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DECEMBER 1969

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HOBBY MAGAZINE

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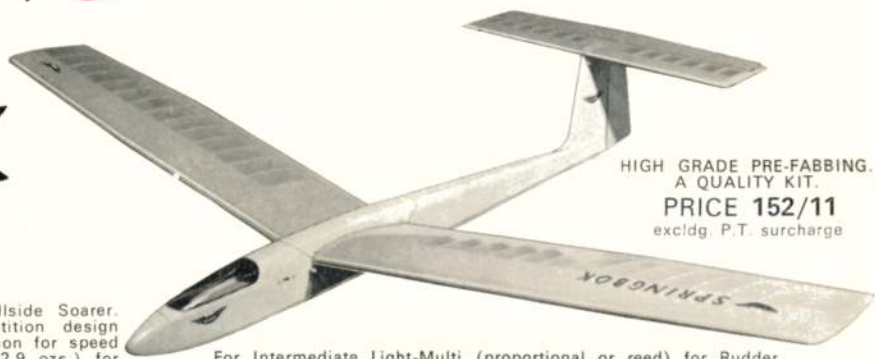


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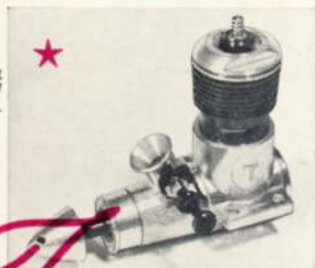
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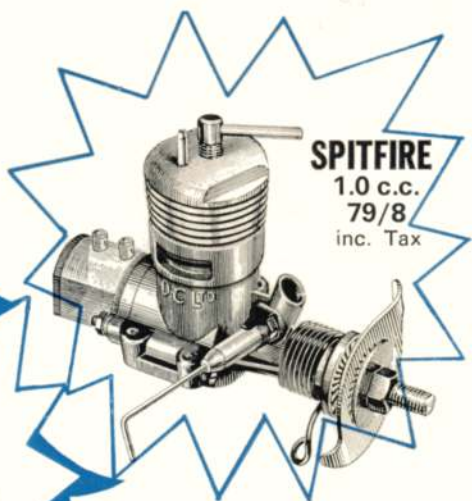
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# Aero Modeller

INCORPORATING  
MODEL AIRCRAFT

December 1969

VOLUME XXXIV No. 407

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HOBBY MAGAZINE



ALSO MODEL BOATS . MODEL CARS . RADIO CONTROL MODELS & ELECTRONICS . MODEL ENGINEER, MODEL RAILWAY NEWS, MECCANO MAGAZINE and SCALE MODELS

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## COMMENT

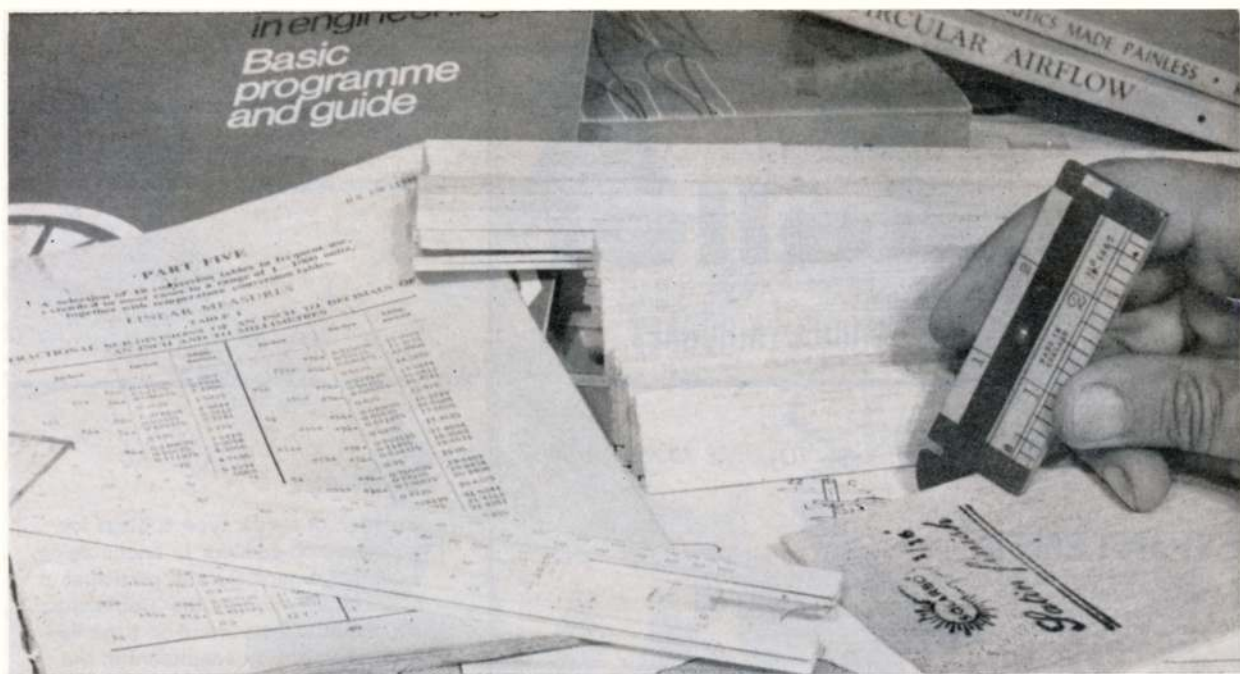
Creation of a new type contest for young aeromodellers is encouraging news for organisers and participants alike. Information on the 'Commercial Kit' event will be found on page 664. It is to be run by volunteers in the Society of Model Aeronautical Engineers at their National Championships in May. This is the largest model meeting of the year, and the combination of a novice event with so many other attractions will make any journey worthwhile. Actual location of the 'Nats' has yet to be decided, but now is the time for young modellers to decide their choice of modelling subject for entry in the event. With Christmas rapidly approaching, selection of a kit from the organisers' list would seem to be most opportune for one's 'Present Suggestions' list. It is never too early to start construction and to practice flying techniques for a competition six months hence.

## on the cover

*It's not very often that one can illustrate a father/son team with such a novel story. Eric Fearnley made the original Luton Minor model while his wife was in hospital expecting their son. This year, with son and model sixteen years old, he has re-vamped the APS favourite for radio control and is seen posed by the resident Minor at Old Warden Aerodrome. See pages 652-3.*

## next month

Ron Irvine's reflections on the U.S. Nats; Jim Punter's 'Graduate' to conclude his A/2 design series; Ray Malmstrom's profile control line racer 'Ole Tiger' full-size plan; Control Line News, plus all the regular features. Out December 19th.



## AND A HAPPY NEW (METRIC) YEAR TO YOU!

STRIP SIZES AND STANDARD THICKNESSES

ACTUAL INCH SIZE	NOMINAL METRIC SIZE - MM.	ACTUAL METRIC SIZE - MM.
1/32	.8	.8
(3/64)	(1)	(1.2)
1/16	1.5	1.6
3/32	2.5	2.4
1/8	3	3.2
(5/32)	(4)	(4.0)
3/16	5	4.8
1/4	6	6.4
(5/16)	(8)	(7.9)
3/8	10	9.5
1/2	12.5	12.7
5/8	15	15.9
3/4	20	19.1
7/8	22.5	22.2
1	25	25.4
1 1/4	30	31.8
1 1/2	40	38.1
1 3/4	45	44.5
2	50	50.8
2 1/2	65	63.5
3	75	76.2

STANDARD LENGTHS

ACTUAL INCH LENGTH	NOMINAL METRIC LENGTH - MM.	ACTUAL METRIC LENGTH - MM.
12	305	305
24	610	610
36	915	914
(48)	(1220)	(1219)

STANDARD WIDTHS

ACTUAL INCH WIDTH	NOMINAL METRIC WIDTH - MM.	ACTUAL METRIC WIDTH - MM.
1	25	25.4
2	50	50.8
3	75	76.2
4	100	101.6

Next year, for better or worse, 'Metrication' will be upon us, and we shall all have to start coping with unfamiliar units. We have given a lot of careful thought as to how best to adapt Solarbo Balsa sizes to metric, specifically with your requirements as aeromodellers in mind. We shall, in fact, continue to cut strip, sheet and block **in the same actual inch sizes as before**, the corresponding metric dimensions being a **nominal size**. We are sure that will work out best for the world's aeromodellers.

At the same time we have rounded off the nominal metric equivalents to easy-to-remember figures (see Tables) and **practical** numbers for millimetres (nobody actually works to smaller fractions of a millimetre than 0.5). The odd one out is 0.8 mm for 1/32" - but it has to be half of a sixteenth, or a third of three-thirty seconds. And by using practical numbers for millimetre sizes we have got logical size 'steps' which are as near actual size as to make no practical difference. If necessary, you can use the Actual Metric Size column in the tables to find the nearest Solarbo size when you are working from Continental plans.

If you would like a copy of our new Metric Data Sheet, just send us a stamped addressed envelope (foolscap size) and mention this ad... All part of the Solarbo service... which, of course, starts with the selection, grading and cutting of the world's finest Balsa to the standards **you** require for aeromodelling. The units do not really matter... it's the **quality** that counts!

# Solarbo Balsa

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SOLARBO LTD.,  
COMMERCE WAY, LANCING, SUSSEX

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

# The finest airliner display ever!

**AIRFIX BRINGS IT TO LIFE!** From the prop-driven 'Heracles' of the early 1930's to the 'Concorde', here are the world's great civil aeroplanes brought to life by Airfix!

The vast range of Airfix construction kits covers 19 different series, including planes, ships, cars, historical figures and trackside series—each model just like the real thing!

Prices from only 2/9d. to 21/6d.



**WARPLANES, CARS, SHIPS, TANKS TOO!**  
Start your collection NOW!



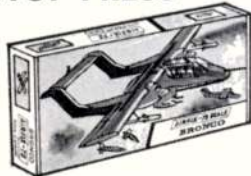
**OVER 250 KITS TO CHOOSE FROM**



**JUST LIKE THE REAL THING!**

From toy shops, model and hobby shops and F. W. Woolworth

**STOP PRESS**



**NORTH AMERICAN 'BRONCO'**

Currently in use in Vietnam this 76 piece kit makes up into a fully detailed model of this twin-beam aircraft. Only 3s. 9d.

**AIRFIX MAGAZINE 2/6d MONTHLY**  
ASK FOR THE AIRFIX KIT CATALOGUE

# Equado

## TOP QUALITY BALSAM AT ROCK BOTTOM PRICES

Compare our prices with other Brands  
 Below prices are our recommended retail prices

1/32in. x 3in. x 36in.	1/5	1/6in. x 1/6in. x 36in.	2d.
1/16in. x 3in. x 36in.	1/7	1/8in. x 1/8in. x 36in.	3½d.
1/8in. x 3in. x 36in.	1/11	1/4in. x 1/4in. x 36in.	5½d.
1/4in. x 3in. x 36in.	2/6	1/2in. x 1/2in. x 36in.	1/-
1/2in. x 3in. x 36in.	3/4	3/4in. x 3/4in. x 36in.	2/-

SEND FOR FREE WHOLESALE PRICE LIST  
**E. LAW & SON (TIMBER) LTD.**  
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# RipMax



## SUPER FLYING SCALE KITS

STERLING F/F OR R/C

Piper Tri-Pacer 58½" span	£9.7.6
Cessna 180 45" span	£6.5.0
Fairchild PT-19 48" span	£7.9.6
Piper Cub J-3 54" span	£8.2.6
Cub Super Cruiser 72" sp.	£16.17.6
Mustang P51 66" span	£19.19.6
Cosmic Wind 34" span	£6.5.0
King Cobra 70" span	£19.19.6
Spitfire 64" span	£19.19.6
De Night Special 50" span	£14.7.6
Stearaman PT-17 64" span	£24.19.6
Fokker D-7 58½" span	£24.19.6
New SE5 (1½" scale)	£14.5.0

**GOLDBERG SUPER R/C KITS**  
 Skyline 42 42" span £5.19.6  
 Shoestring (Goodyear) £16.17.6  
 Skyline 62 De Luxe 62" span £19.19.6  
 Sensational new TOPFLITE KIT!  
 SE5 to 2" to ft. scale £28.10.0

## FOKKER D-7

shown is one-sixth actual size!  
 (58½" span)

## CONTROL LINE SCALE

SE5 32" span	£6.5.0
Fokker D-7 32½" span	£6.5.0
Corsair F4U 35" span	£6.17.6
Nieuport 28 33" span	£6.5.0
Stearaman PT-17 32" span	£6.5.0
P-40 Warhawk 28" span	£5.12.6
P-47 Thunderbolt 27" span	£5.12.6
P-51D Mustang 37" span	£9.7.6
Form-Flite Zero 18" span	£1.11.6
Form-Flite Hellcat 18" span	£1.11.6
Thunderbolt 18" span	£1.11.6
P-40 Tiger Shark 42" span	£4.7.6
Hurricane 42" span	£4.7.6

## GRAUPNER C/L SCALE

Mustang 30" span	£4.2.6
Dornier Do 27 31" span	£5.3.6
Focke-Wulf 190 38" span	£6.5.0
Klemm KL107B 28" span	£4.7.6



## STERLING RUBBER POWERED FLYING SCALE

Fokker D-7 24" span	49/11
Beechcraft Bonanza 22" span	37/6
Nieuport 17 biplane 24" span	49/11
Piper Super Cub 18" span	18/11
AT-6 Texan 18" span	24/11
Cessna 180 17" span	18/11
P-51D Mustang 24" span	49/11
Jap Zero 24" span	49/11
SE5A biplane 22" span	49/11
Spitfire Mk. I 24" span	49/11
Spad 13C 24" span	49/11
Eindecker E-3 25" span	37/6

Stearaman PT-17 22" span	49/11
Thunderbolt P-47 20" span	31/6
Ju 87 Stuka 20" span	31/6
Messerschmitt 109 17" span	24/11
Curtiss Hawk P6E 16" span	24/11
L-19 Birddog 17" span	18/11
F4U-5 Corsair 24" span	49/11
Fokker D-8 21" span	31/6
Ansaldo SVA5 19" span	37/6
Focke-Wulf 190 24" span	49/11
Piper Cub J-3 30" span	49/11
Gt. Lakes Special 24" span	49/11



**NEW LOW-BOUNCE WHEELS**  
 1½" 12/6 2½" 17/6 3" 26/-  
 2" 13/11 2½" 19/6 3½" 30/-  
 2½" 15/6 2" 22/- 4" 36/-

**A COMPLETE RANGE OF FUEL TANKS**  
 A range of sizes to suit all needs



10cc Team Race 7/9	28cc Team Race 9/3
22cc Stunt tank 8/6	30cc Stunt tank 8/6
60cc (for Amateur)	8/11
20cc (for Consul)	12/6

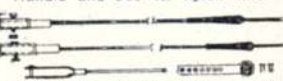
**RIPMAX Tuf-Tanks (Round Clunk)**  
 ½ ounce 6/6 6 ounce 7/6  
 1 ounce 6/6 8 ounce 7/11  
 2 ounce 6/6 10 ounce 8/9  
 4 ounce 6/11 12 ounce 9/6

**RIPMAX Sealite (Square Clunk)**  
 4oz (100cc) 13/6 10oz (300cc) 15/9  
 6oz (150cc) 14/3 14oz (400cc) 16/9  
 8oz (250cc) 14/11

**IN-LINE FUEL FILTER 4/11**  
**TAKE-APART FUEL FILTER 4/11**



**TOW LAUNCH HANDLE 5/11**  
 Handle and 300 ft. nylon line.



Long Yoke, K-link, pair	8/6
Pushrod moulded and linkage	8/6
Adjusthorn (rudder)	2 for 3/11
Pushrod Keepers pkt of 6	3/11
(for rotary output servos)	
Rand Hinges pkt of 4	4/6
Swing-in-Keepers (pkt of 4)	4/6
Black Quicklink 5" rod	2/10
Silver Quicklink 5" rod	2/10
10" rod	3/8
Bowden Quicklink (pkt of 2)	5/3
Extra Long Horn (pkt of 2)	3/4
Wing Fix Bolts (pkt of 2)	4/11
Ball Joint Links (pkt of 2)	7/11
Rod Exit Guides (pkt of 2)	2/11

**SHUCO PILOTS (for Scale Models)**  
 30mm (1.3/16") Painted Pilot 4/6  
 45mm (1½") Painted Pilot 5/11  
 50mm (2") Unpainted Pilot 3/11

## AT YOUR MODEL SHOP!



# meet MAINSTREAM

Mainstream have been licensed by Simprop to produce their digital radio equipment in Britain. Which means that, for the very first time, you can buy the best radio controlled equipment at a sensible price.

As well as the Mainstream Simprop range, Mainstream ECS equipment offers superb value and quality in radio control. All top quality products that have been tried and tested to the most exacting standards.

Simprop radio control equipment embodies the latest developments in electronic design and has been proven in exacting field and laboratory conditions over the last two years.

**Mainstream  
Simprop  
Digital 2 + 1**  
with 2 servos **£92**  
with 3 servos **£108**

**Mainstream  
Simprop  
Digital 5**  
with 4 servos **£160**

#### Brief Specification

##### Transmitter

Precision engineered stick assemblies.  
Special angled centre-loaded aerial.  
500 DKZ 12v. Deac included.  
6-freqency option with plug-in crystals.

##### Receiver

500 DKZ 4.8v. Deac included.  
Size:  $2\frac{1}{8}'' \times 1\frac{3}{8}'' \times \frac{7}{8}''$   
Weight: 3 oz.

##### Servos

Specially designed to withstand strenuous conditions.  
Standard or Miniaturised.  
Servo centering  $\pm .5^\circ$  approx.

# SIMPROP

For a full list of authorised Mainstream dealers, just send a stamped addressed envelope to: Mainstream Productions Ltd., Hallam Street Works, Hallam Street, Stockport, Cheshire, SK2 6QQ.

We'll be happy to hear from you.

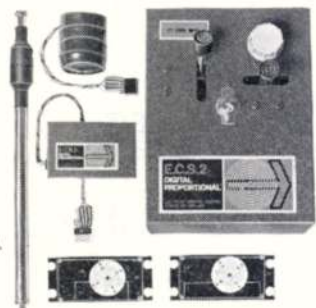


#### Mainstream ECS2 £75 complete.

Two-channel marine/glider digital system.  
Tx twin stick, 9v. battery, centre-loaded aerial.  
Rx,  $2\frac{1}{2}$  oz. with 4.8v. Deac.  
2 orbit servos, ECS amp. and all switch and plug harnesses.

#### Mainstream ECS1

£21.5.0. complete.  
Single channel superhet.  
Tx 5 silicon transistor circuit, 9v. battery, centre-loaded aerial.  
Rx relay output, prewired with switch battery box.  
3v. operation.



KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

# Super Tigre the name that stands for speed and power

CURRENTLY AVAILABLE FROM STOCK

Silencers	£	s	d		
S15 fits G20, 15, 19, 23	2	14	0	G.21/40 RV	15 0 0
S29 fits G21, 35, 40, 46	3	6	0	G.21/46 R/C	13 0 0
S35 fits ST35S, ST35C, ST35 R/C	3	6	0	G.21/40 RC R/C	18 0 0
S40 fits G40	3	6	0	ST 51 BB R/C	15 0 0
S56 fits ST51, 56, 60	3	6	0	ST 56 BB	15 15 0
S71 fits G60 FI & RV & G71	3	15	0	ST 56 BB R/C	17 14 0
Glow Plug Standard	6	10		ST 60 BB	15 15 0
Glow Plug R/C	7	9		ST 60 BB R/C	17 14 0
Spinners G15, G29	1	0	0	G.60 Racing RV ABC	30 0 0
Screw on 2½ in dia.	1	5	0	G.60 RV R/C	30 0 0
Tank Mount fits ST51, 56 60	2	8	0	G.60 FI R/C	24 3 0
G.20/15 BL	8	19	0	G.71/RV R/C	30 0 0
G.20/15 Glow R/C	10	0	0	G.71/FI R/C	24 3 0
G.15 W/Spinner	10	0	0	ST.51, 56, 60 Throttle	4 5 0
G.15 RV Diesel	14	0	0	G.40 Throttle	3 14 0
G.15 RV Glow	14	0	0	G.20/15 & 23 Throttle	2 2 6
G.20/23 BL	8	19	0	Slow Running Carb.	
G.20/23 R/C	10	0	0	Assy.	1 0 0
G.21/29 Lapped RC	11	10	0	Pressure Nipple	2 0 0
G.21/29 RV	15	0	0	Seelig Free Flight Mount	3 0 0
G.21/29 RV ABC	17	6	0	Radial Mount	
G.21/35 BB	10	10	0	For G20/15 & 23 G15	1 17 6
G.21/35 Lapped R/C	11	10	0	For G20/29 35, 40 & 46	1 17 6
G.21/40 Std.	10	10	0	ST51, 56 & 60	1 17 6
G.21/40 R/C	12	4	0	Needle Valve fits all sizes	2 6
				Needle Valve & Spray Bar	10 0
				G60 Throttle	4 5 0

all obtainable from the best model shops or direct from :



## WORLD ENGINES

97 TUDOR AVENUE, WATFORD, HERTS  
PHONE WATFORD 42859



G15 FI w/spinner £10



G60 FI R/C £24.3.0

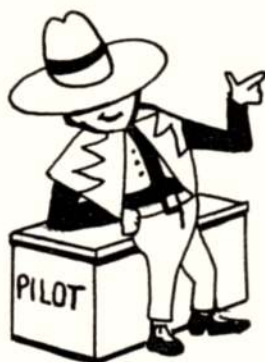


G21/29 R/C £11.10.0



G20 23 R/C £10.0.0

# PUNCHO PILOT USES AND RECOMMENDS



LIL KNARF 40 ENG.  
SHOESTRING 40 ENG.  
MUSTANG 500 60 ENG.



## RADIO, ENGINES AND ACCESSORIES

WITH ALL HIS PRE-CUT KITS

### SCALE 50-60 ENGINES

CESSNA 180	73"	A\$72.65
SOPWITH CAMEL	58½"	72.65
S.E.5	55"	72.65
CHIPMUNK	63½"	91.00
JUNGMEISTER	54¼"	72.65

### MULTI 50-60 ENGINES

ACE 300	A\$39.50
CROWN 500	51.60
ROYAL GRACE 500	54.50
TAURUS 500	48.05
FIGHTER 500	42.50

OS OP2 DIGITAL \$A199  
OS OP3 DIGITAL 299  
OS OP4 DIGITAL 399

WRITE FOR LIST OF ADDITIONAL KITS

NOW AVAILABLE NEW O.S. H60 R/C G.P. FRONT AND REAR INDUCTION

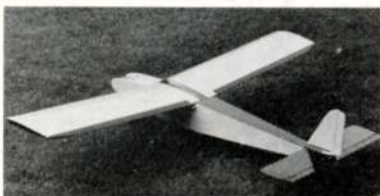
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TRADE ENQUIRIES INVITED  
PHONE 663 - 3505

216 SWANSTON STREET MELBOURNE 3000 AUSTRALIA

# IT'S NOT ALL R/C AT 308

Of course we specialise in R/C. No model shop could continue in business unless they did. But that doesn't mean that we neglect our many other valued customers who prefer, and stick to, free flight and control-line. We do our best to cater for them, too, with the many specialised items they demand such as Tatone timers, Bartel props and Pirelli rubber. It is because of this policy of specialisation that we are a 100 per cent model shop dealing only in Aeromodelling and Marine models. No toy trains - no slot racing - nothing except true modelling items. What more can a modeller ask for?



## THE '308' R/C TRAINER

Here is a real ready-to-fly model specially designed for the R/C learner flier. Completely built and covered in Solarfilm. All push rods installed. All this model needs is an engine and R/C equipment. Strip ailerons, rudder and elevator controls. Span 54", total area 610 sq. ins. For engines 19-35. Callers only. £29.10.0

## FREE FLIGHT ITEMS



**TATONE TIMERS**  
These are still recognised as the most reliable of all timers. Available in three types, D/T 5/6, Standard tick-off, 1/2A tick-off and flood-off, all at 52/6. Remember Tatone is the dependable timer. All in stock now.

