recapture the record if possible. In winter comps. R. Puddephat has won stunt, J. Howard speed, and P. Ball chuck glider, the last with a 5-flight agg. of 1 : 48. Combat entries retired soon after dark on their day, intending to complete the fray later.

North Western

Another display at a hobbies exhibition (this time a Rotary Club effort) was put on by **LEIGH M.A.C.** A couple of dozen assorted models were shown, special mention going to P. Beame's fully detailed *FW* 190 and F. Hampson's *Gamecock*. Biggest crowd-drawer was, however, a jet speed model, also by Beame.

Dud weather has the **MAGHULL M.A.C.** boys gnashing their teeth and still waiting to fly off 1954 comps. B. Leatherbarrow had the agony piled on when his brand new *Stick Stick* with a brand new Racer disappeared off a short run and has remained disappeared.

On the up after a short down is **MILLOM A.C.**, who have regathered the nucleus of twelve keen members and would like some more. They have a good flying site and clubroom, so contact J. Greenop, 148 Albert Street, Millom.

Using a 2 min. max. to suit the field and conditions, J. Done won **WALLASEY M.A.C.'s** glider event with 4 maxs. and 1 : 56. A fortnight later G. M. Hutton, flying with a 1 : 30 max. aggregated 4 maxs. and 1 : 18 to win power, and with the same limit the following week, J. Hannay collected rubber with 5 maxs. and a 3 : 32 fly-off.

A forthcoming exhibition is that to be staged by **WILLASTON D.M.A.C.** on January 8. Entry in the classes (C/L, F/F, F/Scale, rubber, Jetex and solids) is 1s. per five models, single entries free. If you'd like to enter (and, of course, help the show along) contact J. D. Clarke, 13 Elm Green, Willaston, Wirral, S.A.P. please.

South Midland

Also looking back on its most successful year is **HENLEY M.A.C.D.** Painter's win in the Keil and second place in the Halfax with the club power design has boosted morale enormously, and the power men are itching to get at 1955 events. Wakefield interest is increasing, and the junior glider exponent, P. Larcey, can be expected to hold up that end, having twice topped Area results and placed 3rd in the Frog Junior with his *Seraph*.

South Eastern

Quite a good scheme is being featured in "Marsh Mutterings," news-sheet of the **EASTBOURNE M.F.C.** A series of short articles for novices is being published, written by H. J. Towner, and stressing the club angle. Juniors are frequently advised by more experienced club members, but putting it in writing gives them a permanent reference, augmenting the monthly features in "AEROMODELLER."

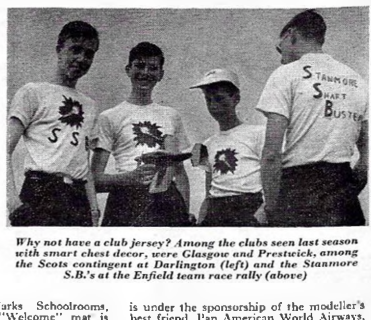
C/L interest is growing in the **MEN OF KENT AEROMODELLERS**, though an attempt to improve ventilation by suggesting to a hardened rubber fan that he build a team racer, didn't quite come off—he didn't *quite* go through the roof!

The **SOUTHERN CROSS A.C.** held a rubber contest in fine but cold conditions on November 14. One or two of the six entries had never before flown rubber. Winner was F. Smith 5 : 47, 2nd R. Smith 5 : 24 and 3rd C. Gates 4 : 40, the last flying his first rubber job since he won an under 100 sq. in. contest in 1939!

Northern

A ladies' section has been formed among **HEATH AEROMODELLERS**, to organise the social side of things. Another rather daring innovation is the necessity of gaining a Class A certificate to become an approved member. Hmmmmm!!

Winners of the N.A. Knock-out were **BRADFORD M.A.C.**, whose team of Lanfranchi, Miller and Eckersley, returned 23 : 27 in a three-cornered contest. Runner-up was **HALIFAX** with 16 : 43 and third



Why not have a club jersey? Among the clubs seen last season with smart chest decor, were Glasgow and Prestwick, among the Scots contingent at Darlington (left) and the Stanmore S.B.'s at the Enfield team race rally (above)

was **YORK** with 14 : 53. The last of the Bradford general comps. saw Silvio and Collinson's *Swiss Misses* in 1st and 2nd place with 4 : 40 and 4 : 23 in squally, rainy weather. The all-in Cripps Cup—a nothing barred H.L. slope soaring event—was held in perfect weather, and the holder, J. Oxley, pulled one excellent flight of 3 : 55 out of the bag to retain the cup comfortably.

Latest caper in the R.T.P. field is streamer cutting, thought up by **LEEDS** M.F.C. But don't use six models in the same circle, since this has proved too many! Outdoor, C/L stunt and racing are well supported, the dnft being towards bigger stunt jobs; fliers are finding that trimming matters when really large stunt models are flown. The F/F men are turning to Oliver motors for contests, with several hush-hush jobs on the stocks.

A re-formed club, **PHOENIX** M.E.S., got together for its first official activity, a R.T.P. Jetex speed contest limited to 50s and 35s. Fastest of the 13 entries was B. Wood's 78 m.p.h. with a 2.5 sq. in., 4.37 gm. projectile. Top junior was J. Whetton with 38.5.