**BARTEL FIBRE-GLASS PROPS**  
The Bartel free-flight props are now used by many of the leading fliers on the international circus.

**PIRELLI RUBBER**  
Again available in 1 lb. (approx.) hanks at 35/-. This is a direct ex-factory supply from Italy which has been carefully stored for six months prior to sale.

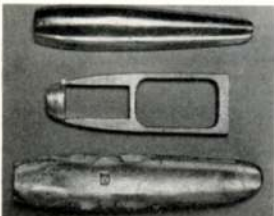
## CONTROL-LINE ITEMS



**VECO BELLCRANKS**  
Still the best. Plated steel with bushes, bearings and fixing bolt, etc. Large 3", 4/6; small 2", 3/6.

**TATONE HINGES**  
The ideal control surface hinge. All metal brass construction with positive lock serrations. Per pair 3/6.

**PANS**  
Cast aluminium polished. "B" T/R. FAI T/R. FAI Sp. all 28/6. 10 ccs sp. 58/6. T/R crutch unpainted 14/9.



**CONTROL-LINE PROPS**  
Bartel fibre-glass 7 x 8, 7 x 7 1/2, TR, 18/11. Punctilio 6 x 6 1/2, 6 x 7, 6 x 8, 7 x 7, 7 x 8, 7 x 9, all 3/9. 8 x 8, 8 x 9, 9 x 8, 4/2. All punctilio sizes in stock. REV-UP 7 x 8, 5/6.

**CONTROL-LINE WIRE**  
Laystrate Lt.wt. 70 ft., 4/8; 100 ft., 6/9. Hvy.wt. 70 ft., 6/5; 100 ft., 8/6. 2 x 62 ft. looped Lt.wt., 10/9.

**CONTROL-LINE HANDLES**  
U-REELY the luxury handle with 200ft super quality stranded lines, friction brake and positive lock. Complete £5.19.6. ROBERTS three line handle for engine control £3.15.0. Bellcrank unit for same 38/9.



**FIREBALL GLOWPLUGS**  
The sales of these excellent plugs rise steadily as more modellers come to appreciate their performance, reliability and long life. In three types. Hot, Standard and Cool. All at 5/9 each or 66/- doz.



## WHEELS

**DUBRO.** Standard and Low-bounce. 1 3/4" 21/9, 2" 23/9, 2 1/4" 25/9, 2 1/2" 27/9, 2 3/4" 29/9, 3" 33/9, 3 1/2" 35/9 per pr.  
**VECO.** Semi-pneumatic with scale hubs. 2" 14/6, 2 1/2" 17/6, 3" 24/9 per pr. Pneumatic, 3 1/2" 72/6, 4 1/2" 85/- per pr.  
**WILLIAMS.** Smooth Contour, 2 1/4" 17/9, 2 3/4" 27/6, 3 1/4" 36/-, 3 3/4" 48/6, 4 1/2" 71/9, 5 1/4" 85/- per pr.



## UNDERCARRIAGES

**NEW!! K.D.H.** steerable nose wheel unit (illustrated). Twin leg Lt.wt 5" or 6" hvy.wt., 22/6. Highly recommended.  
**K.D.H.** retractgear, Main legs per pr. £14.5.0., steerable nose leg, £9.5.0.  
**M.F.A.** with yoke type crank, single leg ... .. 17/11  
**Micro Acc.** single leg ... .. 17/11

We always have a large selection of all available undercarriage units, both retract and fixed, and will be pleased to advise the best type for your particular model.

## BRAKES

**NEW!! K.D.H.** electric (illustrated) 1.5V. up 22/6  
**DUBRO** mechanical, very efficient each 29/6  
**Micromold** mechanical, Simple but effective, pair 12/11

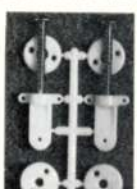


## CONNECTORS

**NEW!! S.L.N.** miniature as illustrated. 4 pin p & s 6/-, 16 pin multiblock with 4 x 4 pin plugs 23/-. Gold plated contacts. Very good value. Brunner type 4 pin p & s 9/-, 16 pin multiblock with 4 plugs 47/6.

## WING FIXING SETS

No more rubber bands to spoil the appearance of your models. A MUST for all scale fans. **MERCURY** (illustrated) with nose dowel fittings complete 6/5. Mainstream single bolt and fitting 2/10. Kavan 2-bolt set 4/11. Micromold 2 nylon bolt set 4/8.



## MERCURY TANK VENT SET

The cleverest little gadget we have seen in years. Access to both tank vents outside the fuselage. Positive filling without spilling. Comes complete with rubber tubing and fitting instructions. 4/3

## SPINNERS

**MERCURY** high grade nylon. A really tough spinner with two screw fixing and universal fitting. 2" 4/13, 2 1/4" 6/8, 2 1/2" 7/8, 2 3/4" 9/-.



## FUEL CUTOUT TUBING

Extra flexible rubber tubing for use with timers. 36" pkt. 2/6

## IN STOCK NOW!!

**THE FULL RANGE OF K & B ENGINES**  
This fine range of engines is now available from stock and spares are also ready to hand. The 40 is an outstanding unit in both Rat Race and R/C forms and is highly recommended.  
K & B 15R £12.60  
K & B 29R £15.10.0  
K & B 55 £18.10.9  
35 Comb. £9.1.6  
35 series 64 £12.60  
29 series 64 £12.60  
40 series 69 £15.10.0

## TATONE PEACE PIPES

The universal fitting silencer from the USA that can be adapted to very nearly every engine with single exhaust porting. With short and long manifolds. For 09-19, 29-40, and 45-61 engines, all 49/6 each.



K & B 19 R/C £10.14.3  
K & B 35 R/C £12.60  
K & B 45 R/C £14.19.0  
40 series 69 R/C £17.15.0  
Also the Veco 60 R/C £30.0.0



## H.P. 61 MK II

Still the most powerful series production 10ccs motor there is. Fitted with very effective and efficient silencer and full venturi R/C throttle. Complete £27.19.0.



## MERCO 61 Mk.III

This is the new Merco Mk.III with the modified throttle, giving better throttling and more stable tickover. A very fine engine all round and highly recommended. £19.7.0. peak - power silencer £3.1.0.

## We also stock and recommend

Webra 61 R/C Black-need. NEW!! £23.0.0.  
VECO 61 R/C £30.0.0  
VECO 50 R/C NEW!! £21.0.0  
VECO 19 R/C £13.15.0.  
VECO 19 stunt £10.14.3. K & B Torp 201 £8.19.6. E.D. Power pipes. No. 1, 60/6; No. 2, 84/-; No. 3, 94/-; Manifolds for above. No. 1, 21/8; No. 2, 28/-; No. 3, 29/3. Special manifold for Merco Mk. II, 37/6. Mk.III 37/6.

## FOR SCALE FANS

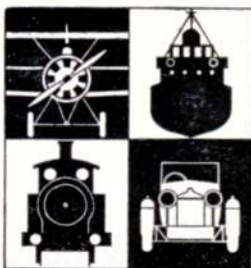
The fabulous new WILLIAMS scale machine guns for W.W.I. models. Scale 2" to ft. Kit easily built up in an hour or so. Authentic in every detail. Vickers, Lewis and Spandau. All at only 13/11.

## MAIL ORDER AND DEFERRED TERMS

Our Mail Order Dept. will send any goods advertised by us (other than fuels and dopes), anywhere in the world. C.O.D. available on home orders of a value more than £5 only. PLEASE ADD A REASONABLE AMOUNT TO COVER POST AND PACKING ON ALL POSTAL ORDERS TO AVOID DELAY. Please note early closing day is Thursday, at 1 o'clock, so please don't phone your queries then. We accept PAYBONDS for all amounts from £25 to £250. Up to 24 months to pay. WHY NOT USE YOUR PAYBONDS CHEQUES FOR YOUR MAIL ORDERS? We will return your cheque book with the goods and an account for your purchase.

**HENRY J. NICHOLLS & SON LTD.** THE MODERN MODEL SHOP  
308 HOLLOWAY RD. LONDON N7.  
TELEPHONE: NORTH 4272

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS



# model engineer exhibition 1969-70

## 31 December '69 - 10 January '70 Seymour Hall, London, W.1

### SEE AND ENJOY

There will be a magnificent collection of models of all sorts, shapes and sizes, covering locomotives, traction engines, steam rollers, ships, yachts, cars, aircraft in fact, anything which can be modelled. These entries will be competing for a wide selection of trophies, cups and other awards as individual entries in addition, this year the emphasis will be very much on the club aspect, and not only the governing bodies but some of the larger individual clubs have come together to give a composite exhibit of their efforts.

In the gallery, the popular 'Boys' Exhibition' organised by Commander Guffick will be there again - bigger and better. There will be a Meccano competition and a fine display.

### WORKING MODELS

The ever-popular live steam exhibit will be operated by the Society of Model and Experimental Engineers and youngsters of all ages, five to seventy, will be able to have a ride behind the steam engine.

The S.M.E.E.'s own stand will also, of course, have its usual selection of models operating under compressed air.

### COME AND HAVE A RUN

... Yes, you can now, with your locomotive. If it is a LBSC prototype, then enter the LBSC MEMORIAL BOWL CONTEST, which requires a track run. A second track will be in operation this year with 2½ (yes, 2½ in. gauge), 3½, and 5 in. facilities. We are open to accept visits from clubs bringing their locomotives to 'put on a show' during the exhibition. Limited time available, so make up a party and get a firm date.

### HISTORIC MODEL AIRCRAFT COLLECTION

Lt. Commander Greenhalgh's collection of famous model aircraft and power units from the birth of flying to the present day will be on display.

### POND FOR LITTLE SHIPS

(about 2 ft. l.o.a. is the limit) where radio-controlled boats will be demonstrated. Why not arrange to bring yours?

### MECCANO DISPLAY

In addition to a Meccano model class there will be a fascinating array of working Meccano models, including the famous Ferris Wheel (from Vienna's Prater - Remember 'The Third Man'?)

### ECRA CAR CIRCUIT

(as built for National Championships) All day running, individual, club, inter-club competitions and visitors' races. Both 1/2 and 1/32 scales operating; six-lane track. Prizes for novices and expert alike. Send for detailed day-by-day programme.

### WORKSHOP EQUIPMENT

Tools to make things, lathe accessories, complete lathes, small tools and the like, making a strong and popular class. Smaller items will be displayed safely under glass.

### CLOCKS

Horological work is one of the most rewarding of home workshop efforts. In recent years we have had excellent support from enthusiasts.

### RADIO CONTROLLED CARS in action.

An operating area round the park will be used by electric r/c cars. If you have one, bring it along!

### STAMP COLLECTORS

Specially franked covers and other items of philatelic interest will be available. A commemorative cover will be available and may be posted from the exhibition with a special frank.

### MODEL TRADE SUPPORT

Once again we welcome members of the model trade who will be displaying their wares and in most cases selling their products. We have Beatties of London, Kennlons, Myfords, Traction Engine Enterprises, Historex, Flying Dutchman, Mainstream Productions, Howard Taylor, Arms & Armour Press, Sartgen Eng., Arlington Supplies, Cromar White, Turntable and G.R.P. Marine. In fact there should be somebody to please the enthusiast in every angle of model making. Our own M.A.P. books will be on sale and a number of representative model governing bodies will be exhibiting, including The Society of Model and Experimental Engineers, International Plastic Model Society, Model Power Boat Association, all of which are National Non-territorial bodies. In addition there will be a number of club features to show what can be done.

### SOUVENIR GUIDE

A very special Christmas Extra issue of Model Engineer will be coming out on December 12th. This will be the Exhibition Souvenir Handbook and Guide. It will contain Exhibition entries, details of Stands, plus articles by leading model contributors. On sale everywhere and at the Show. If you cannot come, get a copy and it should persuade you. If you expect to come, read all about it first.



### PARTIES

Many clubs will be organising parties to come. We shall be very happy to welcome them, give them reduced price bookings, also book up party lunches, teas or other meals well in advance. Single and small number pre-booking tickets are available from these offices at Adults 3s. and Child 2s. Parties of more than ten: Adults 2s. 6d., Child 1s. 6d. Admission at the Pay-box is: Adults 4s., Child 2s. 6d. Any youngster at school is a child. Under five, admission free accompanied by an adult.

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# Scale Models 3

Out 14 November

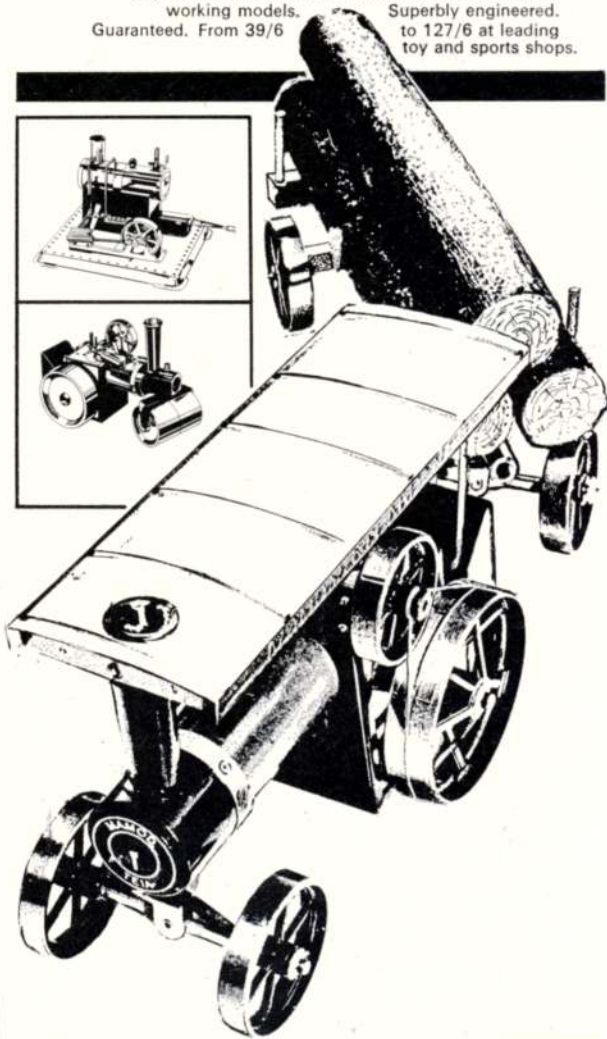
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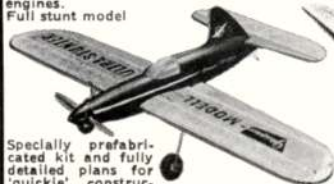


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**CONTRIBUTOR** Trevor Faulkner whose slope-side campaigning for the arts of magnet steered gliders are 'well-known', is also quite an artist in other fields, as the photo above illustrates. The bird is slightly less than life-size, and is constructed by welding together fogged and chased components. Each feather is formed separately, and includes representation of quill, barbs, etc. Basic form is created in steel, and this is then covered in molten copper, brass, or nickel as appropriate, to give the desired colour effect. The completed unit is mounted on a polished alabaster base. This year examples of Trevor's work have been exhibited at the F.B.A. and R.A. Galleries, with a 'one man' Exhibition at a Peterborough Gallery.



## Heard at the HANGAR DOORS

**LT. COMMANDER** Alwyn Greenhalgh's collection of early models will be on display at the *Model Engineer Exhibition*, Seymour Hall, December 31st/January 10th. It includes sixty-one items, including early hand-made petrol engines used for record attempts not long after the Wright Bros. had first flown, a Westbury engine used by the then Captain Bowden for his first records, compressed air record breaker by D. A. Pevely, in fact aircraft in all shapes and sizes by many famous names. **Commander Greenhalgh** will be in attendance, or, in his absence his deputy Peter Jennings, to add anecdote to the excellent descriptive labels all models carry. It is hoped too, that a number of modellers who have helped to make aeromodelling history will attend during the exhibition to renew old friendships.

### THREE PIONEERS

† **Tommy Ives**. We shall never know how many modellers owe a debt of gratitude to the kindly T. H. Ives, who died aged 70 in October. For us, he was the inventor who anticipated everything that ever happened in aeromodelling. His workshop abounded with servos, escapements, reed banks, pulsers and all manner of control devices. To many of the present generation he will be remembered for his 'Ivy' single channel receiver and the book 'Simple Radio Control', but Tommy's modelling career pre-dated radio control and he was renowned as a free-flight contest winner in the early thirties. Proxy flying for Gordon Light, he won the Wakefield Trophy in 1935, flew again for J. J. Haffey of Canada in 1937 and he held S.M.A.E. records for glider duration in 1935. Modelling introduced him to his wife, Constance, who was the daughter of S.M.A.E. Treasurer and first Balsa wood importer, as well as the President of Hayes and D.M.A.C., W. E. Evans. His post-war interest in Radio Control made him counsellor to everyone, for he had the gift of being able to translate the mysteries of radio into modellers' language. Without his help we

Faithful friends no longer with us, seen in characteristic pose, Tommy Ives (left), Nancy Buckeridge (right).

could never have launched our companion magazine *Radio Control Models & Electronics* for which he was the first Consulting Editor. At the same time, he was consultant to Macgregor Industries who launched kits for the Ivy, Tommytone, Terrytone and Ivistor sets which must have started thousands on the successful path to single channel control.

We shall miss him, and extend our sympathies to 'Con' in her sad bereavement.

† **Nancy Buckeridge**. In her time, Nancy was all things to modellers. Formidable in argument or competition, a natural leader and pioneer, she formed *Pharos* club which was said to be named after her house, and stimulated aeromodelling interest among a keen group of youngsters who are today among the leading experts. For many years, the Lady Champion, she had a model known as the *Two-piece suit* and though in recent years rendered inactive, she maintained a keen interest in the hobby right up to her recent death.

† **Charles Lutman**. The Model Shop at Newcastle upon Tyne has the unique distinction of being immediately identifiable by the letters 'MS'—made famous by the scale modelling pioneer Charles Lutman who died recently. His rubber driven scale model kits remain unique, as do his elegant sports designs—and for that matter his airwheels, which though the first in the field, have not been matched either for weight or size since. So another modelling pioneer passes, but the memory of him remains fresh among the modellers who patronised his long established shop and used his fine products.





## THE MODEL ON THE COVER!

Eric Fearnley's

# LUTON MINOR

updated for radio  
control and 2.5 cc.

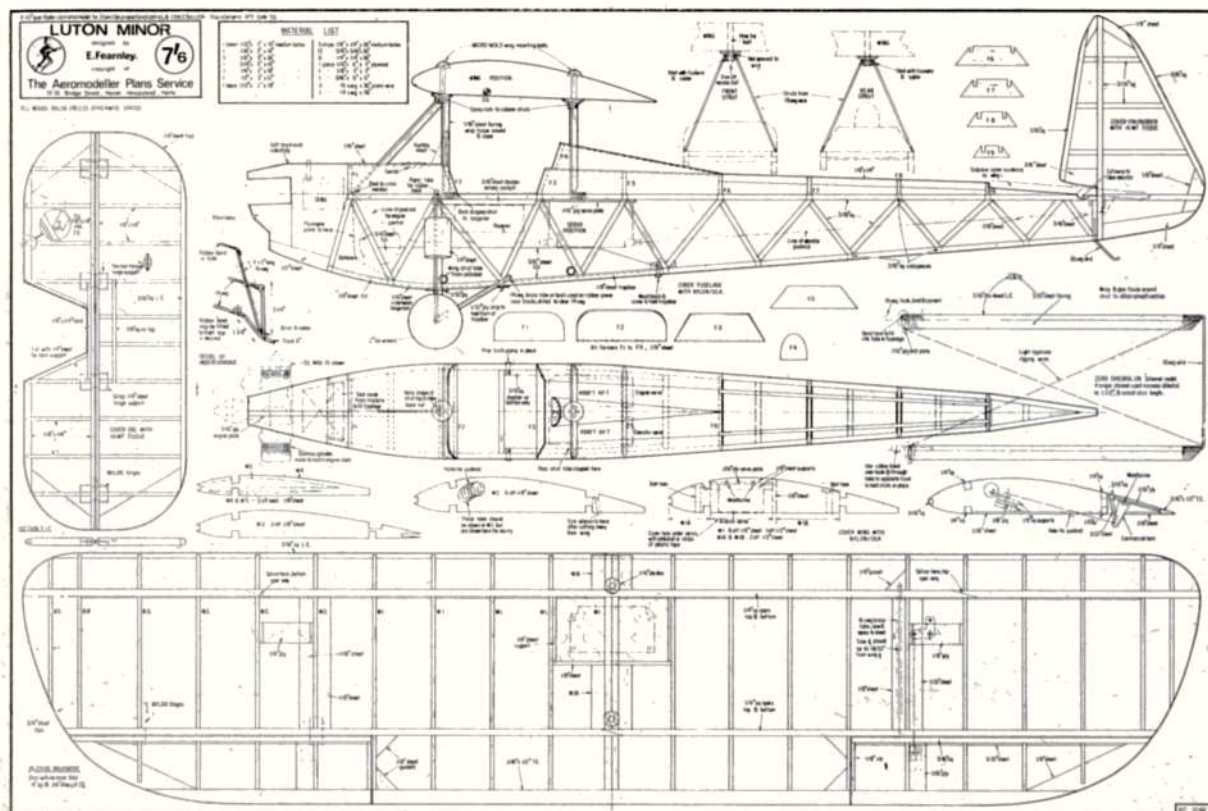
IT WAS one of those wet, windy winter weekends, and I wasn't in the mood to start drawing up a new project. Looking through my pile of old plans, I came across the Luton Minor, which I had designed for the *Aeromodeller* sixteen years ago as a free flight scale project. The simple lines and ability to take hard knocks had kept this design popular over the years and I wondered if it had possibilities as a radio 'fun model' for relaxed flying on the local beach.

I knew of one which had flown very well with single channel and a 1.5 c.c. diesel, and I decided to take it a stage further. Three spare Kraft KP7 (metal cased) servos were produced, and it was obvious that

the two would go in the fuselage quite easily. It seemed a pity not to try to get the third function in, so I decided to fit ailerons for lateral control, do without rudder, and have elevator and throttle on the other two. Owners of modern 'miniature' outfits will find that three servos will fit across the fuselage—who's for a 'full house' Minor? Pete Russell, well known in multi aerobatic circles, was not impressed. His experiences with the real aircraft were rather shattering. On take off, he thought the ailerons were not coupled up, as the response was so sluggish and the aircraft seemed to be a rudder controlled machine. I was by this time committed, so I pressed on.

In keeping with the old time atmosphere, I de-

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cided to fit a throttled Mills 1.3 c.c. We took it down to the beach (on Boxing Day!) and let the old girl have her fling. My first correction on aileron almost made me drop the box, as the model whipped into a turn so fast I thought it was the end! The zero dihedral, and liberal control movement were nearly *too* much. Again we tried, oh-so-gently, and we were getting some real flying, the only trouble being that the Mills was knocking it's heart out to gain any real height. After 61 powered 'military aircraft' flying, this was just a little too relaxed for me, though I did manage a loop after nursing it up to it's absolute ceiling of about 100 feet, and diving it hard. My son Brian, who was born during the month I designed the original model, had a few flights with it and obviously thought the old man was past it, flying this underpowered crab. The maximum thrill was limited to doing touch and goes across the sand, and a campaign was started to get Father to put more kick in it.

Back to Pete Russell for advice, and an O.S. 15 was produced. I shivered—thinking of the original .5c.c. D-C Dart powered model, however I was not going to chicken out.

One thing is certain, we are not going to wear out the O.S. 15 with overstrain. At full throttle (if you have the nerve) the model will do an axial roll that would do credit to a fighter. However, when I fly it, using the superb O.S. throttle, a very good scale effect is obtained. If Brian wants to use it as a sort of parasol Kwik Fli, well at least it will stand the stresses without breaking up in the air!

Construction is quite straightforward, although perhaps a little 'old fashioned', and should not present any problems.

Commence the fuselage by pinning down the two 3/16 in. sq. balsa longerons directly over the plan, then add the diagonal braces and 3/16 in. sheet fill-in pieces. Remove from board and build the other fuselage side. Cut out all the cross braces, and pin those for the tops of the fuselage to the plan. Invert the basic fuselage sides so that the flat, top longeron is over the plan in the correct position. Glue sides securely, using a set square to ensure that they are vertical. When thoroughly dry, add the remaining cross braces—again checking for squareness. Next, add the 1/8 in. balsa sheet fill in between the cross braces to the forward fuselage—as shown on the plan. Remove from board, cut out all formers and cement in appropriate positions. Cut the engine plate from 3/16 in. ply and epoxy in place—not for-

getting to cut a hole for the fuel tank. Bend the cabane struts to shape, then bind and epoxy to fuselage sides and cross brace. Accuracy here is essential. The cockpit floor and pre-drilled servo plate may now be added, followed by the two 1/4 in. x 1/4 in. keels between formers F6 and F9. Sheet cover the remaining formers with 1/16 in. med. balsa. Tack cement balsa block to the nose and sand to shape, then remove to hollow out recesses for tank and engine. Drill holes for the engine mounting nuts, and either install blind mounting nuts, or solder wire across the bolt heads. Make tank from tinplate and install securely to prevent vibration, and then glue the nose-blocks back into position. The undercarriage may then be bent to shape—remembering to add the bearings to the rear leg, and also to insert the rear leg through the fuselage before binding and soldering the assembly. All that now remains is to complete the headrest fairing, install the mounting blocks for the hatch, the strut tubes and control runs—finally adding fairings to the various struts and carving the dummy cylinder.

The fin is made directly over the plan from strip wood and then cemented to the fuselage. The tailplane is built in similar fashion, except that the trailing edge of the elevator is recessed into the 1/8 in. x 1/4 in. ribs. Ensure that the elevator is free from binding.

The wing is very simple to make, especially if three-function proportional control is being used, as no dihedral is then required—however, single channel flyers should allow 1 1/2 in. under each wing tip. Splice the spars as shown on the plan, then pin down the bottom spars and trailing edge. Cut out ribs W1 and W2, then glue in position. Add the leading edge and top spars. Next, add W3, the 1/8 in. sheet tips and rib W4. Remove structure from board and install bellerank mounts. Cement 1/8 in. balsa strut supports in position—then bind and epoxy the brass tube bearing, complete with wire pivot in *exactly* the correct position. Construct the servo box, and drill the mounting plate to suit the servo.

When making the ailerons, make sure that the 'ribs' are chamfered as shown in section, and mount the horns securely. Fill in between the spars in the aileron cut-out with soft 1/4 in. balsa. Complete the linkages from the servo to the ailerons, add the 1/8 in. sheet gussets and the wing is ready for covering.

Finally, sand the whole airframe smooth, and apply two coats of sanding sealer. Cover the fuselage and wing with nylon, and the tailplane and fin with heavy weight tissue. Apply 3 to 4 coats of dope to fill the covering. The tailplane may now be glued to the fuselage, and the ailerons hinged to the wing. The struts are then cut to length, shaped, bound and epoxied to the 1/6 s.w.g. pivot. Cement the two 1/16 in. plywood discs to the wing.

The original model as shown on the cover, was finished with a yellow fuselage, and white flying surfaces with leading edge 'scalloped' a bronze gold colour.

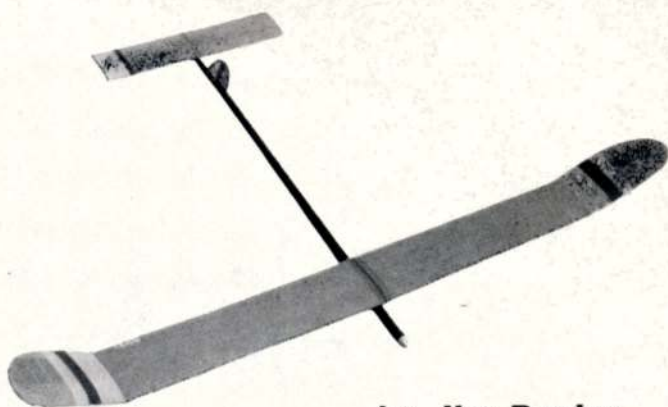
After painting and lettering the model to your choice, apply a coat of fuel-proofer to the entire model (two around the nose).

Mount the engine and check that the centre of gravity is in the position shown—adjusting with ballast if necessary. Cover the servo bay with celluloid or strips of plastic tape to keep the excess fuel out.

Perfect for the chap who wants nothing more than a realistic sportster to buzz around the local field, this new version of our Plans Service favourite fills the bill without involving heavy expense or a large model. Design is still admirably suitable for free flight, using 1 cc. to 1.5 cc. power.



# design and development of the A/2 glider



by Jim Punter

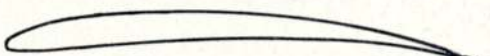
Last month's feature dealt with design features, now we discuss structure

**Historical developments:** Having obtained a fair idea of how the glider flies, and effect of the various components on the performance, the next step was to look at previous successful models, to see if there was anything to be learned as a general trend. Obviously, a complete summary of all the design trends since about 1952 would take a lot of space, so I will only mention the designs and modellers by which I was influenced most. I found that the models in the 1959 World Championships were very interesting, particularly the three Finnish models, and that of the winner, the American Gerry Ritz. The *Continental*, as his model was called, had all the ingredients for a very good glide; high aspect ratio, small lifting tail on the end of a long moment arm. The wing layout also appealed to me; the long centre section and small tips with large dihedral seemed to provide a method of increasing the aspect ratio, by utilising the projected area rule to increase the span. The long centre section providing a large portion of the wing unaffected by any dihedral breaks, with the sharply upturned tips apparently providing adequate stabilisation. The design of this model appeared, together with a report of the World A/2 Championships for 1959, in the October 1959 edition of the *Aeromodeller*. The biggest drawback to the *Continental* design, in the opinion of the author, is that of construction. The model would probably be a real handful to control on the line in all but the lightest breeze. Not really the model for Chobham in the March winds! The three Finnish models appeared in the Christmas edition of the *Aeromodeller* of the same year, and although not identical to each other, are all of a very similar design. The aspect ratio being not quite as high as that of Ritz's model. All three models appear to be more structurally sound, using hardwood spars, in what seems to be the right places. Again, small lifting tailplanes are used, except for Tahkapaa's model, which

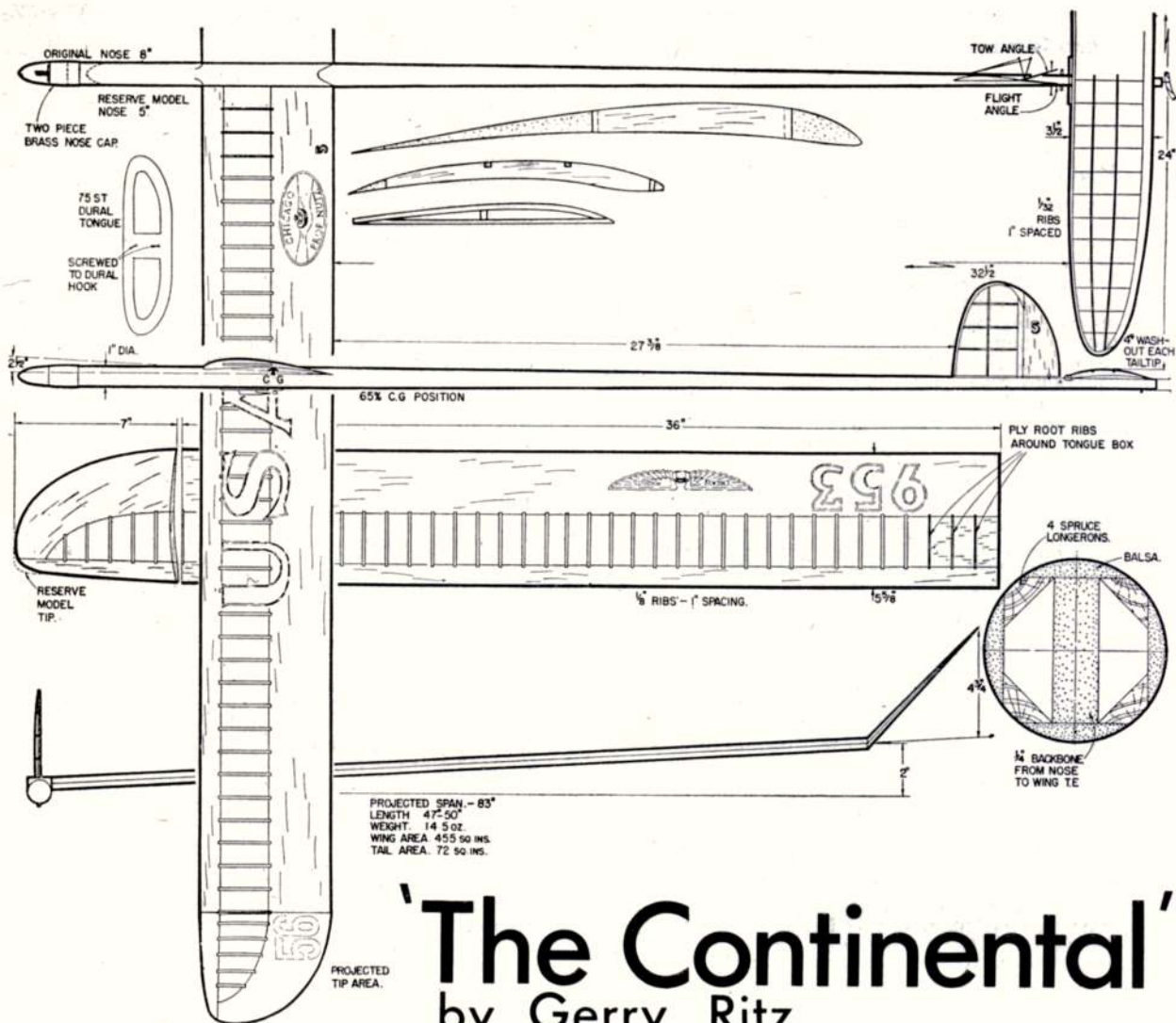
was unusual in that he used a symmetrical tailplane to make trimming the model easier. The moment arms of the Finnish models were not exceptionally long, and they all had a nose length of less than 6 in. The feature common to both the Finnish, and Ritz's model was that of polyhedral with fairly long centre section.

No discussion of the relative merits of previously successful A/2 gliders would be complete without mention of at least three other names, Rudi Lindner, Hansheiri Thoman and the Russian Juri Sokolov. An interesting article about Rudi Lindner appeared in the *Aeromodeller* in April 1957 by U. A. Wannop, and the ordinates of the airfoil sections Lindner used are reproduced at bottom of page. Lindner won the World A/2 glider championships two years running in 1954 and 1955. The two models that he used differed largely in fuselage design, the wing remaining essentially unchanged. Three view drawings of the model are available in Zaic's Year Book of 1955-6. The models both had wings with V dihedral, but not a very high aspect ratio by today's standards, although quite high at the time. Lindner started directing his efforts more towards full size gliding around 1958, and became internationally known as a full size glider pilot. His models utilised turbulated airfoils, and the use of the wing section he used would probably yield fairly good results, although one would have to be equally proficient at flying the models to achieve anything like the same competition results!

Few people have adopted a different approach to A/2 glider design with any degree of success. Hansheiri Thomann did this in the early and mid-fifties. Again the technique, and the model were reported in the *Aeromodeller*, this time in March 1958. Thomann reasoned that it was not essential for a model glider to have symmetrical wings like its full size counterpart, particularly if it was ultimately



	Wing Section										Tail Section									
	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	95	100		
R. Lindner	1.09	2.73	3.52	4.78	5.62	6.37	7.36	8.05	8.40	8.65	8.68	8.20	7.32	6.06	4.58	2.67	1.52	0.25		
Wing Section	1.09	0.09	0	0.20	0.55	0.85	1.52	2.13	2.58	2.97	3.64	3.88	3.82	3.40	2.81	1.52	0.85	0		
R. Lindner	1.30	2.80	3.50	4.80	5.55	6.20	7.45	8.10	8.90	9.30	9.70	9.45	8.85	7.75	6.10	3.90	2.40	0.40		
Tailplane Section	1.30	0.50	0.25	0	0	0.20	0.95	1.00	2.25	2.90	3.70	4.30	4.50	4.40	3.70	2.20	1.30	0		



# 'The Continental'

by Gerry Ritz

going to fly in circles. Further to this he argued that there were compelling reasons for constructing the model asymmetrically, so that it would be designed specifically to fly in circles, and that the wing would perform better under these conditions. To do this he moved the C.G. of the model towards the outer wing of the turning circle, so that the whole wing operated at much the same angle of attack; the whole wing can now be safely flown at a higher angle of attack (and hence at a higher lift coefficient) than was previously possible. Under such conditions, a conventional model when turning has the inner wing operating at a much higher angle of attack than the outer wing, and as the angle of attack is increased, the inner wing stalls first, before the angle of attack of the outer wing has reached a very high value. So the asymmetrical model can more efficiently utilise the lifting capabilities of the whole wing. Thomann used this method quite successfully, and placed high in the World Championships of 1954-6. He also used a turbulated airfoil, a long moment arm, and small tailplane.

Another modeller who has frequently featured in the results of past World Championships is Juri Sokolov. His models have been of much lower aspect ratio than that of the general trend of the time; they

have also featured a slightly dihedralled tailplane with a ply or dural keel mounted on the nose, and on which the wing is mounted. The model has a short moment arm, and a fairly large tailplane. The three view drawing in the 1957-8 Zaic Year Book shows the airfoil without a turbulator, although a drawing of the model in the *Aeromodeller* of December 1959 shows an entirely different section, with a turbulator on the leading edge sheeting. These are different models with similar layouts.

This gives some idea of the types of models flown by leading A/2 glider exponents of the past; many more designs were studied, but there is inadequate space to include them all. Apart from the D/T timer, which changed the A/2 contest considerably from the flying point of view, the trend has been towards higher aspect ratio, with more spindly looking models. On average, nose lengths have become shorter, and modellers have been making more effort to reduce the fuselage weight behind the C.G., using balsa tube fuselage booms. I think that less people use turbulators these days than in the past, that is not to say that they do not work, undoubtedly a model with an airfoil section specifically designed to be turbulated should have a better glide than a model without turbulators. Perhaps the added difficulty of attaching



by a tendency to drop a tip in a gust, and spiral slightly before recovering. Valuable height has been lost in the past when this has happened, although I have spoken to many people who have used models with heavy wings and have not experienced this problem. Either way, the model would be more responsive and 'lively' if the tip weight were reduced to a minimum. In the end a compromise was reached, which eased other problems as well. The centre section was sheet covered, whereas the short tip had leading edge sheeting only. Because the tip was small, it was subjected to comparatively small aerodynamic loads, and could be built of very soft material.

Now for the construction details. A great deal of time was spent deciding on the construction of the wing. The main requirement, in my view, was to build a wing which did not pull too hard during the tow, since this would enable the model to be flown in any conditions. After a little thought, I realised that this could probably be achieved by careful structural design of the wing. Most aeromodellers realise that a wing which flexes is less likely to break than one which is rigid. Model glider wings inevitably flex under tow, even in a light breeze, so I decided to attempt to utilise the wing flexing to advantage. If the wing were attached to the fuselage at its leading edge by means of a pivot, and the trailing edge held down with light rubber bands, then the centre of lift while towing would almost certainly be behind the attachment point, and the aerodynamic loads will tend to twist the wing so as to lift the trailing edge off the mount and reduce the angle of attack. If the angle of attack is reduced, then the lift the wing produces will also be reduced, and the pull on the line reduced correspondingly. Obviously, it is not a practical proposition to attach the wing to the fuselage at its leading edge, but it is possible to attach it well forward, particularly if a tongue and box wing fixing method is used. This method of fixing the wing is not often used these days, but for the above reasons, I decided to use it. It is important, however, if attempting to achieve a self limiting line tension system by anchoring the wing well forward, to tailor the wing construction to suit. The construction used in the prototype had only one spar situated at a position along the chord which corresponds to the middle of the wing box. The mean lift of the wing will almost certainly act behind the spar, and box. High lift loads during tow will then warp the wing slightly, reducing the angle of attack. Using tongue and box fixing has the incidental advantage of enabling the wings to 'knock off' in the event of striking the odd tree, or pole etc. For the remaining wing construction I felt that it was advisable to reduce the strength of the wing along the span, from the root. Of course, if the wing strength is suddenly reduced at any point along the wing, then the result could be disastrous, and sudden breakage would be almost inevitable. No, the spanwise strength has to be reduced in a carefully controlled way. The way in which I decided to do it, was to have a box spar at the wing root, until a few bays from the wing box, and then change to a T spar. At the tip the spar is not built up at all, being a flat balsa strip. The lower strip spar on the wing centre section is spruce, and the leading edge has a spruce component also along the centre section. The tips are entirely of light balsa, with only leading edge sheeting. Tapering the wing strength towards the tip in this way serves a double purpose of putting the maximum strength where the maximum load is, and keeping the tips light.

The fuselage has a 4½ in. nose, and a 30 in. moment arm. Although the nose length was not particularly short, I thought that using a fully sheeted wing centre section might have increased the wing weight slightly, and with a slightly longer nose, the fuselage could be made fairly light. The tailplane was fairly small (77 sq. ins.) so a longish moment arm was selected (30 in.). Although I had mounted the wing on a solid pylon on previous models, being convinced that this gave superior towline stability, I could see no reason to continue with the arrangement, and opted for a shoulder wing layout instead. The fuselage was built up on ½ in. sq. spruce longerons, with 1/16 in. sheet covering behind the wing, and 3/16 in. sheet for the nose, with the nose portion carved to a circular section. This provided a fuselage which was very strong, but light behind the wing, with a well streamlined front end, to reduce the drag.

The tailplane was made about 17 per cent of the wing area, and a lifting section used. It measured 22 in. x 3½ in., which was a slightly higher aspect ratio than normal, but this may have marginally improved its performance. The original tailplane was built conventionally of straight ribs and spars, with no geodetic strengthening, but had to be modified later.

The layout of the first prototype is shown in *Fig. 5*, and this was completed in March 1968, and labelled 68-1. The second prototype, which was designed at about the same time, but built later, differed in various respects. The wing layout was much the same, but the span was increased by 3 in., when it was discovered that the first model was not up to maximum area. The increase was achieved by extending the centre section of each wing by 1½ in. An entirely different wing section was selected, so that a comparison of performance against that of the Benedek section could be made. The wing section finally chosen was that used by Hirschel, the World A/2 glider champion of 1967, the section being published in the *Aeromodeller* in December 1967, and luckily the chord was exactly the same as that which I was using! The moment arm of this model was reduced from that of the first model by 2 in., to 28 in., and the noselength increased slightly to 5½ in. In keeping with the numbering system, this model was numbered 68-2, it is shown in *Fig. 6*.

**Flight tests:** The flight testing of both models started around the end of March, and the results of each flying session were recorded, so that a clear picture of the flight characteristics of both models could be obtained. Right from the start, 68-1 was very bad on tow, weaving uncontrollably in all but the lightest breeze. The glide, however, was excellent, and certainly the best that I had on any model up to that time. The towing problem was finally traced to the 2 in. trailing edge which had warped along its length; it proved impossible to remove these warps, and the wing had to be scrapped for A/2 use, although when cut down, it made a nice little A/1, since called ½A/2. The wing was replaced with one using a different section, this time the Eppler section published in the *Aeromodeller* in November 1965, the section was E-59. The model then performed very well, having a surprisingly good tow, considering that the section was very thin, and the glide was pretty good too, but not as good as that when using B-6456f. The wings were of a different construction, having only leading edge sheeting, with a full depth spar. These wings were the only wings which I have constructed on a jig. This took a little longer, but the

section was quite accurately reproduced. The model never won anything, not having an exceptional glide; though it was very stable, and flew best when trimmed for wide turning circles, which tightened up well in lift - but not to a dangerous extent. Initially 68-1 had a very poor stall recovery, and in an effort to improve it, the tailplane was replaced by one with more undercamber on the section, to increase the lift. This worked out well, and the new model, now called 68-1A, has a good stall recovery, only oscillating once if purposely stalled violently off the top of the line.

Initial flight tests of 68-2 were very disappointing, although the towline stability was very good, and the model could be led on the line for long periods. The glide appeared to be very unstable, and by this time I was becoming quite disappointed. I persevered, however, with the two models, and also found that 68-2 was inclined to spin in if it encountered strong lift, but that it was docile if trimmed for a wide glide turn. With a wide turning circle, the glide improved considerably and this model showed some promise. Both models were taken to the 1968 Nationals, together with one of my previous designs which until that time was being unsuccessfully used in contests. During a superb trimming session on the previous Saturday evening, 68-2, the model with the Hirschel section, started flying really well, and for the first time, I felt that it was sufficiently debugged to use seriously in a contest. During the following two days of the Nationals, the model flew flawlessly, with ten consecutive maximums, two of which were fly-off flights. Despite these extremely satisfactory results, it was still not clear that the model had satisfied all the objectives, because all but one of the flights were in strong lift, and I was keen to develop a model which would max regularly in weak lift. It had shown that the design was fundamentally much better than anything that I had built before, and the tow in particular was now free from vices, and quite docile. Unfortunately, 68-2 was lost after the A/2 fly off but retrieved in a sorry state some months later. After restoration it still flies as well, although it is a bit heavy now after its extensive restoration. I do not use it regularly except in windy conditions, when it seems better than my other A/2's. In fact, nearly every time it has been used, it has maxed, and has done 19 consecutive maximums in competitions, only recently recording a duff flight to end the run!

After the 1968 Nationals, I felt convinced that the design was along the right lines, and proceeded to design and build a replacement, 68-3, for the trials later in the year. Looking through my notes on the flight characteristics of the two models, 68-1 and 68-2, it was clear that 68-2 had been more successful, and the third design was based on the Hirschel sec-

tion. The layout of the new model was the same as 68-2 with only detail changes. The first obvious modification was to reduce the fin area, and eliminate the tendency to spin-in when in lift. The second modification was to the tailplane. During testing throughout the previous months, the leading edge of the tailplane persistently cracked near the tail mount, and despite stiffening in this area the problem continued. As an experimental measure I decided to cover the whole tailplane upper surface on 68-3 with 1/32 in. balsa suitably sanded before covering to reduce the weight. In all other respects the model was the same as 68-2.

At about this time, I decided to devise a method of holding the model on the line even when the line went slack. The problem of course is to design a system which both insures that the line does not release prematurely, but that released easily when required. I spent a lot of time thinking up all sorts of unlikely ideas, even to using very fine electrical coaxial cable for the line, and releasing by switching electric current through a solenoid! Finally, a system was devised which looked like having some chance of working and which was comparatively simple. The hook shown in Fig. 7, it consists of a dural hook by the side of which is a dural lever hinged as shown. The lever is spring loaded so as to prevent the towline ring from releasing prematurely, it is shaped to the curvature shown so that should the ring move backwards with the line slack it will not move far beyond point A, and will move forward again when the line tension is restored. To release the line is a simple matter. If the line tension is released quickly, the nose of the model will rise, and then if the line is pulled, the ring of the towline will release as shown in the figure. The model completed after the Nationals of 1968, 68-3, was fitted with the prototype autowhook. This year I have seen another version of the hook fitted to a model, and I think that it is an easier and probably better approach than the method I am using. The system here is to make the hook out of beryllium copper, a spring material, and attach it to the model as shown in Fig. 8, so that the line cannot be released until the tension is placed further along the hook when it will flick off; again this will happen if the line tension is released quickly.