The Boxing Day meeting which has become an established date for **WORKSOP AEROMODELLERS,** will be held as usual. Details from the sec. (see changes). Indoor meetings are livened by R/T.P. rubber and Jetex, ½ m.p.h. R/C "things" creeping round the floor, and even a Jetex R.T.P. autogiro. Latest big C/L job is a 4-E.D. 3.46 *Liberator* spanning 80 in.

South Western

Biggest news is from **SALCOMBE M.A.C.,** concerning H. O'Hefferman's world record, already detailed elsewhere. Apart from R/C, other types of model flourish, and an exhibition in a local showroom is expected to encourage recruits.

Getting to the end of their 1954 comp. programme is **ILMINSTER D.M.A.C.** A. Peppitt won the club glider and Jetex events, R. Sattin chuck glider and scale, and L. Jackson rubber. Two members made the long journey to Radlett and were rewarded with Peppitt's 3rd in power, while at Bristol the club gained a 3rd in the Bartlett trophy.

Midland

A twelve-month old club making its debut in print, the **WEST BROMWICH M.A.C.,** has a frightening mixture for indoor activities—microfilm F/F and ½ A team racing. Meetings are on Thursdays at Charlemont Schools, when an average of 20 roll up. What about going along and upping that average?

LEICESTER M.A.C. are well into their winter programme, sessions being alternate Mondays in St. Marks Schoolrooms, Belgrave Road. The "Welcome" mat is always in place for new members, and next club night after publication is December 20, when Jetex 50s. or 35s can be used in a speed comp.

North Wales

It is many years since a report came in from this Area, but one live club exists—the **MERTON HOUSE SCHOOL M.A.C.** All the boys are under fourteen, but produce very creditable models, as can be seen in the accompanying photograph. The Head (acting as P.R.O.), tells us that the lads forgo their tuck in order to buy cement and materials. C/L jobs—own design—are popular, but rubber and glider get a look in. Probably most numerous are, needless to say, chuck gliders.

Southern

Quite a claim is made by the **SALISBURY D.M.E.S.** sec., when he says that R. Marsh hit 150 m.p.h. over six laps with a 2.5 Oliver at the S.A.C/L Rally. A leaking tank made the 10 laps needed to qualify impossible. But 150 ? ? ? Salisbury members won A team race and placed 1, 2, 3 in stunt, while in combat, A. Piscentini tied for them with a **WEST HANTS** flier.

A sober and very fair account of the L.S.A.R.A. conference occupies much of the **BOURNEMOUTH M.A.S.** *News*. It was regretted that the subjects of most use to the active modeller were rather too quickly glossed over, but the general reaction was very favourable and the L.S.A.R.A. is to be congratulated on its initiative.

The easiest way to list the **SOUTHAMPTON M.A.C.** domestic results is open-glider, A2, power duration, power precision, R. K. Cooper, open rubber, and second in all but one of the above, N. Worley, who incidentally is only just out of the junior class.

A visit to the aircraft section of the Science Museum, South Kensington, proved most instructive and interesting to **READING S.M.S.** Actually, any aeromodeller, whether scale or "contest only," can profit from the exhibits and information available. If you think your new airfoil is the very latest, take a look at the *Antoinette* or one of its contemporaries—chances are it's there!

Scotland

1955 looks like being a red-letter season for Scottish builders, for, on top of the U.K. Challenge Match, a real gargantuan two-day meet with at least 14 events, will be held at Heathfield, probably in September. Full-size aircraft will also be exhibited to make it a real crowd-gatherer. The do is under the sponsorship of the modeller's best friend, Pan American World Airways, through the good offices of their Scottish Manager, Jock Doughty.

MONOFIETH MONARCHS and **PERTH M.A.C.** spent an enjoyable if damp day, at the Kirkcaldy C/L rally. **KIRKCALDY** won B, with the aid of more rain-water in the opponent's fuel than got into theirs! Models on the stocks include a twin Eta 29 *Marauder*, with interior lighting, etc., and a 66 in. Rowell 60 stunter. Novel touch is Barclay's o.d. engine, built round an E.D. 2.46 crankcase and displacing 2.51 c.c., for class B racing. Should have range, anyway.

Any club spoiling for international postal contests has a unique chance, if they're strong on A.2's. Radoslav Cizek, of Kamenne Zehrovice 14, U. Kladna, Czechoslovakia, is anxious to pit up to five of his clubmates against any British team, the contest to take place around the end of February, 1955.

Lastly—don't say you've guessed it? —an unidentified model found. It's said to resemble a *Paageboy* (has the same measurements, too), is red, yellow, and black, has an E.D. Bee, and is believed to belong to someone in Oxford. Was found after the Midland Area eliminators and is in the hands of the Moreton-in-the-Marsh police. You know, you really should put your name and address on 'em—name and address on 'em—monotonous, isn't it?

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PHOENIX M.E.S.
B. L. Martin, 11 Terrace Road, Mansfield, Notts.

WEST BROMWICH M.A.C.
M. Grimmet, 46 Victoria Road, West Bromwich, Staffs.

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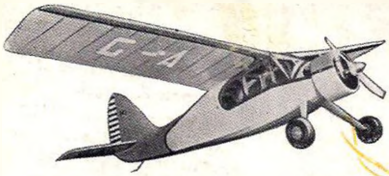

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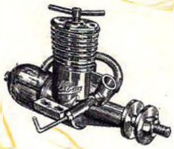

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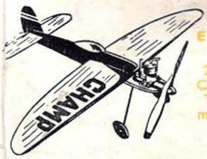

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