To my delight, the new model was as good as the model that had been lost, and the new hook functioned exactly as required. It was possible to let the line go very slack without the line releasing prematurely, even to the extent of letting the line between the model and myself to be trailing along the ground, and still bring the model to the top of the line with a good run. Tests also showed that the model could be easily led downwind in calm conditions, and turned full circle. The hook has been a great help in competitions when looking for thermals; it's nice to have confidence that the line can be allowed to go slack with no fear of it pinging off early. The new model after the 1968 Nationals (68-3) has been used in nearly all the competitions that I have entered since it was built. Until recently it had had the best glide of all the models that I have had, and in fact does max in marginal air. I find that it is remarkably docile on tow even in very windy weather, until recently, when the wings folded in a strong thermal on a very windy day. The main cause was later diagnosed as a rather stupid structural design error. I had butted the lower spruce wing spar to the wing box, which makes an extremely weak point in the wing. Later models have this spar let into the wing box as shown on the plan, using epoxy adhesive for strength. Apart from

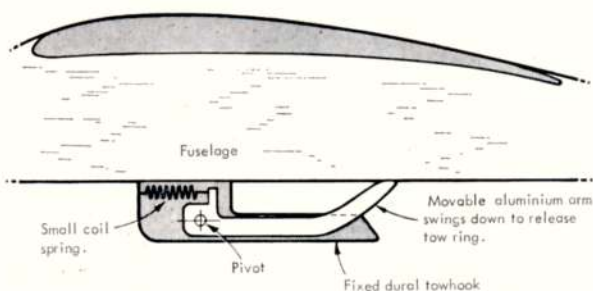
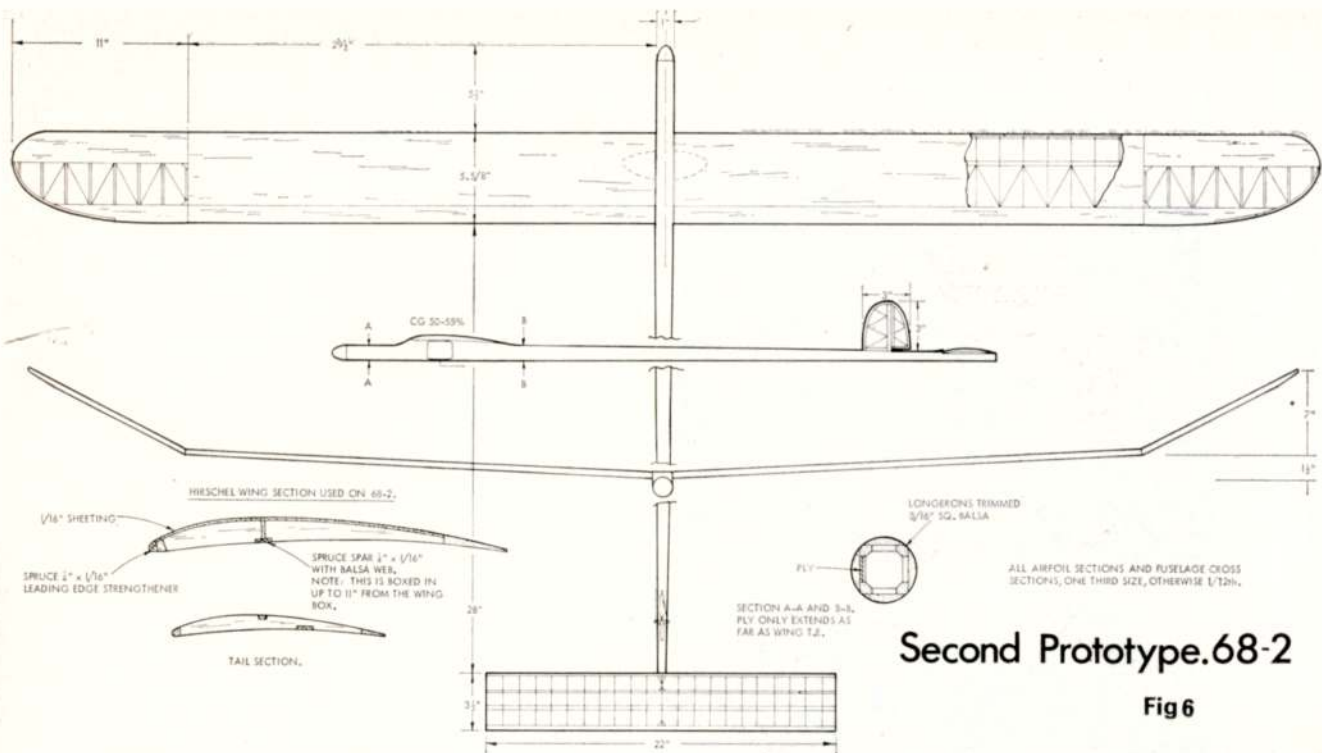


FIG:7 Spring Release autowhook



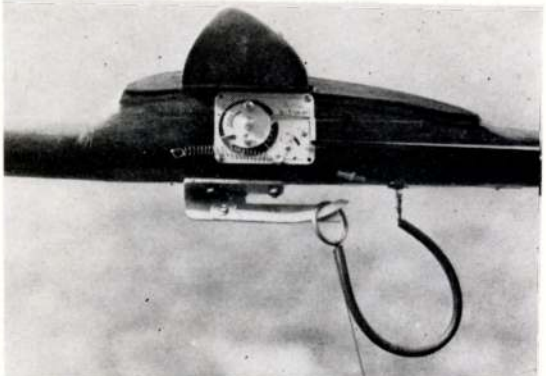
## Second Prototype.68-2

Fig 6

this latest occurrence, the model has never let me down, being extremely reliable – it has been possible to fly in competitions without any check flights previously with every confidence that it will be on trim. The sheet covered tailplane worked out well, weighing a little more than the 'normal' tissue covered version,  $\frac{1}{3}$  oz. as compared to  $\frac{1}{4}$  oz. I reckon that the added advantage of strength, and being fairly waterproof, far outweigh any mass penalty. The model was used in both trials in 1968, with the autowhook. Any failure was on my part, and often I just scraped a max because the model had the glide, when my interpretation of a thermal on the line was suspect! I was well satisfied with my 6th place after the trials and at that time felt that the original objective had been achieved. The latest version of the design meeting all the original requirements.

There was still room for improvement, in particular the wing fixing onto the fuselage. Using the shoulder wing system, there is bound to be a large drag resulting from the effect of the fuselage on the airflow over the wing. Various continental designs have overcome this problem by mounting the wings on a thin

dural pylon, which provides a minimum of interference. I decided to try this method of mounting the wings after seeing how easily it could be done with tongue and box wing fixing, on John Spooner's continental A/2 design at the second trials in 1968. A further variant of my design was then conceived. Next month – The 'Graduate' and final developments.



Above, close-up of 'Autowhook' on '68-3', about to release and below, the pylon mount on '69-1' to be described in Part Three.

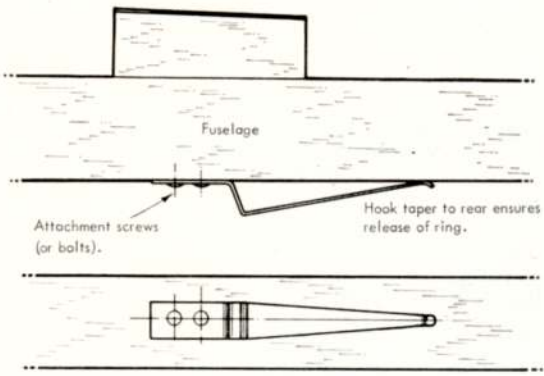


FIG. 8 Beryllium Copper Spring Towhook



## AIRCRAFT DESCRIBED No. 188

# PIEL EMERAUDE

AMONG the select names of aircraft designers responsible for the flow of popular home-built designs emanating from France since 1948, Claude Piel has perhaps appeared under a dimmer spotlight than, say, Gardan, Druine, Joly and Delemontez.

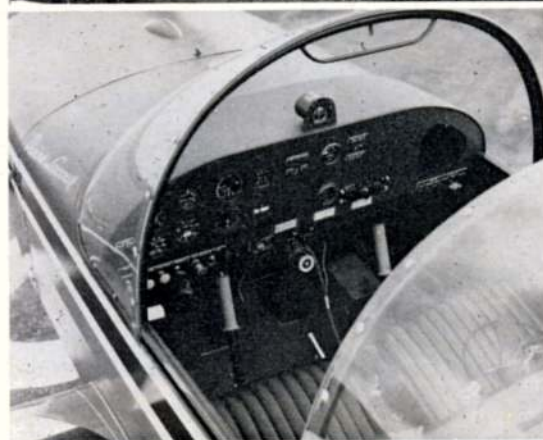
Yet perhaps of all the French light aircraft that have been built from plans approved by the R.S.A., those from Claude Piel have been the most attractive in line and among the most conventional in their forms of control, and proportion. Immediately after the war years, Piel constructed the small, single seat 'Pinochio' for a Volkswagen engine, the main feature of which was its appearance as a mini-Spitfire with curved wing outline. Although popular with the local pilots, the design was not produced by other constructors and Piel developed his CP-30 Emeraude as a side by side two seater using a similar wing plan form.

This was soon adopted by the home-builders and a number of small companies became interested in serious production, but it seems an unfortunate fact that everyone connected with the Emeraude has in some way or another become so commercially embarrassed that production ceased through no fault of the design at all. This even extended to the 'Super' version produced by Scintex with more powerful engine, large blown transparent canopy and full instrumentation—a type now very much highly esteemed in the second-hand market.

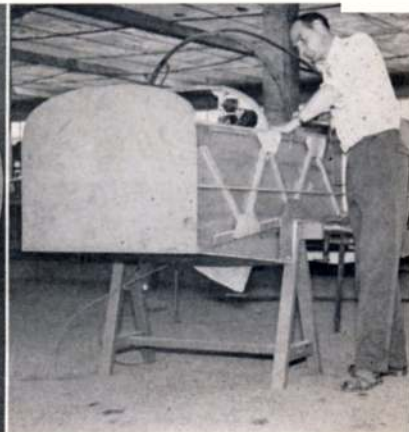
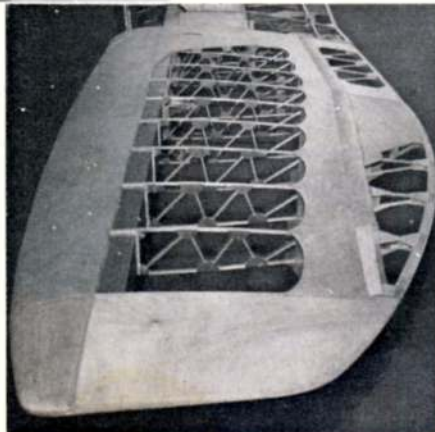
Similarly, the Emeraude was produced to a limited extent in this country by Messrs. Garland-Bianchi at Maidenhead for the very competitive price of £2,200. The name was changed to the 'Linnet' and reports of test flights were glowing with approval. The aircraft was demonstrated during 1958 by Neville Duke but production and sales only extended to three examples.

In every respect, the Linnet (Emeraude) behaves as prettily as it looks. Reviews have referred to it as a 'thoroughbred'. Its descendants have maintained the reputation, but it is the Emeraude which remains the most favoured of the Piel designs for home-builders. Many are flying in Canada and the U.S.A., where involved colour schemes have added extra glamour.

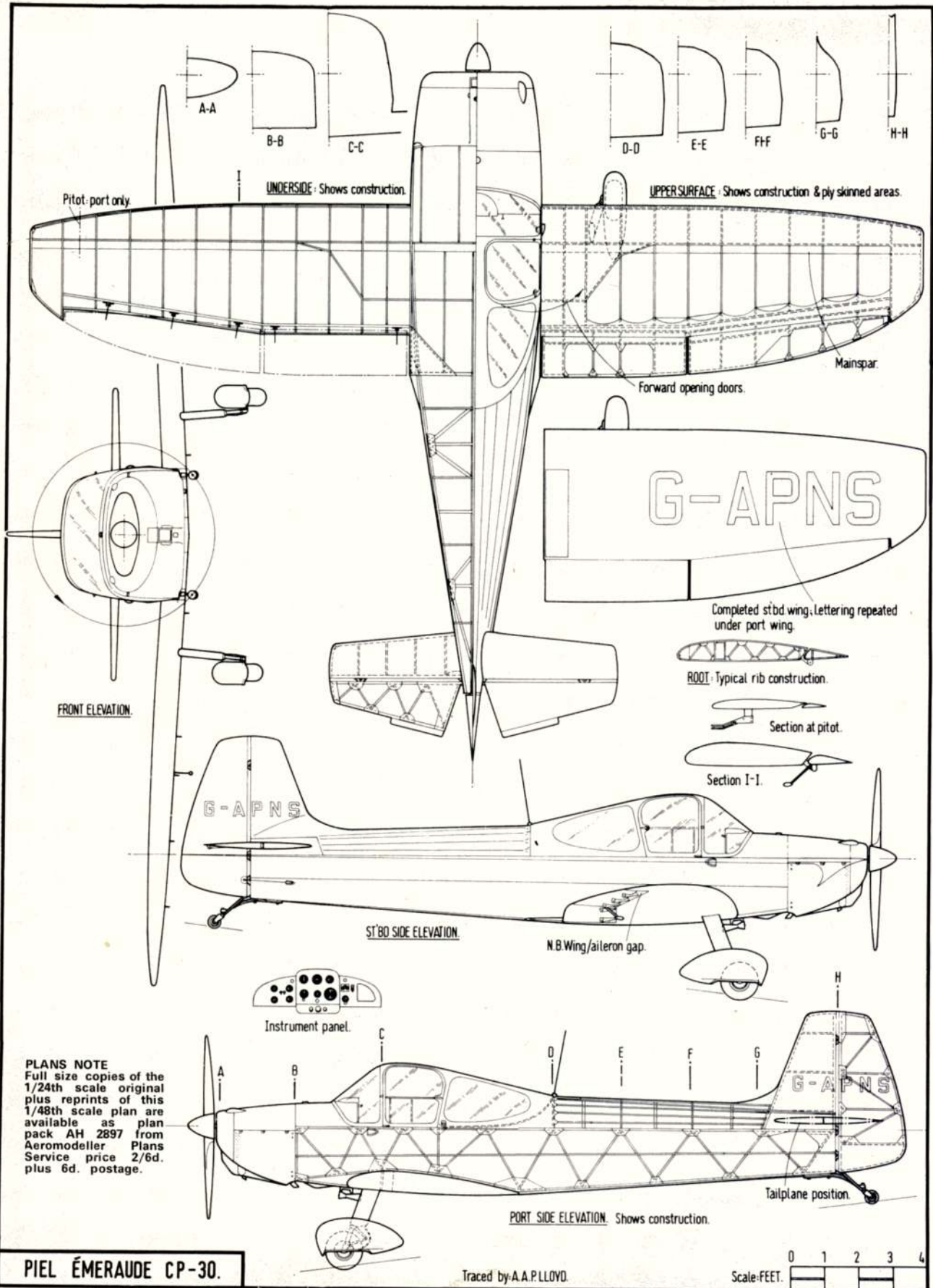
Construction is all wood and empty weight of 802 lbs. is a good reason for the sprightly performance on a 10 h.p. Continental. Strictly a two seater, it has a top speed of 130 m.p.h., cruises at 115 m.p.h., and a range of over 700 miles. Span is 26 ft. 4 ins., length 20 ft. 9 ins.



Top: G-APNS, the first of the Linnets, with the first of the French CP301As, F-BIJA below it. Nose view shows undercarriage without spats and cockpit is the Super Emeraude prototype, F-BJVR. Right, the SCANOR production Emeraude wing and fuselage, with designer Claude Piel at work. Curved outlines have tended to discourage many would-be home builders, but in fact the competitive designs are no easier to construct.







**PLANS NOTE**  
 Full size copies of the 1/24th scale original plus reprints of this 1/48th scale plan are available as plan pack AH 2897 from Aeromodeller Plans Service price 2/6d. plus 6d. postage.

**PIEL ÉMERAUDE CP-30.**

Traced by A.A.P. LLOYD.

Scale: FEET. 

0	1	2	3	4



## FREE-FLIGHT COMMENT by John O'Donnell

THERE ARE times when I think that my monthly article should be sub-titled 'Dawn on the Motorway'! Certainly, the past few weeks on the 'Contest Circuit' have involved a lot of travelling.

The nearest to home was the sixth and last of the S.M.A.E. Area-centralised events held on 14th September, and which only meant my going to Topcliffe to fly with the Northern Area. On this occasion they were favoured with the best weather in the country, as a glance at the rubber and glider results will indicate. The early morning breeze never became strong and although the sky remained completely overcast all day there was plenty of lift. The thermals were large if not particularly strong.

Many of the A/2 glider entry flew tactically, although one could tow for lift easily enough in the case of misjudging what an upwind model was doing. I started by colliding with another towline and having to retake the flight, but had everything 'my way' thereafter. At one time there were chances of a genuine fly-off—but Dave White had the lift run out on him one flight, and Tony Cordes had a poor launch (into good air) on his final flight. My fly-off proved unnecessary but at least wasn't an anti-climax—being timed o.o.s climbing steadily. These scores proved to be the best Nationally, which was hardly surprising when we heard about the weather elsewhere.

From the Midlands and South there were tales of mist or low cloud, sometimes with drizzle, and invariably with enough wind to give visibility troubles. Respectable or even modest scores from other Areas were usually a sign of persistence as much as anything else.

In these circumstances the fact that the Team Rubber event (for the *Farrow Shield*) was the final event for the *Plugge Cup* meant that many people flew who would not otherwise have bothered. The *Farrow* itself was won by Birmingham, who had two members fly with the N.W. Area at Chetwynd and the others at the 'new' Midland venue. Ray Monks provided Birmingham's only treble—but declined to fly-off. This gave Russell Peers the opportunity for a fly-off in the N.W.'s simultaneous domestic event. About a minute behind the winning total, and very close together, came Northampton, Norwich and Baildon 'A'.

Baildon must be very disappointed. They had the top two individual scores but nominated the wrong people for their 'A' Team, as their best four would have topped the *Farrow* by over two minutes. Furthermore, if my slide rule is correct, they failed by a few points to overtake Norwich in the *Plugge*. Barry Halford wrote to say that his club had spent the day visualising the National Club Championship slipping from their grasp. They made most of their rubber flights in the only reasonable (clear) period. Conditions at fly-off time were such that Bob Wells' model went o.o.s on its second circle!

Comment must be made on the effects that discounting the *Keil Trophy* has made on the *Plugge*. Whilst it is hardly fair merely to compute points from the scores made (since other people could well have flown in different circumstances), there is no doubt that an additional power contest would have favoured Baildon and Birmingham. My own club

Whitefield, gave up before the *Farrow*, as they felt that they had been 'legislated out' of the battle.

In comparison to the other categories, the  $\frac{1}{2}$ A Power contest was poorly supported. It was, however, distinctive in that it was won by a lady—Mrs. P. Hook, of Southampton, flying a modified (different dihedral) *Sloworm*, powered by the inevitable TD 049. It was misty at Beaulieu and her total of 8:45 included one flight timed o.o.s (at 2:45) by her husband!

Finally, mention must be made of the Individual Championships. Trevor Payne had tried very hard (and successfully) all year and had five seconds lead over me before the A/2 contest. Normally, he does not fly this event, but built a model specially, finished and tested it on the Saturday before the event, and then had poor weather on the day. It may be thought that there should be more than a couple of people really trying for the Senior title, but I presume from the 'Appeal' in *Model Flying* that the Junior Championship is unclaimed so far.

★ ★ ★ ★

The South Midland Area Rally at Cranfield is one of the very few major events to which the public is specifically invited. Poor weather is consequently a double disaster, as both flying and spectator attendance are affected. This year's event, on 21st September, fared better than that of 1968—but was hardly a modeller's day. It started windy and got worse! Free-flight was obviously the hardest hit, but the R/C and C/L events must also have been handicapped. Radio, incidentally, was dead downwind of f/f at the opposite end of the drome. The resultant 'interference' must have been a hazard to all concerned.

The time to fly was early—although few did so. Jim Baguley made all three glider flights before it got really windy—and looked well set in consequence. However, Mike Fantham followed an initial 2:45 by two maxs. in the wind for top place.

Another to fly early was Russell Peers, who logged the day's first treble in open power. His clubmate Alan Moss flew simultaneously and managed only a few seconds short, with a Super Tigre 19 powered model of *Dixielander* origin but with considerable other influence (second-hand from me, via Russell!). However, a fly-off was necessary when George Fuller got his third max with his Eta 29 'E type *Dixielander*'. George mixed open and  $\frac{1}{2}$ A flights and eventually won both. His smaller model had two flights timed o.o.s. under maxs partly through its colour scheme. George now admits that black and white chequerboard is not the answer for visibility. The model's other notable feature was the use of a pen bladder fuel system. The Power fly-off was uncontroversial—George had the longer flight—and the higher score.

Rubber was a different story. There proved to be three trebles—from George Sharp, Gerry Tideswell and myself. George had broken his model on landing on his third flight and was forced to rely on his rather small reserve. I had lost my *Maxine* on the second flight when it did not come down on D/T.

A reminder of the warmer weather! Mrs. Wendy Smith (Nats. winner) at far left holds J.O.D.'s new Wakefield - first flown at Gutteridge, Centre, Miss Shora Sinebruchowa displays Barry Lumb's Cox 15 powered open model - unfortunately written off at Woodford due to warp trouble. At right, a demonstration model for 'Transparent Solarfilm' is shown by Miss Elaine Beaumont.

Gerry had escaped unscathed - but broke the wing mount whilst winding for the fly-off. His reserve model spiralled in on glide. Meanwhile, George had done a very good and long-distance fly-off - but disappeared o.o.s. very quickly. These effects combined to let me win, with a three-minute plus flight from a 'throw-away' model assembled out of oddsends, including a 1953 sheet fuselage, and an old propeller converted to being a single blade featherer.

Henry Tubbs won tailless with just short of a treble - flying his long-run rubber model. All three flights were made early - and within about half an hour! Ken Attiwell also flew rubber to place second - well ahead of Don Wyld's third place glider. I won Coupe d'Hiver with one good and two poor flights. Second was Dave Tipper on only two flights. He had two crashes trying to R.O.G. for his third flight - and a very mangled model thereafter. There was a fair amount of criticism voiced, but probably not to the organisers, regarding the R.O.G. requirement.

Chuck glider seemed well supported but I believe only carried one prize. Best three flights (with a minute max) counted out of nine launches. Bill Houghton did a treble for first place. His models are never conventional and the one I saw had the wing surfaced with 'Melinex'. Second by just a second was Roy Roberts, once of Whitefield but now a County Member.

The really unique event is helicopter. All I saw of this event was a St. Albans' attempt to launch one of their 'Charabydis' designs - but the contest was won by long-standing exponent F. G. Boreham.

★ ★ ★ ★

Somehow, I haven't seen much of Chobham Common this season - but made up for it recently. Once again the South Coast Gala had venue difficulties, and the organisers could not obtain a suitable airfield. To keep the 'name' going it was decided to stage the f/f events at Chobham and the R/C at Thorney Island - both on 28th September.

It was not the best of days - as although bright enough, even sunny at times, the quite stiff breeze was directly on to the Tank factory (the F.V.R.D.E. to be formal - as just featured in 'Drive') and the adjacent woods. This did nothing to encourage flying - and a number of those participating understandably 'played it safe'. Even so, a number of models were lost, and I gather that not all have reappeared.

The All-in F.A.I. event required most effort, as it had five flights to the other events' three. Even so, some people say 'why not seven!!' As far as I know, I was the only one to fly power, and so had a comparatively easy win, using the H.P. 15D model, with neither model nor engine going particularly well. The latter was simple enough, and was merely proof that my diesel fuel does not keep well! Runners up were Jim Baguley and J. McNeil - both with A/2's.

In comparison with their scores, times in open glider were very low. Ken Smith winning with only 5:17. The other two open events fared a little better. Tony Child won power with three good flights at the cost of his model. At least, it was well over all the immediate 'model traps'. George Fuller was second, despite or because of short D/T's with his usual ETA 29 model. Fred Chilton was only a few seconds behind with a similar motor in a F.A.I. size model.

Rubber was taken by Russell Peers with three flights all on the common. Bill Gravett provided the only real opposition, especially after I put my 'bitsa' into the woods. Tailless went to G. Mills, of Leatherhead, despite Don Wyld's starting with a max from his large swept glider, and retrieving it from the woods. His model has sheeted inner panels, but built up tips that 'tip-up' for D/T purposes.

The traditional South Coast Gala Trophies, plus plaques were presented to all event winners - plus Senior and Junior rally champions. The latter was won by Fred Chilton's son.

★ ★ ★ ★

The need to collect my 'Maxine' from Cranfield, combined with a visit for my employers, resulted in my visiting the South again the following weekend - and attending the East Grinstead Autumn Gala. This time the weather was kind. In fact, it was like 'a summer's day' with sun and generally only a little breeze.

The advertised All-in F.A.I. event turned out to be three separate contests. These were run in rounds - with a gap between third and fourth for 'lunch'. Best illustration of the weather was my being able to fly both A/2 and F.A.I. Power. Whilst most entrants flew from the vicinity of the Control Tent, the Croydon Club took themselves off downwind. As they were using Jack North's thermistor to indicate lift, they would hardly wish to provide others with pilot models! Nevertheless, the organisers emphasised that they

still wanted 'neutral' timekeepers and the flight cards returned each flight.

Scores were generally respectable without being outstanding. Dave Welch flew well, after retrimming on arrival, to win F.A.I. Power with five maxs. John West was second with one short flight taken right at the end of a round after an earlier over-run. Both models were piped.

Wakefield was topped by Dave Hipperson, hardly recognisable in the beginnings of a beard. No one else looked a serious threat, although Bob Wells is getting back on form.

There was a fly-off in A/2 - to settle second place. Don Wyld's had won the contest with a 'Wichita' - but Jim Pinter and I had tied with 13:10 apiece. We decided to fly off with a 3 mins. max, partly to avoid losing models, and partly so I could complete a couple of seven flight postals. Jim had a new approach - which was to let me pick the air, launch as close as possible, and hope he could out-glide my model. His max was rather more comfortable than mine - but the next flight in less helpful air was decisive enough!

Meanwhile George Fuller had won  $\frac{1}{2}$  A power on a 'flyover', from John Boxall, using the same model as at Cranfield. The other events were quite closely fought. Crawley reappeared on the contest field with Pete Cameron, edging out John Oulds in Cd'H. The A/1 glider event was won by Dave Glue, followed by Martin Dilly and Bob Bailey (who seems to be really branching out nowadays). Closest event was chuck glider in which Bill Houghton lost by a second to M. Sheppard! Mike Fanthams was very close behind!

The host club had obviously tried to make this 'one of the better Chobham rallies' with a scoreboard, pre-engraved plaques, and by refraining from participating so they could provide timekeepers.

★ ★ ★ ★

A very late addition to the contest calendar was the London Area Rally staged at Greenham Common aerodrome, near Newbury, on 12th October. This was in many ways a replacement for the withdrawn Northern Gala - with the same S.M.A.E. trophies being awarded. I had doubts as to the status of the event - but it proved to be a centralised S.M.A.E. contest. R/C and C/L events were held and are reported separately.

It was the first time that this 'drome had been used - and some people's first introduction to American ideas of security. The airfield is long and narrow, with unattractive (to f/f) surroundings! The wind direction was slightly across the runway and models were drifting into an area of thick woods intermingled with expensive residences. As the day was initially very misty events were slow to start. Provided one stayed in the 'drome flying was easy - but not otherwise. In any case, going out through the gate involved a very long diversion.

The time to fly was late as conditions improved in mid-afternoon. Glider had the most activity and was won by a new name, George Clark of Maidenhead. He has only flown in about three events this year, but did three good flights with a straightforward model 'designed' by averaging three models published in one of Zaic's Year Books. Pete Trenchard, back now the full size gliding season is over, placed second - whilst I managed to push Elton Drew down to fourth.

Rubber saw a clear cut, if very expensive, victory for Bruce Edwards. He ended the day with both his models located but not recovered in the trees! Dave Hipperson short D/T'd himself down to second place trying to ease recovery. Dave Digby was close behind at third but was lucky enough to have his model returned undamaged after an early max. Looking very well placed was Bill Gravett - but his model spiralled in on the final flight when the prop folded - for reasons unknown.

The power event needed a fly-off as there were four with trebles. J. Russell had lost one O.S.19 model downwind as a D/T failure and did not recover his reserve in time. This left three to make the extra flight. Visibility was worsening rapidly and did in fact prove to be critical. Russell Peers won the Hamley for the third time by virtue of having a large and easy to see model with plenty of 'dayglow' paint. George Fuller disappeared still well up with his much smaller ETA 29 model, whilst Dick Johnson did nearly the same time with what appeared to be a piped F.A.I. model.

#### East Grinstead Autumn Gala 5/10/69, Chobham

F.A.I. A/2: 1. D. Wyld's (Crawley) 13:22; 2. J. O'Donnell (Whitefield) 13:10 + 3:00 + 2:01; 3. J. Punter (Hayes) 13:10 + 3:00 + 1:38. F.A.I. Power: 1. D. Welch (Brighton) 15:00; 2. J. West (Brighton) 14:38; 3. J. O'Donnell (Whitefield) 14:27. F.A.I. Rubber: 1. D. Hipperson (Croydon) 15:00; 2. R. Wells (Norwich) 13:50; 3. L. Burrows (Blackheath) 12:18. A/1 Glider: 1. D. Glue (Brighton) 7:43; 2. M. Dilly (Croydon); 7:26; 3. R. Bailey (St. Albans) 7:18;  $\frac{1}{2}$  A Power: 1. G. Fuller (St. Albans) 9:00 + 2:29; 2. J. Boxall (Croydon) 9:00; 3. R. Bailey (St. Albans) 8:48. Coupe: 1. P. Cameron (Crawley) 5:31; 2. J. Oulds (Crawley) 5:12; 3. R. Johnson (St. Albans) 4:47. Chuck Glider: 1. M. Sheppard (St. Albans) 2:42; 2. W. Houghton (C.M.) 2:41; 3. M. Fantham (Richmond) 2:34.



Are you between 10 and 16 years of age? Then don't delay, join today

### 'KIT-ONLY' CONTEST FOR YOUNG MODELLERS

AT NEXT year's British Nationals, to be held at Whitsun weekend (May 24/25th) a new special competition is being organised and it is aimed mainly at YOU. Provided you have insurance (MAP will do fine) then it will be open to anyone 16 years or younger on the day of the contest. Entrants must fly models chosen and built from the following kits only: - **Rubber Veron Sentinel, Keilkraft Ajax or Senator, Mercury Mentor, Glider Veron Verosonic, Keilkraft Invader, Mercury Martin or Swan.** All cost between 15/- and 25/-.

The contest will be held in the early afternoon of the Sunday of the 'Nats' meeting, so you will have plenty of time to get there and you won't have to attend both days if you don't want to (although, we hope you will!). Also you'll be able to get away early as well if you wish.

The contest will be divided into Rubber-powered and Glider sections and you can enter either or both (you can enter both for the price of one entry fee of 2/-). You can enter on the day or in advance and you can have as many models as you wish, within the above choice, although only one entry per person per section.

The rules will be simple and yet give you some idea of how normal contests are run. There will be prizes for best performance in each section and also for the best built.

The aim is to get YOU to enter a contest without feeling that all the others are better than you - in this contest everyone must start from more or less the same potential performance. Careful building to instructions, some practice, and a bit of luck on the day will decide the winner.

How do you feel about it? Why not write to the organiser for more information: -

Mr. R. A. FAVRE,  
90 COURTLANDS DRIVE,  
WATFORD,  
HERTS.,  
WD1 3JA

marking the envelope 'KIT CONTEST' and enclosing a Stamped Addressed Envelope. It won't commit you to anything if you write, but it will give the organiser some idea of the reaction to the contest.

Don't forget, if someone asks you what you want for Christmas, how about one of those kits - it will give you ample time to build and practice.

vapours which made my eyes sting for about half an hour afterwards. Can you tell me what this is due to since you can imagine I do not wish to go through the same experience again? I should mention that since I bought it I have not placed it in any hot surroundings. Jonathan Wright. Shipston-on-Stour, Warks.

Your experience with the fuel-proofer is most unusual - in fact I have never heard of a similar occurrence. The only explanation that I can think of is, that perhaps the tin had been exposed to strong sunlight in the model shop, causing a build up of pressure, due to expansion of the gases within. However, it does underline the importance of opening tins carefully - and not leaning over the tin, as even inhaling the fumes can be harmful.

Dear John,

I have a D-C Spitfire 1 c.c. and after reading an old Aeromodeller engine test on this engine, it said that the crankcase is the same design as the D-C 1.5 c.c. Sabre engine, and as I want a 1.5 c.c. engine I wondered if it was possible to convert a D-C Spitfire into a D-C Sabre by buying a cylinder head piston, etc., to fit the crankcase.

If not, would the D-C Spitfire installed in a Keil Kraft 'Marquis' still perform all the basic aerobatics. Camberley, Surrey. Alan Jewell.

As you state the Sabre and Spitfire share a common crankcase, and as the stroke of each engine is identical, it is reasonable to suppose that the crankshaft is also interchangeable.

However, to convert your Spitfire into a 1.5 c.c. engine, you would need a new cylinder jacket, liner, contra-piston, piston and con-rod - and the cost of these parts is likely to approach that of a new engine. The cheapest remedy is to buy a second-hand motor, although the standard 'Spitfire' should provide adequate power for the 'Marquis' provided that the weight is kept as low as possible.

Dear John,

I am writing because I want to start single channel. Please could you send me the price of a single channel Spitfire. Fishponds, Bristol. Kevin Jones.

Oh dear! Why is it that nearly every newcomer to R/C flying wants to start with a scale model? With very few exceptions, a scale model is always more difficult to fly than an equivalent sized trainer aircraft, due to higher wing loading, physical bulk and usually unsuitable proportions for model flying. Worst of all is the low wing subject - an inherently unstable design. Apart from its flying shortcomings, it is always mere heart-breaking to damage a scale model - which takes longer to build

and finish, than it does to prang a trainer, where a quick squirt of balsa cement will often have it flying again in a short space of time!

As an introduction to single channel flying, the 'Pal Joey' (Plan No. RC/852, price 5/-) is hard to beat, as it is easy to build and fly, yet strong enough to take loads of punishment.

Dear John,

I have just opened a tin of H.M.C. 'Hot' Fuel Proof Dope. I did this by the usual method of prising the lid off with a pen-knife. However, I had only loosened the lid slightly when it suddenly shot off, hit my forehead, and was followed by a blast of petroleum

Dear John Bridge,

I am between 10 & 16 years of age and would like to become a member of the "Golden Wings Club". With this application I enclose postal order (International Money Order) for 2/6d. to cover cost of the enamel club badge, two coloured transfers and membership card.

NAME IN FULL .....

ADDRESS .....

YEAR OF BIRTH ..... SCHOOL .....

NAME OF ANY OTHER CLUB OR CLUBS TO WHICH I

BELONG (if any) .....

SEND TO:-GOLDEN WINGS CLUB, AEROMODELLER, 13-35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS

Dear John,

I have just finished a control-line model by Keilkraft, the 'Radian', could you please tell me if insurance is worth applying for and if so, how would I apply for it and under what terms? Sonning, Berks. Alan P. Jackson.

To my mind, insurance is always worthwhile, as although your 'Radian' may seem harmless enough, consider what it could do to a small child if struck in the face.

Most clubs insist on insurance (or provide their own cover), and local authorities make it a condition for using land where permission to fly model aircraft has been granted.

Details of our own insurance scheme, providing third-party cover for up to £100,000 is given in each issue.

12/69 2d in the 1/- Rebate plan purchase coupon for Golden Wing Members G.W.N.

# TOPICAL TWISTS

by "Pylonius", illustrated by "Sherry"

## Signal Success

Gone are the picnic parties, the family cricket matches, the gay swish of the child's kite, and all the other familiar sights and sounds of week-end on the local common. All is now grim desolation, with only the occasional dog exerciser to be seen scampering fearfully across the wasteland. Yes, you've guessed it—the Radio Boys have moved in.

Ah well, nil carborundum, quoth I, as armed with nothing more potent than a chuck glider and a Coupe D'Hiver, I marched bravely towards the sinister huddle of cars on the centre patch. Well, I got one flight in—admittedly with many a chill coursing up and down my unprotected spine—but then I came under direct attack from a model which, for all its ragged appearance, must have been equipped with some highly sophisticated intruder homing device. Luckily, I knew an evasive tactic or two, and the model disintegrated on the old (now horseless) bridle path. I am not sure whether it actually crashed or just fell apart, but no sooner had the sigh of relief escaped me than the scourge of the common, a souped up bazz bomb, went into action.

Now, I know the owner to have been especially proud of the fact that this model had done more to

THEN I SAID  
YER'LL PARK  
WHERE I TELL  
YER!



AT THE 'NATS' !!



'What d'you mean, unpack it? This is the model'

empty the common of non-Radio life than any other crowd clearing machine, even though it had never at any time been under full control. Indeed, it is thought that it was this very machine that gave the coupe de grace to the highly persistent riding school. However, I was not prepared to admire it at close quarters—at least not without dark glasses and a crash hat.

Perhaps I should think myself fortunate that the missiles only operate at those times when a grimly determined public endeavours to reclaim its heritage; thus I am able to squeeze in a crafty flight or two during an off-peak period. Even so, I think that Radio flying should be put on the same basis as Rifle Ranges—a red flag to be hoisted when operational.

## Tom (Non) Mix

Back in the days when aeromodelling was just an innocent old hobby the Lone Ranger was looked upon as a happy symbol of that freedom which was to be enjoyed on those broad acres where now is to be found the housing estate, the motorway and the cement quarry. It was highly significant that the unclubbable eccentric should have been identified with the romantic figure of the prairie roaming cowboy—getting a folksy reception from the happy hoe downing homesteaders whenever he hove into sight on the bluff. Fact was, clubs abounded with such exuberance in those days—they were even named after single houses let alone districts—that it was considered a test of character to resist joining at least one, particularly since, in those pre-permissive days, you were very much the boy-with-a-toy. It was many years before commercialisation of the hobby and the two hundred quid radio image gave some semblance of adult acceptance. Anyone stoical enough to suffer the jeers of the multitude, alone and unsupported, was considered quite the guy.

Today the Lone Ranger is no longer the 'howde stranger' he once was. He may have been welcome with a beans for all smile on those brave, broad acres of yesteryear, but the reception he gets when, nowadays, he tries to muscle in on the hard won cabbage patch is of the wagons-in-a-circle variety. Even those club members who are at least a year in arrears with their subs are hardly likely to open up the chuck wagon for him. If they have to suffer the rigours of club life in order to get a bit of flying space, why should some free ranging intruder get away with it? He, too, should give up his Lone Ranger role and become a Club Wrangler like everyone else.



## ENGINE TEST

by Peter Chinn

# McCoy 049

**Easy to handle engine –  
ideal for the beginner**

SINCE 1965, retail prices of model engines have risen sharply. This is through no fault of manufacturers. The Government's 46 per cent increase in purchase-tax on model goods, the imposition of selective employment tax, the devaluation of sterling and an all-round increase in the cost of materials and labour have pushed up prices to a greater extent in the past four or five years than had occurred in the previous 20 years. Indeed, in many cases, engine prices were actually dropping until the early 'sixties, by which time there were two or three small engines being sold at less than £2 retail, including tax. We can, therefore, thank manufacturers for the fact that, having got engines down to such remarkably low prices, their current prices, even with all the recent increases, are still very reasonable.

The engine with which we are dealing in this month's test is the latest development of one of those earlier low-priced motors, i.e. the Wen-Mac 'Rotomatic', that was originally sold in the U.K. for 39s. 6d. A simpler version, without Rotomatic starter unit and known as the Wen-Mac 'Hustler', was actually priced at only 29s. 6d. and was the cheapest model i.c. engine ever offered on the U.K. market.

These engines were eventually replaced by improved models, namely, the Wen-Mac 'Hot-Shot' and 'Thunderbolt'. In 1968, the Wen-Mac Model Division of the American Machine and Foundry Company was purchased by the Testor Corporation. Testor's model products include, through their Duro-Matic Products Company subsidiary, the well-known McCoy engines, and so the Wen-Mac Thunderbolt, following minor modifications, has been renamed the 'McCoy 049'.

Basically, the McCoy 049 is an orthodox 'Half-A' class (i.e. .05 cu. in. or 0.817 c.c.) glowplug engine. It employs shaft induction, conventional reverse-flow scavenging, a plain bearing and fairly conventional construction. It is, however, unique in one respect. This is in its use of an integral self-engaging spring-starter unit.

This starter unit was used on the Wen-Mac models and is a development of the pull-cord starter

originated by Wen-Mac in the early 'fifties in their efforts to popularise model i.c. engines for 'toy' use – an endeavour, incidentally, in which they had considerable success, eventually reaching production figures not far short of 5,000 engines per day.

During the past ten years, many other small engines have been fitted with integral starter devices – mostly in the form of an exposed coil spring, surrounding the crankshaft bearing, which is then hooked over the prop blade, or a pawl behind it, for starting. The advantages of the Wen-Mac/McCoy system are that it is self-engaging and, being totally enclosed, is much neater and does not interfere with cowling the engine, should this be desired.

The starter unit fitted to the McCoy 049 consists of a total of eight parts. The starter spring is of the flat 'clock-spring' type and is coiled inside a pressed steel housing permanently fitted to the crankcase nose. The outer end of the spring is anchored to the housing, while its inner end is secured to a steel sleeve, freely mounted on the end of the crankshaft bearing. This sleeve transmits the starting impulse to the crankshaft via the clutch assembly housed within the driving disc. The driving disc is pressed on to a knurled section of the crankshaft. Inside it contains a steel cam plate (the centre of which is keyed to the starter spring sleeve) and two small flat rollers. When the drive disc is rotated in a clockwise direction viewed from the front (i.e. as in revolving the prop backwards) these rollers move tangentially outwards to lock the cam plate to the drive disc and so engage the starter spring. On releasing the prop, the motor is spun rapidly over several compressions, the clutch being automatically disengaged as the spring returns to its original position.

In practice, the starter works well and is, unquestionably, a considerable help to any beginner having no previous experience of model engines. To test this, our engine was deliberately over-primed to the extent of making normal hand-starting difficult; whereupon use of the starter quickly had the motor running again.

Designed primarily for use in ready-made plastic 'toy' models, these engines have to stand up to treatment that the experienced modeller would regard as abusive. For example, the manufacturer fully expects



that the purchaser will run the engine flat out from the word go, with no thought of running-in. Fortunately, like most very small glow motors, the McCoy does not really need a running-in period as such, nor is its performance likely to improve after the first few minutes. However, since it is our policy to give every engine a series of preliminary runs before carrying out a test, we did run our test model for a total of about 30 minutes before performance tests were begun.

The maker's recommended fuel for the McCoy 049 is McCoy 'Premium' glow fuel. This is not available in the U.K. and since the engine is distributed in Britain by the Keilkraft organisation, we used, instead, their Record Nitrex-15 blend, having first checked performance on McCoy Premium. There was very little difference between the two in performance, the McCoy fuel giving about 200 rpm extra on props matched to the engine's peaking speed.

The actual torque and b.h.p. obtained on test are shown in the accompanying performance graph. The figures are well up to average levels for 'sport' or non-contest type 0.8 c.c. glow engines.

The engine was also checked on a wide variety of prop sizes, ranging from 7x4 down to 5x3. Typical r.p.m. figures obtained were as follows: 8,100 rpm on a 7x4 Top-Flite nylon, 9,800 r.p.m. on a 7x3 Top-Flite wood, 11,000 on a 6x4 Keilkraft nylon, 11,600 on a 6x4 Top-Flite wood, 12,400 on a 6x3 Keilkraft nylon, 13,200 on a 6x4 D-C nylon, 13,400 on a 6x3

Tornado nylon, 14,000 on a 6x3 Top-Flite wood, 14,600 on a 5x4 Keilkraft nylon and 15,800 on a 5x3 Keilkraft nylon.

In general, the handling qualities of the McCoy 049 were very good. The recommended method of priming the engine for starting is to dribble a little fuel on to the fins above the exhaust port. This can be used equally well whether the engine is cold or hot. The needle valve control is raked back and is located at a safe distance from the prop. The only complaint we have about our two test engines is that they had a tendency to 'hunt' when set for maximum r.p.m. This, amounting to a fluctuation of 200-300 r.p.m. at the peak, appeared to be due to the needle-valves being fitted a trifle too loosely: merely touching the needle control was enough to affect the speed. Apart from this, the engine's operational characteristics could not be faulted.

The current U.K. list price of the McCoy 049 is 70s. 0d. It is still among the cheapest model engines on the market. For the young newcomer to the hobby it is one of the best engines with which to give him an encouraging start.

**Power/Weight Ratio** (as tested): 0.49 bhp/lb.  
**Specific Output** (as tested): 73 bhp/litre:

#### SPECIFICATION

Type: Single cylinder, air-cooled glowplug ignition two-stroke with crankshaft type rotary-valve induction and integral spring starter.

Bore: 0.420 in.

Stroke: 0.360 in.

Swept Volume: 0.0499 cu. in. (0.817 c.c.)

Stroke/Bore Ratio: 0.857:1

Weight: 56 grammes - 1.97 oz.

#### General Structural Data

Pressure diecast aluminium alloy crankcase and (unbushed) main bearing unit with screw-in rear cover. Hardened and ground, non-counterbalanced steel crankshaft with 7/32 in. dia. journal and 3/32 in. dia. crankpin. Non-hardened steel cylinder with integral cooling fins, externally threaded and flanged at base for attachment to crankcase and internally threaded above bore for screw-in glowhead unit. Hardened steel connecting-rod with ball joint small end retained in hardened steel piston by internal circlip. Pressed-in brass spraybar with blued steel threaded needle and coil spring friction device. Pressed steel starter spring housing pegged to crankcase nose. Machined steel clutch-housing/prop-driver, sealed in unit with drive cam and rollers and pressed on to knurled section on crankshaft. Beam and radial mounting lugs.

#### TEST CONDITIONS

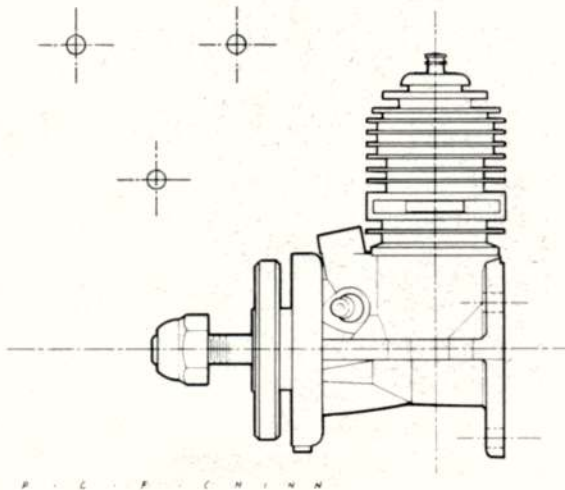
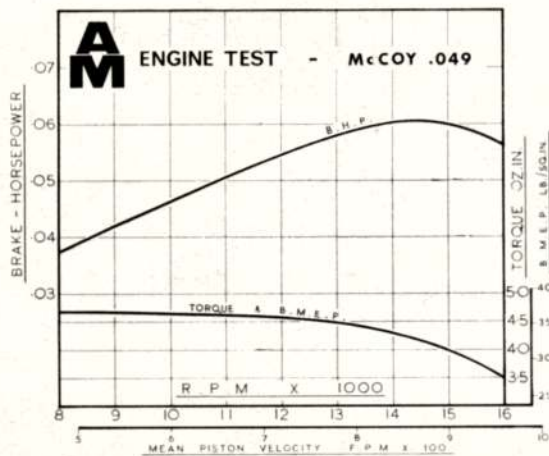
Running time prior to test: 30 minutes.

Fuel used: KK-Record Nitrex-15.

Air Temperature: 62 deg. F.

Barometer: 29.85 in. Hg.

Silencer: Nil.





THIS SEMI-SCALE model of the Me 262—which owes its fame to the fact that it was the world's first operational jet powered fighter when it entered service in 1944—is suitable both for the beginner to control-line flying, and also to the sport flyer who wants a 'different' model. With its two large underslung jet pods it certainly qualifies for this category, and looks striking in its black green/dark green camouflaged upper surfaces and light blue lower—as shown in the July issue when this aircraft was featured. Don't let the lack of an undercarriage deter you—those jet pods will absorb all the shocks and enable smooth landings to be made on grass without the usual 'nose overs'.

You can start construction practically anywhere with various sub assemblies, but if you decide to build the 'nacelle saver' modification in, then hollow the nacelle halves before cementing them together.

The main point to watch is the correct assembly sequence for the fuselage. This should be as follows. Firstly, cut out the  $\frac{1}{2}$  in. fuselage blank, with suitable mods to bearer spacing, etc., for your particular motor. Cut and epoxy bearers into their respective slots—you will note that the bearers'  $\frac{7}{16}$  in. width does not match the fuselage's width—don't worry, add a piece of balsa packing. Next, drill a hole for the bellcrank pivot bolt and then make up the complete bellcrank assembly, with leadouts and push rod as per plan. Solder cup washers on the wire ends, then add the whole unit to the recess in the lower bearer. **MAKE SURE YOUR LEADOUTS ARE ON THE PORT SIDE OF THE BLANK!!** Drill the mounting holes to suit the engine, and insert the bolts, locking the heads with wire. Now add the fuselage doublers, carefully hollowed to clear bolt heads, ends of bellcrank, etc.—Try threading these over the leadouts and push rods a couple of times to ensure a snug fit before glueing. Okay! Now glue the lot together and when dry sand to shape. **DON'T ROUND OFF THE SEATING POSITION FOR THE FIN.** Cut out the tailplane, sanding to section



Tough — almost unbreakable, easy to fly and yet 'nippy' on the controls, the Me 262 makes a fine semi-scale trainer for any 1.5 cc. engine.

Pat Lloyd's

## MESSERSCHMITT 2

to suit the  $\frac{3}{16}$  in. dowel. Next add the fin, noting carefully that when adding the tailplane **PUT THE ELEVATORS WITH THEIR DOWEL THROUGH THE FIN SLOT FIRST!** Hinge the elevators either by sewing with nylon thread, or use tape. Bend the control horn as shown, or if preferred use an ordinary ply one, stuck into the elevator under surface.

Score and crack completed wing to suit the dihedral, then add dihedral brace. When dry assemble to fuselage, carefully drilling two holes into the wing and lower bearer. Cement wing in position and add dowels, when dry, follow similar procedure with nacelles. These should be 'handed' by carefully sanding the wing mount area for a snug fit under respective wings. Link up the pushrod and horn, retaining with a cup washer soldered on, and check for binding around the fuselage holes. Add the dowel pitot and the wire leadout guide into starboard wing tip, binding it to the pitot with nylon thread. Finish the fuselage by blending the fuselage nose into the spinner—covering the motor with a plastic bag while doing this. Apply a couple of coats of sanding sealer, then a layer of lightweight tissue, another of sanding sealer, and you've a variety of finishes to add to your choice.

A coat of fuel proofer will protect the finish against the glow fuel, although Humbrol enamels are not affected by diesel fuel. The last stage is to make up the fuel tank (or if you prefer, use a commercial one), then paint and epoxy glue it to the fuselage.

Now you're ready to fly—but make sure that your helper does not hold the pushrod with his hand while launching—it took the designer a long time to work out *that* little problem!



# Your Two Free Plans !

an



WHEN CHRISTIAN MENGET won this year's 25th Coupe d'Hiver contest, held at Chevenay near Paris, it was no 'out of the blue' victory for him, as he has for several years consistently placed well in this type of contest.

The *Deuzio* is of orthodox design, but in keeping with the French (Landeau) line of thought, is larger than its British counterparts. The reliability of this design is evident—Christian won the contest with the model which he built two years ago.

Construction is quite simple, but great care must be taken over selection of the wood used in order to achieve as light an airframe as possible, consistent with adequate strength.

The fuselage is started by selecting four longerons of medium-hard 3/32 in. square strip of equal strength and density. Pin two of these longerons over the side elevation by placing pins either side to prevent splitting the wood. Next add the 3/32 in. medium sheet nose doublers, ply mounts and tail fill-in pieces. Carefully cut the vertical 3/32 in. sq. med. balsa spacers to length and glue in position—followed by the diagonal braces. Remove from the board and build the other side—noting that the

diagonal braces should be in the opposite direction. When dry, remove from board and add the medium-soft 1/32 in. sheet covering to the nose section, then add the 3/32 in. sheet cross braces at the motor peg positions—ensuring that this section is square and true. When dry, draw the tail together, adding the sheet fill-in pieces—followed by the 3/32 in. sheet nose reinforcement. Check that the fuselage is square and straight by holding over the plan view—and when satisfied in this respect, add the remaining spacers and diagonal braces, again noting the different positioning of these on the top and bottom. Finally, add the 1/32 in. sheet nose covering to the position indicated on the plan, followed by the 1.5 mm. plywood facing for the nose block.

Commence wing construction with the centre section. Cut all the ribs from light quarter grain sheet, and cut the leading and trailing edges to length—notching the latter for the ribs. Pin the leading edge directly over the plan—then the trailing edge, but raising the front edge of this 1/16 in. with scrap balsa, to conform with the undercamber. The lower spar is also pinned in position—packing with 3/32 in. scrap for the same reason. Insert all the ribs (W1 and W2), noting the positions of the 1/8 in. and 1/16 in. ribs, and also angling the outer ribs to conform to the dihedral angle—using the template to do this. When dry, add the two top spars and sheet in the centre section with 1/32 in. med. soft balsa. Remove from board, and sheet the centre section underside.

Build the tips in the same manner, then join to the centre section—packing up the tips 3.9/16 in.

The tailplane is built on the board—light weight is essential here. Bind the wire hooks for the D/T in position and epoxy glue.

The entire model may now be covered—preferably with Jap tissue, but if not available, lightweight Modelspan may be used. Apply three coats of 50/50 dope-thinners, being careful not to induce warps.

Cut the underfin to shape from light 3/32 in. sheet, epoxy the wire hook, cover with tissue doped on, and glue to fuselage. Likewise, add the fin, hinging the rudder with soft metal or stiff foil. Finally add the tailplane stop and wing retaining dowels.

The propeller blades are then covered to shape, the dowel hubs added, and each blade hinged so as to fold along the length of the fuselage when the power is exhausted.

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**d Christian Menget's 1969 Coupe d'Hiver challenge winner**

## 'DEUZIO'

**A well-proven  
36 inch wingspan  
contest duration model  
to the popular International  
specification for the Winter Cup**



# CRITERIUM OF ACES

GENK 1969



## PART TWO of our report by Peter Richardson

UNDOUBTEDLY THE HARDEST worked people at the Criterium were the five stunt judges, who for two days had to watch the 34 competitors make their three flights in appalling conditions. Sheltered only by umbrellas on the first day, and a make-shift tarpaulin cover on the second, these five and their 'secretaries' suffered the tedium of watching so many identical flights. A pity the control-line organisers do not follow the lead of their R/C counterparts, whereby each round is judged by a different set of judges - thus avoiding strain and boredom and helping achieve greater consistency in scoring.

The weather naturally affected the scores - it being noticeable that most competitors' best score was achieved on their second flight when the rain temporarily stopped and the sky almost brightened late on the Saturday. Contrary to the British scene, the trend continues towards large models powered by 45s or 49s, flying relatively fast.

The first round began slowly with several 'average' flights until Ivan Gani (Czech) appeared with his immaculately finished 'Supermaster' styled model. His manoeuvres were very good, but the bottom edges of the squares seemed a little ragged and the pull out from the clover-leaf was very low. His score of 2,601 was partly due to his motor leaning out too much half way through the flight. Next was Clemente Cappi, of Italy, who flew an identical model to his countrymen, which although functional was probably one of the ugliest designs on the field! His engine giving a fast two stroke throughout the field, he flew well, using a puffer of french chalk to check wind direction before each manoeuvre, but his pullouts varied in height and were distinctly ragged at times, resulting in a score of 2,676. Mick Harvey then appeared for Britain with his O.S.35 powered Yak 3 design. Following several abortive minutes trying to start his engine, he was obliged to call an attempt - only to discover the sealing cap was still on the vent of his Uniflow tank! His flight began well with three good loops, but the inverted was too low and he seemed to hesitate in the bunts. The square loops were 'untidy' at the bottom, but in contrast the square eights were good. The landing was rather bumpy and he received just 2,028 points.

Plotzinsk (U.S.S.R.) flew a very nice pattern with no particular faults and a perfect landing, which scored a disappointing 2,687 and deserved better. The tandem undercarriage on his immaculate model was most impressive - the model not showing any tendency to bounce as it landed on the rear wheel and gently coming to rest on the

front (sprung) one. French regular, Billon, gave an impressive flight - clearly impressing the judges with the smoothness of his pattern, racking up 2,875 - the highest score of the first round. Our second team member, Jim Mannall, then came to the flight line with his 'Nimrod' design and not a 'Crusader' for once. The Merco 35 started well, but on take-off sagged, then just as suddenly picked up again for a perfect 'switching' run. His flight seemed a good 'average' one, with good intersections but rather stretched eights - it being a little surprising to score only 2,472.

R. Kessels, of Germany, flew a large-area model, powered by a Veco 35, finished beautifully in a white with red stripes colour scheme, plus a detailed, rivetted cockpit. Although very smooth, his pattern was poorly placed and the Veco seemed a little short of breath - particularly in the gusts of wind. His intersections didn't, while the entry and exits to his loops were at different heights - accounting for his 2,283 score.

Another big plane devotee was Vandenhout, of Holland, flying an *Olympus* - Merco 49 powered and using a three-bladed 10 x 6 Tornado propeller. His main errors were in the outside square loops, and the square eights were much too large, dropping his score to 2648 - still a good flight. Egervary (Hungary) deserved his high score - 2830 - through his consistently good flying, making no serious errors at all. Potential winner and 1968 World Champion Josef Gabris (Czech) flew superbly, producing the best round manoeuvres of the meeting, but just a little unsteady on the squares. His M.V.V.S. never missed a beat as it hauled the Supermaster around. By using a low pitch prop and a fast two stroke, the engine had ample torque to pull the model vertically, yet the physical bulk of the model kept the horizontal speed to a reasonable pace.

Following Gabris is never an easy task, but Compestella of Italy was unperturbed - flying a good schedule, but losing points for being erratic on some pullouts. Nevertheless, his overall flight is reflected by the high score of 2819. Third British flyer was Mick Reeves who flew his Monokot Dictator design to a small tight pattern with a slow airspeed. He flew well, but mushed badly on the square corners and the horizontal eights had different sized loops. The triangle and landing were very good - his total score being 2524. One of the best in the first round was young Marc Vanderbeke (Belgium) flying a model which he had pranged and repaired only two weeks earlier and which he had only test flown once prior to his official flight. His flight was superb, being difficult to fault - for which he received 2874, one point less than Billon.

Round two, held later that day, began with Milanov, of Bulgaria and his superbly finished model fitted with a sprung monowheel, powered by a Simenoff-built 49 engine. Suffering from a rich needle setting, as well as inexperience, he improved on his earlier flight but even so scored just 2285. Kondratenko (Russia) and Andersson (Sweden) improved their scores considerably and were followed by Jim Mannall, who again flew a good (by our standards) pattern, but netted only an additional 5 points. Kaminski (Germany) and Kaiser (Austria) surprisingly failed to take advantage of the calmer weather, to drop points whereas Vandenhout boosted his chances considerably with a very impressive flight rewarded by 2835 points.

Billon, France's national champion, again flew superbly and consistently dropping just 20 marks on his first round score, his 2855 being a good reward for one of the most improved flyers of the year. Egervary, already well placed, was unlucky to have gusty winds during his second flight, but really excelled himself under this handicap to increase his score to 2876. Compestella, also receiving some of the gusty weather was fortunate to receive 2929 points with his noisy (no silencer) Fox 35 powered model.

Milanov's sprung mono-wheel undercarriage - which produced some very smooth landing. Note also unusual spinner shape, and alloy exhaust duct.





Clemente Cappi looks unhappy after his first round flight. Since this meeting, Clemente has won the 'Champion of Italy' title.

Mick Reeves again flew his little *Dictator* in small manoeuvres, which did not seem to please the judges, who were obviously more impressed by the large steady models, flying big patterns with big motors on fine pitch props. His score of 2497 points represented a drop of 27 marks. Ivan Gani (Czech) flew superbly, upping his score to 2844. The most acrobatic pilot (as distinct from aerobatic) was Marconcini of France who pirouetted in fine style, reversing his wrist as the model went inverted and flying with plenty of 'body English' as the Americans are so fond of saying! His model of quite rakish lines was powered by an Enya 458B but was spoilt by a rather 'tarbrush' finish. Cappi flew another good pattern but still his entry and exit points were uneven and in common with the majority of competitors, the third angle of his squares was poor. Plotzish again flew exceptionally well but again did not seem to gain sufficient recognition - scoring a consistent 2649 with his originally decorated model in white and light grey, powered with a home-built .49 engine. Harvey, having spent all his spare time watching the opposition in company with Mannall and Reeves, showed that he had not wasted his time, improving his score by 340 points (making 2368). Gabris, always so consistent, returned another excellent score of 2845 - his only obvious fault being the intersection of his vertical eights.

Vanderbecke, flying late again, then produced the most outstanding flight of the whole contest, in which he was credited with the astonishingly high score of 3087 - way above any other flyer. What makes his performance even more amazing is the fact that he rarely practises - considering it to be unnecessary now that he has reached his present form. Round three, held on the Sunday, suffered from ever worsening conditions and it was unlikely that any major changes would be made to the positions as only the best two flights count.

Bartos did manage an improvement, despite out of shape bunts and oversize squares - as did Mayer (Finland) with an attractively painted and designed tricycle under-carriage model. Andersson made a tremendous effort to score 2813. Esjkin (U.S.S.R.) executed a very good hourglass in windy conditions, good round eights but a poor cloverleaf and squares. Twerda, who did so well at the 1968 Championships, failed to find his best form with his Olympus styled model but did better in this round scoring 2711 to gain eleventh place. Liber of Belgium produced some beautiful squares - both inside and outside on his last flight but was unable to improve his position. Mannall and Reeves who, like Harvey, had been watching 'form' flew really well in the difficult conditions, both improving their scores by a large degree - being among the few to do so. Jim Mannall, in fact, produced what was probably the best wing over of this round. Compostella, understandably, failed to fly as well as in the previous round, but his corners were really 'sharp'. Billon, trying rather too hard failed to pull out from the wingover with the usual fatal result. Vandenhout, with the advantage of a large engine to cope with the wind produced a good flight of 2709 - his main error being in the 'cloverleaf' and horizontal eights. His hourglass was exceptional in the gusty conditions. Mick Harvey was unlucky to have his model blown in whilst flying inverted - fortunately with little damage.

One of the last to fly was Gabris, who by a magnificent flight made the highest score of round 3 (2903) to snatch second spot from Compostella. Vandenbeke, having drawn yet another late flight, need not have flown as he was certain of victory, but even so scored 2839 as further example of his superb talent.

The main impression gained from this contest is that to succeed the British need a faster, larger pattern with perhaps a more impressive model.

#### COMBAT

This event was unfortunately, reduced to little more than a farce, due to four elements - the organisation, the weather, the language barrier and, dare we say it? Patriotism. The *Chef de Pist* (Contest Director) perched on his mini scaffolding tower did not seem very *au fait* with the rules, nor usual combat procedure.

In practice John Dixon was by far the fastest with his tuned pressurised Super Tigre G15 glow powered wings and the other competitors were openly worried by the British team's proficiency! The progress in combat flying overseas is still many years behind our own, there being some very weird and fragile models evident. The Belgian team, however, were using orthodox *Dominators*, albeit overweight, powered by S.T.G15 diesels, whilst the Swedes were obviously going to provide the stiffest opposition with their lightweight Super Tigre (diesel and glow) powered *Ruter-ess* and floating tail designs.

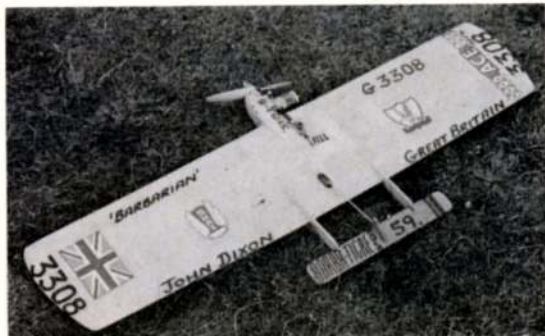
The first round brought together the awkward number of 17 entries (awkward, as how do you evolve a two-man final?) Vernon Hunt was the first British team member to fly - his opponent being J. Gustavsson of Sweden. Hunt was away first flick, but the motor (needless to say a Copeman Oliver) was way off tune, so he promptly ditched it, enabling his pit crew to adjust the compression, being back in the air well before his opponent's engine was started. The result was a very decisive win for Vernon with three cuts to nil.

Steve Jones then took on Rylin, also of Sweden, who was using a wing with flaps and an elevator supported on two booms. After a couple of minutes, with Steve two cuts in front, there was a line tangle resulting in the Swede's pranging, whilst his lines were wrapped around Steve's. Our pit crew, having gained permission to enter the circle from the scorer, and seeing that Rylin had abandoned his model and lines in favour of his reserve, cut the scrapped lines from Jones's own - as he was still airborne. Immediately the contest director disqualified Jones! Fortunately, after making an official protest, and some hard talking by team manager Steve Blake, the F.A.I. jury gave a re-fly: deciding that the Swede was wrong in releasing his handle and that Steve's pit crew were wrong in not seeking the 'C. de P.'s' permission to enter the circle. In the ensuing re-fly, Steve out-maneuvred his opponent into the ground - the final score being one cut each, with 30 seconds ground time against Rylin.

John Dixon, drawn to fly against Dubell of Germany, had a walkover, as his opponent's H.P.15D refused to start. True to form, it started immediately after the two minute whistle! One of the best bouts from the spectators' point of view was between Schutz of Germany and Gossiaux (Belgium), who were evenly matched, both using *Dominators*.



Mick Reeves displays his *Dictator* design - only model of the meeting covered with Monokote.



A familiar sight to British eyes – but one which worried the Continentals considerably – John Dixon's 'Barbarian'. In the contest he used Oliver powered 'Warlords' due to their better consistency.

The second day the rain worsened, causing a delayed start. At this stage, nine contestants remained – the Bulgarian Jankov getting a bye. Steve Jones trounced his opponent, R. Liber, of Belgium, by four cuts to one, and losing only two seconds on the ground. Vernon Hunt then flew against the brother, G. Liber, and was winning two cuts to one, when a mid-air collision occurred. A re-fly was ordered, which Vernon won 3-1. Immediately afterwards the Belgian made a protest to the (Belgian) 'C de P' that Hunt had obstructed him by 'crossing his arm over his opponent's arm'. Amazingly, the Chief de Piste upheld this protest. It should perhaps be pointed out that Liber appeared incapable of flying inverted, or even of performing a bunt – the obvious way out of his predicament. Steve Blake again made an official protest, but the F.A.I. Jury upheld the contest director's decision, and Hunt was disqualified.

John Dixon then easily disposed of his French opponent, Lienard, which left five people in the next round. John was then drawn to fly against Gossiaux, of Belgium, to leave four for the semi-finals. John easily beat his opponent, who flew level with an occasional loop or wing over.

The semi-finals were abandoned when Dixon's streamer dissolved in the rain, as he was flying against Jankov. Having struggled all day to keep the contest going, it was disheartening to have it abandoned at this stage, particularly as the weather was no worse, even slightly improved. However, the decision was final, and the results were decided upon a points basis – giving Steve Jones first place and John Dixon second.

Altogether, a most unsatisfactory way of terminating an international contest – and poor reward for the British flyers who had gone to much trouble (18 models were processed) and expense to compete. Need a combat event of only 17 competitors really take two days to reach only the semi-finals? Steve Blake put a suggestion to the F.A.I. jury that the final round be flown early on the Monday morning, before the teams departed, and although the British and Bulgarian teams agreed, the Belgian did not, so this idea was dropped.

Below, left, Bulgarian combat models. The short out-board wings are not designed that way, but appear to be clipped following various prangs! Right, the victorious British scale contingent – Messrs. Briggs, Ivans and Day.



#### SCALE

The scale event was disappointing in that it attracted only five entrants – three of whom were British! The organisers, realising the attraction of scale models to the public, delayed the start of the qualifying flights for some considerable time in order to give a larger number of spectators a chance to see them. As it was, the weather worsened and there were even fewer spectators.

Tony Day scored the highest static and flying points with his three-year-old *Shinn* (only 11 flights though) – familiar to many British Nationals spectators. The model flew very steadily in the strong winds at a safe altitude, displaying its operating flaps and throttle control to good effect. The judges were obviously impressed with the attention to detail (the joystick 'operates' the ailerons) and the metal finish with full rivetting detail. The wings are, in fact, covered with special adhesive backed aluminium foil, which is no longer available and Tony is now considering repainting the model as he considers the present covering a little 'tatty' by now.

In second place was Nationals winner Albert Briggs, again with his familiar *Bristol Brigand*, powered by a brace of Olivers, albeit rather tired by now, as was demonstrated in his 'touch and goes' when on take-off the model hung on the props at an angle of approximately 45 degrees into the wind, before slowly levelling off, completing the lap. His throttle and flaps, operated by his 'live' handle were well demonstrated, the model being virtually unaffected by the gusts.

Ognian Angelov's (Bulgaria) third place model of the *Pilatus Porter* (as used on the Himalayan mountains) was in our view the most commendable effort as accurate details of the full size were almost impossible to find in his country and the model was designed and built mainly from data gleaned from photographs. It is all the more remarkable when you consider that this was his first scale model and though lacking the finish and devoid of throttle control of our team's models, it flew well on its Rijn (Russian) 2.5cc engine featuring working suspension and opening doors.

The *Grumman Tracker FV3*, flown by Eduard Struik of Holland received very high flying points which he earned by extremely smooth touch and goes, having excellent throttle control on the two Webra 3.5cc Glo Star engines, but no operating flaps.

His model was very well finished but lacked the surface detail to which we have become accustomed and the cockpit was rather poor with a profusion of glass headed pins as well as some unpainted sections. The pilots, too, were rather obviously dolls and it was in these respects that he lost his scale points.

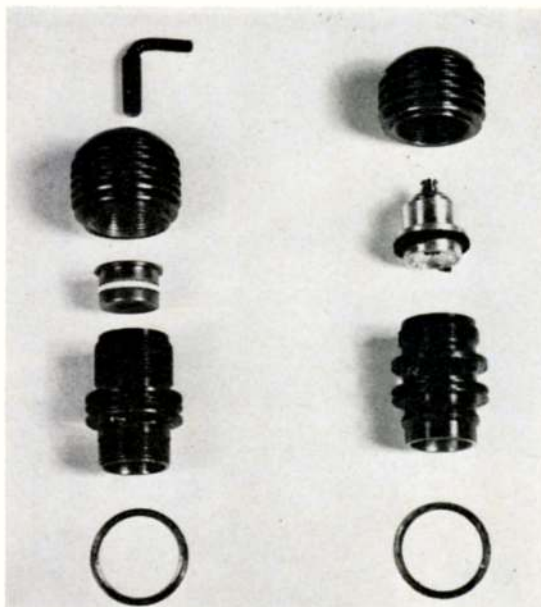
Lastly, we come to the sorry tale of Bob Ivans and his huge and impressive *Junkers 87G*. The contest, due to commence at 10.30 a.m., did not get underway until about 4 p.m. at which point Bob was suddenly told that it was his turn to fly now. Caught 'on the hop' Bob took his model to the flight circle, tanked up, started and took-off, unfortunately forgetting to offset the rudder tab in his haste. The result was that the large wing area model went slack on the lines, rolling into the circle. Luckily, the damage was restricted to the inboard wing, which broke off cleanly at the dihedral joint. Little more than an hour later Bob had repaired the break with 'Isopon' and he made his second attempt, only this time unable to get the motor to run evenly and suspecting dirt in the fuel, he was forced to retire not having made a qualifying flight. The fault was finally traced to a loose spray bar assembly. A great shame, as Bob had added a lot more cockpit detail since the Nationals and he was unable to demonstrate his working cannon or bomb.





1. Kessels' immaculately finished stunter. 2. Bulgarian scale entry - a Pilatus Porter with working suspension. 3. Scale winner - the Tony Day 'Shinn'. Note the raindrops on the metallised wings! 4. A most impressive flyer - the Grumman Tracker by Struick. 5. Vanderhout ponders over his two-year-old 'Olympus'. 6. Swedish combat model - featuring flaps - performed better than its looks indicated. 7. Stunt winner Marc Vanderbeke. 8. Combat winner (right) Steve Jones with his pit-crew. Glasses are not a standard issue! 9. Jim Mannall's 'Nimrod' design. 10. Rather crude French combat model illustrates the differing standards. 11. Milanov and his superbly finished stunter.





Left, the 1954 diesel and 1955 glow model McCoy 049 cylinder assemblies. Note O-ring equipped contra piston and unusual glowhead arrangement. Despite outward similarities, engines used different crankcases, shafts, pistons and con-rods as well as different cylinder assemblies. Above, two vintage McCoy 049's. These were introduced in 1954 and 1955. The long intakes each housed a clapper valve between the jet and rotary-valve - a unique arrangement.

## LATEST ENGINE NEWS by Peter Chinn

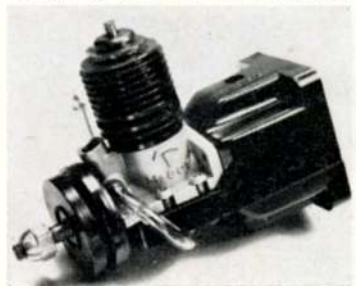
### McCoy 049 tank-mount

Elsewhere in this issue there is a test report on the American McCoy 049 glow engine that is being boxed and distributed in the U.K. by Keilkraft. As sold in the U.S., this engine is packaged differently. It comes complete with black moulded nylon 6 x 4 prop and attached to a stunt type fuel tank, also of moulded black nylon. The tank, intended for direct attachment to the front bulkhead or 'firewall' of the model, is unusual in that, instead of having the engine fixed to it via the latter's three radial mounting lugs, it incorporates a pair of beam mounts specially shaped to fit the horizontal lugs. The engine is secured with round-head self-tapping screws which hold it very firmly.

The tank has a useful capacity and is very easy to fill via a big hole in the top. This is walled inside to form a  $\frac{1}{4}$  in. i.d. tube that reaches almost to the bottom of the tank and enables the tank to be inverted without fuel being spilled. There is also a small diameter vent pipe, its outlet in the bottom and reaching up almost to the top of the tank so that air is allowed to replace fuel when the model is doing inverted manoeuvres.

We tried out this tank mount and it appears to us to be quite a useful

Below left, the new McCoy 049 as sold on the American market comes complete with this moulded nylon stunt type tank-mount and a nylon 6 x 4 prop. Below, right, an early forerunner of the present McCoy 049 was this McCoy 'Duro-Glo' 049 of 1953. This engine was the first of a 'second attempt' by American manufacturers at that time to revive interest in diesels.



accessory. When rigidly bench mounted, it gives the impression that it allows the engine to vibrate too much, but this would not be the case with the unit installed in a model and the flexibility of the mounting should be useful as a means of reducing the risk of serious damage to the engine in crash landings.

The McCoy 6 x 4 nylon prop seems to be well matched to the performance characteristics of the engine. We obtained static r.p.m. figures ranging from 12,400 to 12,800 r.p.m. with these props on two different engines and on different fuels. Allowing for some build-up in flight, this means that operational r.p.m. on the McCoy prop should be quite close to the speed at which the engine develops its maximum power, as indicated in our b.h.p. test curves.

It is not known whether Messrs. Keilkraft intend to import these accessory items for the McCoy. They do, of course, already have suitable props in their own 'Keilkraft' nylon range. Their present policy, however, of selling the engine separately and without such accessories is, we feel, the right one, enabling, as it does, the initial cost of the engine to be kept as low as possible for the benefit of the young beginner.



### Some Vintage McCoy 049's

Incidentally, the present McCoy 049 is not the first McCoy engine of this displacement. As early as 1951, a .049 cu. in. glow engine was announced by the McCoy factory, called the 'Baby-Mac'. It was not on the market for very long but in 1953, another McCoy 049 appeared in the shape of a compact .8 c.c. radial mount diesel. This (for some obscure reason called the McCoy 'Duro-Glo' 049) was a very lively little engine and was unique, at that time, in that instead of being finished to a press fit in the cylinder bore, the contra piston was fitted loosely with an O-ring compression seal made of 'Silastic'.

In the Autumn of 1954, this was, in turn, superseded by a new beam mount 049 diesel to which was then added, a few months later, a glow-plug version of similar basic design. A unique feature of these last two engines was the clapper valve carburettor. This consisted of a spring loaded valve, located just below the spraybar, which opened and closed automatically with crankcase depression and compression. Its operation was similar to that of a reed valve, but instead of replacing the usual rotary valve, was supplementary to it.

Three of these earlier model McCoy 049's are illustrated. It is interesting to note that the 'Duro-Glo' of 1953 was the first of four American diesels made in the mid-fifties (McCoy .049 and .09, Herkimer Cub .049 and .075) which, collectively, represented one final effort by U.S. manufacturers to interest the average American modeller in diesels. Like the attempts made immediately after the war (when diesels were rapidly becoming popular in Europe), the attempt failed and no American diesels have now been made for many years. This was not due to any shortcomings in these American diesels (they were, in fact, quite good). Most American modellers just preferred glow-plug engines. The diesel simply did not catch on.

### O.S. Graupner Rotary Engine

In two countries of the world, the rotary (Wankel) engine has been

brought to the stage where production units are now successfully competing with normal reciprocating engines for everyday use, i.e. as power plants for cars. These two countries, respectively, the third and second largest automobile producers after the U.S.A., are Germany and Japan, so it is, perhaps, appropriate that the world's first production model rotary engine should be a German-Japanese co-operative effort.

We are referring, of course, to the O.S.-Graupner Wankel engine. Five years were spent in Germany in evolving a practical working prototype suitable for model aircraft use, after which it was turned over to the O.S. Company in Japan for further development and production. O.S. have spent the past two years in further developing the engine, in the extensive testing of prototypes both on the bench and in digital-proportional R/C models, and in designing and building machinery to make the final product. Graupner in Germany remain the sole licencees for the commercial exploitation of the basic NSU-Wankel design in model sizes, and, therefore, sales of the engine will be through Graupner appointed agencies.

The O.S. Graupner Wankel engine is not yet available in the U.K. but we have received a pre-production unit from O.S. for test and evaluation. This, to all outward appearances, is identical with the production model. The latter will, however, incorporate certain internal improvements, including the use of a slightly narrower rotor, a redesigned eccentric shaft and modified counterbalancing plus an extra front ball-bearing.

Among the advantages of the rotary engine for car use are its light weight and compact dimensions when compared with a four-stroke piston engine of equivalent power. This would also apply in comparing a model Wankel with a model four-stroke. Advantages are less obvious, however, when comparisons are made with model two-strokes. These latter now have remarkably good power/weight ratios and the Wankel engine (at its present stage of development) with its heavy rotor and rotor housing is bound to be heavier than a model two-stroke of equivalent capacity. The Wankel's shape, on the other hand, is well matched to model requirements.

The 5 c.c. O.S. unit weighs just over 12½ oz. compared with between 8 and 9 oz. for an equivalent capacity reciprocating engine of similar performance. This does not necessarily mean a 4 oz. increase in model weight. Some structural weight can be saved by virtue of the fact that a shorter nose moment is called for and a simple bulkhead type mounting without any form of cowling is obviously quite accept-

able in all except scale type installations. The engine is 2.6 in. long from prop driver face to radial mounting flange and has a diameter across its cooling fins of just over 2½ in.

One of the real virtues of the rotary engine is its smoothness. Although a single rotor Wankel is the same as a single cylinder two-stroke in having but one 'power stroke' per revolution of the output shaft and has to have its eccentric rotor balanced by counterweights (the O.S. has two counterweights, located fore and aft), it is, in practice, markedly more vibration-free.

None of the basic parts of the O.S. Wankel bears the slightest resemblance to those of a reciprocating engine, of course. The rotor is made of Meehanite and has special cast-iron tip seals, each with a pair of high carbon steel springs. No side seals are used. Instead, the rotor, rotor housing and front and rear (side plate) housings are all carefully fitted to very close tolerances to ensure the necessary gas sealing between the rotor and side plates. The trochoidal rotor housing is machined

from cast-iron while the front and rear housings are of pressure diecast aluminium alloy, with steel wearing surfaces, applied by a metal-spraying process. The gears are of case-hardened nickel-chromium steel.

The eccentric shaft, the equivalent of the crankshaft in a reciprocating engine, is of case hardened steel. It runs in a 7 x 19 mm ball journal bearing at the front (production engines will have two such bearings) and a 6 x 10 mm caged needle-bearing at the rear. Counterbalancing consists of a keyed-on mild-steel counterweight at the rear and a dural drive hub at the front that has cast-in counterweights.

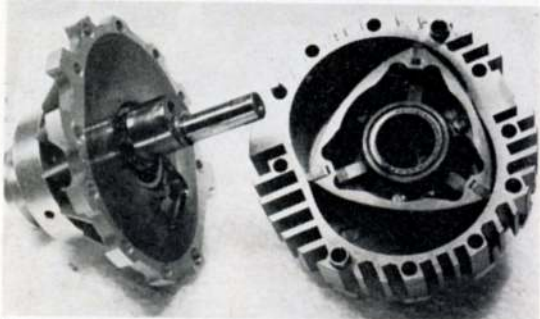
Unlike some of the full-size Wankel engines, the O.S. uses a side (front housing) intake port. This is desirable with the model engine to ensure adequate lubrication of the bearings. The carburettor is basically the same as that fitted to the O.S. Max-S 30 R/C engine.

Further details of the O.S.-Graupner Wankel motor will be found in next month's R.C.M.&E.

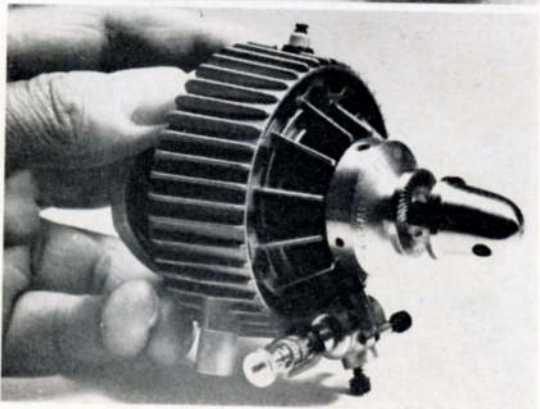
Rear view of engine, less cooling ring, with radial mount and rear cover removed to show rear counter balance.



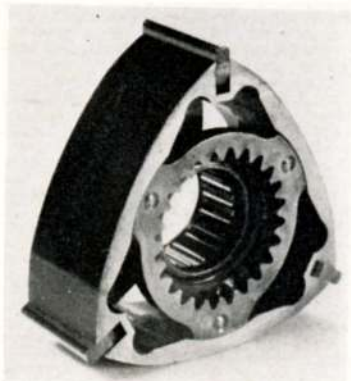
Eccentric shaft and front housing (left) removed from rotor housing. Darker polished surface of aluminium front housing is steel applied by metal spray process.

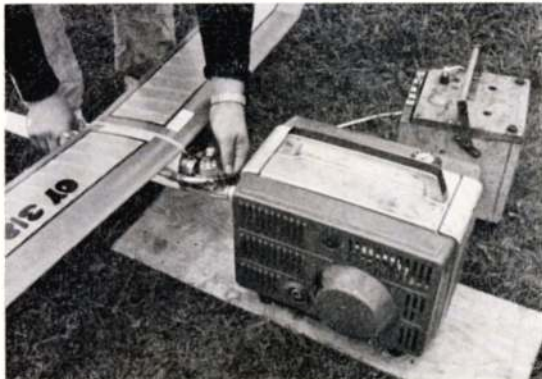


Right, only just over 2½ in. dia. across finned cooling ring. O.S. Graupner Wankel is pleasing and compact shape for model use.



Rear side of rotor, showing internal gear, caged needle bearing and rotor apex seals.





THE VERY SIZE and nature of the entry at the F/F World Championships is such that a comprehensive description of all models would be a mammoth undertaking. Such a task has not even been attempted, and the intentions of this short article and the accompanying photographs is merely to highlight a few points (and models) of interest.

Some of the most recent developments are not directly concerned with the models as such. There was a

'Model Airplane News' article. A direct indication of the presence or otherwise of rising air was provided by a variety of 'bubble machines'. Again, these varied in complexity from the (literally) children's toys which produced soap bubbles by hand, to electrically powered machines, usually mounted on a high pole, and which could produce a steady stream of bubbles at the touch of a switch.

Whilst some contestants trusted such



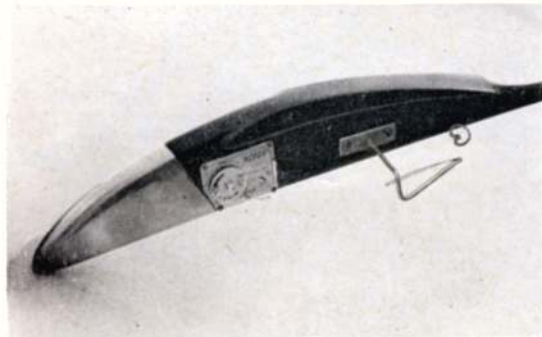
1. (Above Dave's electric starter in action, Thomas Koster's model.

2. (Left) Bulgarian inertia starter. Note leads are not attached.

considerable collection of equipment intended to assist thermal detection falling into two basic sub-divisions. Thermister devices used to indicate variations in air temperature varied from relatively simple hand held instruments (on which the rise and fall of a meter needle had to be watched) to complex reading equipment on the style of that described by George Xenakis in a

devices there was still a preference for tactical flying in A/2 and Wakefield; and mass launches were commonplace.

The other ground based development was in the number of electric or inertia starters used in the power event. The former comprised an electric motor run off an accumulator (see photo 1); whilst the latter rely on a flywheel initially cranked by hand (see



3. A/2 by L. Braire of France, note offset hook, glass fibre fishing rod, aluminium nose.

To bring this feature into perspective perhaps it should be remembered that both A/2 and Wakefield were won by conventional models. Apart from its rear mounted fin, Elton Drew's glider is very representative of current British A/2 designs. Oschatz's Wakefield winner is equally representative of present day practice, tubular fuselage, constant chord (even square tipped) polyhedral wing, low pylon etc. Technicalities apart, when and how the model is flown is still decisive!

## TECHNICALITIES

observed by John O'Donnell

## WORLD CHAMPS

photo 2). Both types have their 'output' shafts fitted with a piece of rubber hose or the like, into which the flier pokes the spinner of his model. Whilst such a method may not appeal to all, it does overcome starting difficulties with those glow motors that need 'sloppy' fits and low compression to rev fast enough - and the breakage problem associated with hand flicking fragile wooden propellers.

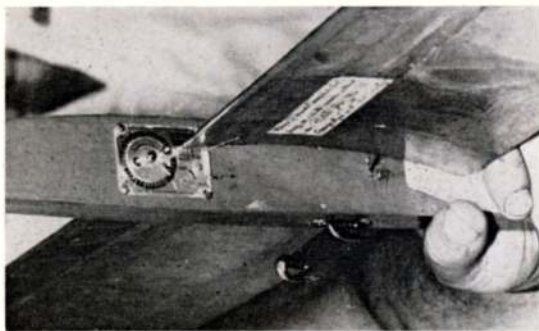
In glider, there are different degrees of emphasis laid on performance (in terms of sinking speed) and on utilising lift. Present day A/2 designs are becoming very similar and there were few novelties to be seen at Wiener Neustadt. Use of a D/T timer actuated, along with the auto rudder, by release of the towline is, to all intents and purposes, universal. The use of fibre-glass fishing rods for fuselages has spread abroad as rapidly as it has in Britain.

Another answer to the contradictory requirements of a strong fuselage and little weight behind the C.G. was displayed by America's Jim Taylor. His A/2 had a complex machined aluminium forward portion and a light tubular balsa tail boom connected by a flexible joint. This is rigid enough to withstand flight loads but deflects readily upon impact.

There were some still-air models, most notable being the S.P.L. design developed by the West Germans Schmidt, Puttner and Laszlo. This model features a very high A/R (nearly 8 ft. span) solid wing balsa pylon mounted above a tubular (aluminium front, balsa rear) fuselage. A full description and 3-view has appeared in *Free Flight News*. Schmidt's example was impressive in the last couple of rounds at Wiener Neustadt.

The circling tow technique was used by several countries, including France, Hungary and the U.S.S.R. It provides a means of towing for long periods, whilst searching or waiting for lift, without the tower having to run continuously. The glider has its tow hook offset sideways by an inch or so (see photo 3). This asymmetry causes a turn-off on tow that is counteracted by opposite rudder. Balance of these two opposing forces depends on tow speed and attitude. The model is towed very quickly when released by the helper, veers against the rudder turn, and then tows fairly straight. When the model is approaching release height the tower reduces speed and line tension. The rudder then takes over and the model tries to circle with the line still attached. With a tight enough turn the circle can be completed well clear of the ground. If the tower increases line tension by running into the wind as the model starts to climb again it will





4. (Left) Second place A/2 by G. Pataki of Hungary has central and offset hooks, Graupner timer with starting arm removed.

and altered the tailplane angle (see photo 7) some 4 or 5 seconds after launch, and subsequently the auto-rudder (if the all-moving fin can be so described). The failure of the timer to start on Hofsass' fourth flight was attributed to it (the timer) being left wound up for two hours whilst the rain delayed flying.

Variable pitch propellers were in evidence, if not commonplace. Laurie Barr used his for at least one flight. With all the 'works' concealed inside the spinner, and adjustments made by grub screws at the bottom of screwdriver access holes, there was little to photograph. Much more obvious were the propeller 'mechanics' of Mike Thomas, one of the N.W. Area but now living in Canada (photo 8). Especially interesting was the fact that the whole assembly is being retained (at \$15.00)

straighten out and can be released as normal. For repetitive circles on tow, the tower moves up and down wind to control the model.

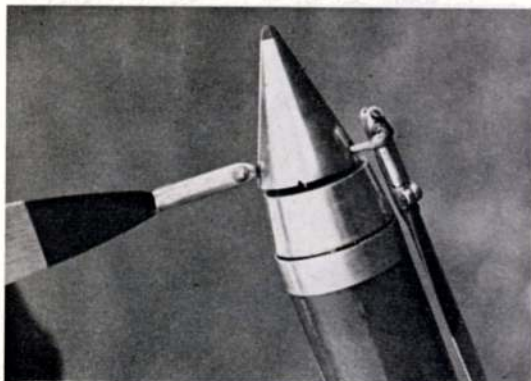
This is a technique for calm weather, as those who watched Pataki's initial attempt in the final round will appreciate. The wind picked up whilst he was towing and the model circled faster until it looked out of control before he towed it into the ground. It is noteworthy that his model features a normal central towhook as well as the outrigger one (see photo 4). It should be noted that the systems illustrated are compatible with normal tow rings, as distinct from the involved type first used by the French.

The other categories offer more opportunities to those who like gadgets or machined fittings, and there were plenty to be seen. From what I saw, the first and most important prerequisite for top class Wakefield performance is a model that will fly the right sort of pattern under power. This means the ability to hold a very steep climb (with a bit of roll) on power burst, with a gradual and smooth change to a spiral climb as the power dies. There should be no sign of 'flats' on the climb as the model turns.

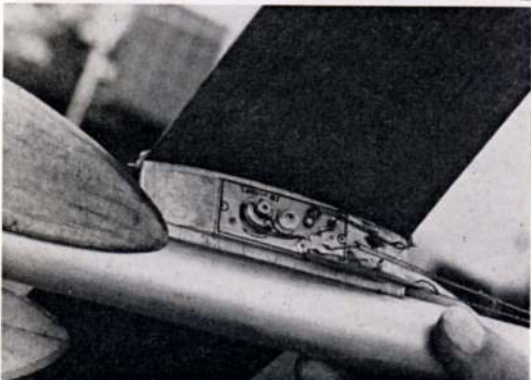
Some designs have such aerodynamics that they will fly the correct pattern without gadgetry. Advocates of the right power, left glide approach claim that this is one answer. However, there is another solution. As little longitudinal dihedral (incidence difference between wings and tail) is helpful under high power, the model can be 'forced' to fly a better pattern by use of V.I.T. Whilst this can be operated from the rubber motor itself, it appears sufficient to have a two-position tail and move it a few seconds after launch by means of a clockwork timer.

A good example of this approach was provided by Hofsass, who has discarded his earlier variable pitch propeller in favour of fixed pitch (see photo 5) and V.I.T. His Championship entry was distinctive enough without the gadgetry, having very high A.R. solid balsa wings, and an aluminium tube forward fuselage. The wingtips were separate from the inner panels, retained by tape, and apparently adjustable for trim. As on the S.P.L. glider, the panels are constructed by gluing together preshaped blanks so as to approximate the intended wing section and eliminate much carving. The aluminium motor tube was so thin that it showed 'lumps' due to earlier motor breakages. A modified Seelig timer was mounted in the pylon (see photo 6)

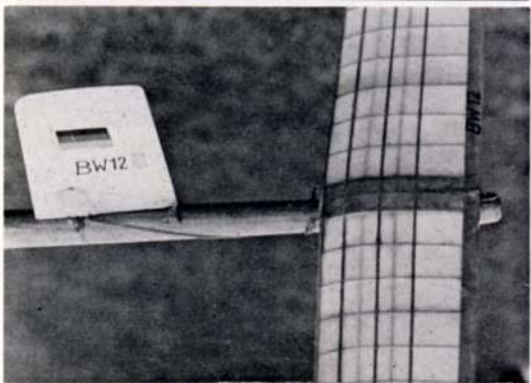
5. Hofsass's Wakefield prop blades adjustable for pitch.

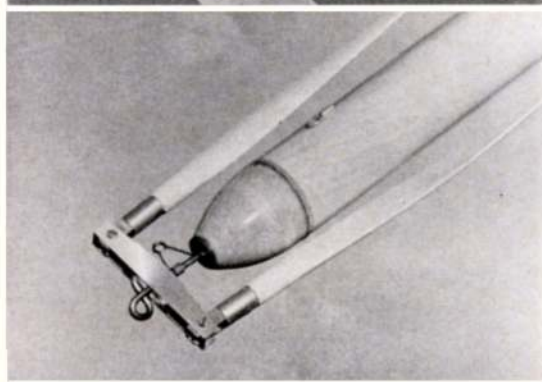
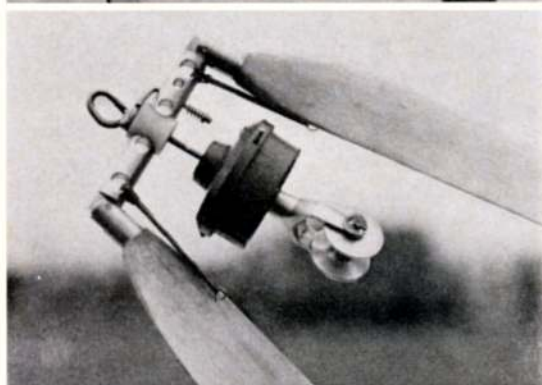
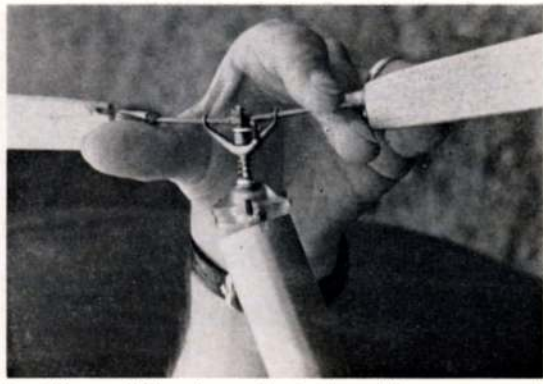
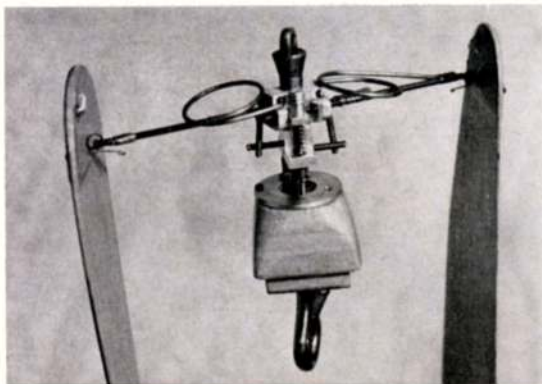


6. Same model, has Seelig timer in pylon.



7. Again Hofsass, all moving fin and tail. Later is thread braced diagonally.





8. (Above left) V.P. prop by Miller Thomas of Canada.

9. (Above right) Perspex noseblock by G. Cassi, Italy.

10. (Left) Metal hub, Free-wheel, fold, machined fitting for bobbin - Jan Zetterdahl, Sweden.

11. Metal hub, spring stop working autorudder on 2nd place by Hans Martin of Austria.

12. 'Night Train' complete with Miebach, pipe and Seelig timer used by R. N. Hewitson of New Zealand, proxy flown by Jack Allen.

by a Montreal modeller on a semi-commercial basis. Mike received his prototype only a fortnight before the Champs, and consequently did not use it in the contest.

There are some very conflicting opinions held regarding propeller design, as became apparent during an impromptu discussion that took place during one of the test flying sessions. Central figure in the debate was Christian Schwartzbach, who was trying to explain the theory behind his non-helical (tips at less pitch) propeller design used with such success by Thomas Koster and others. One thing at least became clear - that the subject was much too complicated to be understood by any but the technically trained amongst his audience. He also argued that the V.P. prop, as used, was nothing more than an inefficient aid to trimming the model under high power. On efficiency grounds what was needed was low pitch at the beginning of the motor run and high at the end. For a 24 in. dia. propeller turned by 16 strands of 6 x 1 mm. Pirelli, figures of 22 in. pitch on burst, increasing to 38 in. (if I remember correctly) were quoted. Erik Nienstaedt has used such a prop., and said it worked.

Variable pitch apart, many Wakefields still had involved propeller assemblies. Examples could be seen of metal hubs, ball race supported shafts, Perspex noseblocks threaded for screws to adjust the thrust line, screw tightened collars on blade roots so pitch could be adjusted, and a variety of machined fittings (see photos 9 & 10). Despite the acceptance of free-wheel fold systems, the spring and screw stop is far from dead, and has the advantage that it can be used to operate an auto-rudder to provide glide turn. Hans Martin's second place model was so equipped (photo 11).

Despite the obvious need to wind the 40 gram rubber allowance to 'the limit' I saw very few winding tubes (Xenakis, Barr and my own) as most fliers relied on having a stoutly constructed forward fuselage. I even saw people wind with the prop attached even though this could and did lead to avoidable damage from motor breakage.

The Power event is, of course, the real opportunity for the metalworkers not to mention the engine tuners. Without doing an exact count I would estimate that 80 per cent of the models flown had a tuned pipe system - and by implication almost certainly a non-standard motor. Whilst there were numerous Miebach tuned G15's and pipes (see photo 12) there were plenty of others. There were even megaphone pipes to be seen on the Hungarian models (photo 13) and Brian Eggleston's (photo



14). The latter found his 'trombone' ready made in a local Canadian store! Also notable was his use of a plastic prop - the latest Cox 7 in. x 3½ in., aluminium coloured and much harder than earlier varieties.

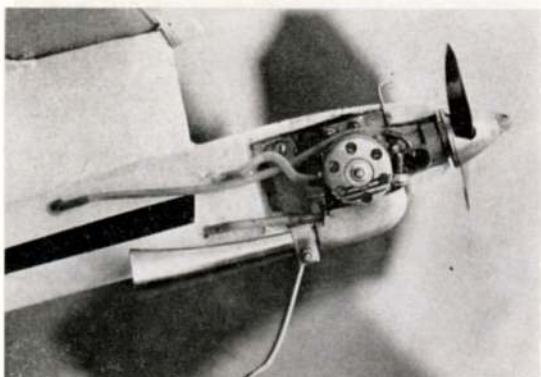
The glow engine was not quite universal. The Czech team all had M.V.V.S. diesels with 7½ in. x 3½ in. Bartel fibre-glass propellers (photo 15), and I heard mention of an H.P.

Model design seems to have settled down to the low-pylon style. Certainly my photographs show nothing else! There were a couple of models (Thomas Koster and Rolf Hagel) with triple fins - but the most surprising deviation from normal was Karl Hienz Rieke's use of a 'T' tail.

V.I.T. and autorudder are all but standard - with the Seelig timer as a common method of operations (see photo 12). Increasingly popular is the use of cast (or machined) aluminium motor mounts. Rigid mounting and heat absorbing properties should be an aid to engine performance. There is also the opportunity to 'clean up' the nose and get more useful thrust from the propeller. None the less there are few attempts made to do any more than use the mount or half-pan 'as it comes'. The Seelig design that extends over the front of the crankcase is better than most in this respect. Notable were one or two attempts to cut down cylinder drag either by fairing it into the pylon (A. Grethin, U.S.S.R., photo 16) or by using a 'Speed' cowl (F. Hartwegner, Austria, photo 17).

Drag reduction is becoming critical from considerations of climb, speed and height. The biggest returns do not appear to result from conventional streamlining - but by reducing drag at the low angles of attack that exist on climb. Of late there has been a noticeable trend to the use of very little undercamber and often quite blunt LE's. The top two models were impressive under power, especially Reike's which had a rate of climb equal to that of a first class English 'open' model. Both featured flat bottomed wing sections of about 8½ per cent thickness and unusually thin tail sections. This, obviously, goes well with the completely sheeted structure employed and glide performance did not seem in any way inferior.

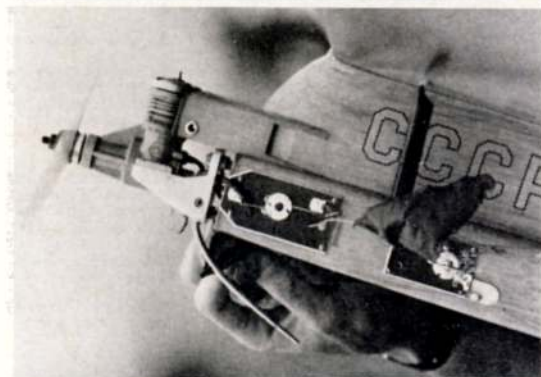
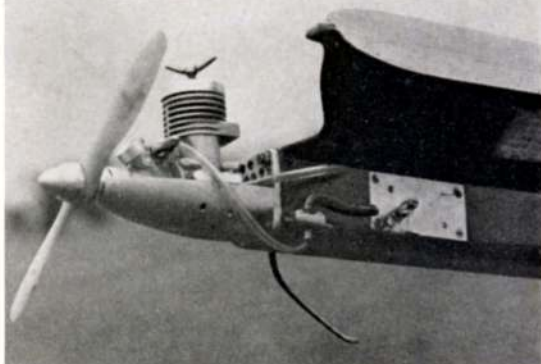
The propeller is probably the most neglected part of the modern power duration model. Rieke, and presumably the other West Germans, used a very narrow bladed fibre-glass prop of 175 mm. (6.9 inches) diameter. Blade section was thin with slight undercamber! Pitch was not deducible - but is certainly low. Nevertheless Rieke did not claim excessive revs from his motor - only the usual 22,000 plus!



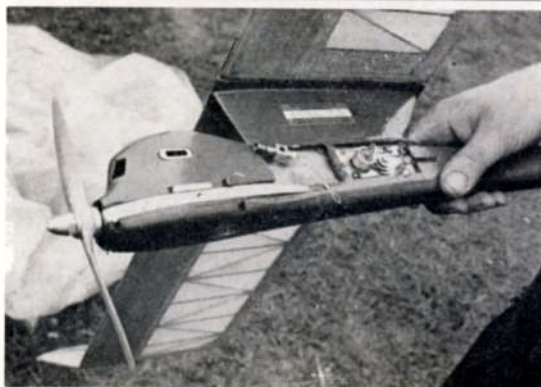
13. (Above left) Megaphone pipe still used by Hungarians.

14. (Above right) 'Trombone' by Brian Eggleston, ex-Baildon, now Canada.

15. MVVS diesel at 45 deg. to vertical on model of B. Krycer, Czechoslovakia.



16. Faired cylinder head, adjustable thrustline mount on A. Grethin's (U.S.S.R.) model.



17. Speed cowl used by F. Hartwegner, Austria.



**TWO EUROPEAN CHAMPIONSHIPS  
FOR SLOPE SOARING  
REPORTED BY TREVOR FAULKNER**

**— KOLIBRI - POKAL**

ST. POLTEN, AUSTRIA

THIS ANNUAL EVENT held near St. Polten, 30 miles west of Vienna is unique in combining two different classes. One of the two days is devoted to five rounds of the F1E class (Magnet steering), the other seven rounds of class F1A (A/2). Scoring is simple – one point per second flown, giving respective 'possibles' of 1,500 and 1,260 pts. Prizes are lavish – the social aspect excellent (three get-togethers in 48 hours) and the organization such as one now associates with the Österreichischen Aero Club – excellent.

Commemorative medals were awarded to far-travelled National representatives by the local Bürgermeister, whilst the ladies received cuddly toys from Father Christmas Edwin Krill, relaxing after supervising the F/F World Champs.

**Magnet Steering**

A moderate slope of some 250 ft. facing a 3 m.p.h. wind emphasised that at least part of the contest would revolve around the slow-flying properties of models. Not all had this capacity, although last year's Europa Cup winner, Schubert, of Germany, made maxes look simple. Felix Schobel, the Pokal's organiser, flew a most impressive 'Riese' (Giant) using a 108 in. x 12 in. wing which progressed outwards very slowly.

The other British entrant, Paul Fynn (St. Albans) arrived rather late for the first round, whilst after a false start I short-fused for 294 secs.

Round 2 was flown under similar conditions – this time my model was really in tune, circling well for 2 full minutes during a flight of 5+ mins. Paul was getting the hang of the slope, and his simple and well-made model looked extremely promising.

A 180 degree wind-change rather upset the 3rd round. The start-point remained unchanged, so those flying later in the round found themselves launching into a down wash airstream *with the wind*. Subsequently, torrential rain interrupted the programme, the wind freshening to clear the clouds and also to provide us with more testing conditions for the final two rounds.

Paul made the most magnificent max of the competition in round 4; the timer jammed to delay descent until the model had drifted slowly back to the lee of the hill. Unfortunately, some damage necessitated the use of his untrimmed No. 2 for the final round. At this point, many casualties resulted amongst the more fragile or less stable models. I changed to a 27 oz. sheet wing job, which proved to be of average use; a failure to correct quickly a turn to port (later traced to a mis-aligned tailplane mount) was sufficient to curtail flights drastically.

The final round was flown in worsening wind, so bad in fact that only one max. was recorded.

Helmut Schubert gained top spot with a total of 1,294 – 138 points ahead of Schobel. Schubert is, I suppose, a

Teutonic J. O'D in that his approach is to perfect a basic design and to become thoroughly conversant with it over a long period.

His models are (or appear) simplicity itself, and at first glance almost identical. Variations do exist, however, e.g. smaller rudder areas for rough weather models, varying tailplane sections and moment arms – but the basic pattern remains; long tail-moment, tubular fuselages, plug-in booms with visual alignment, A/2 size wings of conventional proportions, structure and section. Detail refinements include tailplane – retainer bands passing through tubes cemented to leading edges to thwart accidental displacement, wire dihedral braces, simple foam cushioned wing – mounts adjustable for C.G. changes, and, most important, beautifully warp-free construction.

**A/2 Glider**

Clear skies, light wind, a very damp air strip and the proximity of main highway and woodland made fliers apprehensive of the 7 rounds to be flown.

The calm conditions of the first 2 rounds appeared to favour Ritz 'Continental' and the S.P.L. designs, but contestants skilful enough to sense the elusive lift patches recorded good times with widely differing designs. Eminence, however, was no guarantee of success, one member of Germany's A/2 Team logging only 158 secs. in two flights. Of 62 recorded flights in rounds 1 and 2, nine were maxes (9 maxes were the most to be gained in any one round).

Not all contestants were, like myself, inexperienced F1A fliers. Herbert Schmelik, leader of this section of the competition, collected a mere 4 out of 7 'possibles'; the standard of both model building and flying appeared good, so perhaps conditions were a little tougher than average.

The small British contingent, having heard with delight of Elton Drew's win at Wiener Neustadt, were hoping that Paul Fynn's version of 'No. 8' would work the oracle. Again disappointment, as trimming flight damage made Paul a non-starter. My efforts were little better, as the holes into which I misguidedly launched in the first 3 rounds preface a max. (and lost model) in the 4th.

As the wind stiffened at noon, the advantages held by Club groups with organised motor-cycle transport or down-wind recovery teams became obvious. Lone fliers found the  $\frac{3}{4}$  mile down-wind trek, search and subsequent return within the hour pretty hard going.

Proceedings were halted before the final round to allow a demonstration parachute drop to be made, the target placed some 20 yds. from control and very close to the highway. No doubt Authorities in G.B. would have frowned, but as entertainment it was a great success – another example of positive thinking by the Austrian A.C. in associating two dissimilar Aeronautical Sports. (Yes, I know, model-flying

isn't a sport in the U.K. — with no injuries to speak of, no animals slaughtered and no associated gambling, how could it be?)

In a subsequent discussion with Continental modellers, it was obvious that they consider us to be rather shiftless in not voting unsympathetic Ministers out of power — a beautiful thought!

The final round (total 3 maxes) was flown in dull and damp conditions. An analysis of the FIA Competition showed that of 205 flights recorded, only 40 were maxes; the first three contestants making 4, 3 and 2 respectively.

Prize-giving was attended by all contestants, the most appreciative applause greeting Organiser Schobel's 2nd place in F.1.E.

The dominating position of the Schubert's (father and son) gave rise to considerable speculation as to what would happen the following week at the Europameisterschaft — but that's another story.

### Kolibri — Pokal

Magnet Steering (Class F1E) — 34 entries

1. H. Schubert (Germany)	1294 pts.
2. F. Schobel (Austria)	1155 ..
3. W. Schubert (Germany)	1095 ..
6. T. Faulkner (Gt. Britain)	905 ..
28. P. Fynn (Gt. Britain)	550 ..

A/2 Glider (Class F1A) — 31 entries

1. H. Schmelik (Austria)	1093 pts.
2. H. Weichesfelder (Germany)	1035 ..
3. H. Zachhalmel (Austria)	1009 ..
19. T. Faulkner (Gt. Britain)	781 ..

Combined Classes (F1E and F1A)

1. H. Schubert (Germany)	2075 pts.
2. W. Schubert (Germany)	2021 ..
3. F. Haider (Austria)	1954 ..
12. T. Faulkner (Gt. Britain)	1776 ..

and the 1969

## EUROPEAN MAGNET STEERING CHAMPS

ADELBODEN, SWITZERLAND

Seventy-eight competitors and six full national teams met for the second F.I.A. — adopted Annual event.

The fact that this year, national teams had been chosen in advance rather than being a country's top three fliers at the close, was an innovation, the participation of individuals other than those in official teams adding an extra spice to the occasion. It was interesting to see how success at eliminators differed from results in the 'Big 'Un'.

A bright Saturday morning in the Alps, traditional music to greet competitors on reaching the flying site, plus the prospect of two days flying, gave an impression of the Magnet Flier's idea of Heaven. The first maxes appeared on the board in such profusion as to make one anticipate a mass fly-off.

At this time, certain potential difficulties began to reveal themselves. In essence the slope was so good that it tended to penalise mistakes rather than to reward above average skills; the height and gradient combined meant that a simple straight flight away from the slope lift-wave would still max — provided the time-keeper could see it. In fairness to the Swiss Aero Club, they were faced by an unusual difficulty — either the Competition was held on lower ground after the winter-feed for cattle had been mown, or the higher ground only was available. The ideal slope, therefore, was only free at the end of September — most inconvenient for the majority of entrants. The worthwhile objectives of magnet-flying (flight-speed tuned to match wind speed and the use of circling flight-patterns), were merely rewarded by a shorter recovery distance.

Those mature campaigners, Emil Ludwig and Hans Gremmer demonstrated ideal flight patterns with forward and rear-fin models respectively. Hans' photographic duties prevented him from competing but his lunch-break 'fun-flying' was an example of this branch of the sport at its best.

Paul Fynn's bad luck persisted when, with the model obviously going well, the timer *again* failed; the model was not to be found, rather damping the morale of the G.B. contingent. This was not improved when Brian Faulkner recorded a bare 20 secs. — the sort of mistake he then set out to remedy with 2nd and 3rd round scores of 185 and 270. Probably the hard-luck story of the entire contest was



Opposite: Author launches Magnet Model 'Hanger' at left; Winkler doing same against superb scenery at right. Above, crisp mountain air and still atmosphere evident as Felix Schnobel poises. Below is typical Alpine launch scene and at bottom, Bodmer's Swiss Plank — what a short fuselage!



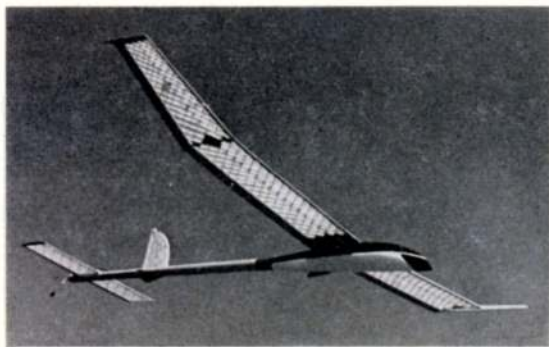
Ludwig's 2nd round 299 secs., a single second debarring him from a fly-off chance, while Schubert's 294 in round 1 preceded 4 perfect flights.

The first day ended with a sudden lowering of cloud and temperature. British spirits were not raised by the interim report on placings with 54, 55 and 78th spots. Six perfect scores had been returned, and National Totals read: —

1. AUSTRIA	2,558	pts
2. ITALY	2,421	..
3. SWITZERLAND	2,166	..
4. GERMANY	2,001	..
5. GREAT BRITAIN	994	..
6. CZECHOSLOVAKIA	905	..

The same weather prevailed on the second day, and made me certain that the leaders would record the outstanding maxes rather as a formality; this was far from the case. In the 4th round Swiss contender P. Maurer dropped 11 secs. whilst the final hurdle brought down K. Marx (Germany) and





Left: Giorgio Cobelli's superb structure, above is Feruglio's Geodisy, a picture of elegance. Below left: Sartori's lightweight, an Italian experiment.

Herbert Schmidt (Germany) with an unaccountable 53 (this dropped the unfortunate Schmidt to 26th, the lowest 4-max place).

With some of the tensions removed, the Faulknors both maxed after almost simultaneous launches in the 4th, only for Brian's model to go A.W.O.L. His use of an unsuitable (rough weather) model for the 5th flight spoiled a praiseworthy effort in which successive flights had improved. My second max of the day proved to my satisfaction that I, not the model, was the cause of the poor showing on Saturday. Paul, having damaged his reserve model in the 3rd round, was now out of the reckoning entirely, and we had scant hopes of even keeping above the Czechs in the team placings . . . rather disappointing for the initial assault on Europe by a full team from G.B.!

However, the comp's never over until it's finished, and many were the improbable results when came the reckoning; Schobel of Austria (2nd in the previous week's Pokal) came 44th; lady entrant Grete Rosser (one max) finished a creditable 18th, her fiancée making 70th spot after some unselfish pit-work on Grete's behalf.

Mario Feruglio produced the expected highly-finished and inventive models, only to finish 42nd (far below his more characteristic placing at 18th last year) so that the three remaining fliers with perfect scores had sufficient warning of the fate which could befall even the most eminent.

### Fly-Off

The system of increasing max times by one minute each round was employed; of the finalists (from Germany, Austria and Italy) Ghiotto's model was infinitely the most complex: Feruglio's system of light-steering, with transistors, relays and other inventions confusing to my simple mind, gave a positive and powerful rudder movement with a choice of sequence; Puttner, on the other hand, had the simplest model in the entire contest (straight dihedral, Jedelsky - construction etc.) Peter Schobel used a well-proven and conventional design.

The rear-finned Italian model was soon away on an attractive weaving flight pattern; Puttner headed straight, then after approx 3 mins. the circling pattern flight kept the model well in sight for an easy max. Schobel flew rather straighter but a little more slowly for a sound 6 min. effort.

Quarter of an hour later and the seven minute lap had begun; Ghiotto's flight was missed by many - I only saw it through the cine camera's 'finder' - where the impression gained was of a mis-launch with left rudder full on - time 4 secs. Next away was Puttner, who headed slightly right (as I thought to take advantage of a patch of the lift-wave from a lower escarpment during the circling part of the pattern).



Meanwhile Schobel had launched, the model creeping slightly LEFT. With eyes darting from left to right, almost Wimbledon fashion, spectators followed the progress of both craft with feelings of unbelief - the centre slope unoccupied and both models trimmed for risky flight-paths. Was there some advantage that more timid fliers had failed to detect in seeking marginal safety at the fringes of the slope? For Puttner the answer came after 154 secs. - an unqualified 'no'. Some 10 secs. after his touch-down Austrian cheers gave witness to the fact that Schobel's model was still air-borne, had headed out towards the centre of the slope - and was beginning to climb rapidly.

So the contest ended with the Austrian model still air-borne, and Peter Schobel chaired off the field by his team-mates.

Prize-giving (to music) was a crowded and gay affair which gave a chance to the lustier winners to gain a kiss as bonus from the attractive Swiss maids handing out the medals! At such functions, few are forgotten - even the Chef receiving acknowledgement of his efforts. Members of National teams were given attractive commemorative medals and I was astonished to receive a presentation plaque from the German Aero Club for helping to extend the sphere of magnet-flying to the English speaking communities of the globe.

Organiser Alfred Degen received a case of wines for his manifold efforts to make affairs run smoothly, and the team awards of Swiss Cowbells (in graded sizes) kept the atmosphere appropriately informal.

### What next?

Perhaps one of the great aspects of our sport is that it is never static. There had been talk of a World Championship in F.1.E. This would, I suppose, lead to competitions every two years - not as satisfactory to many as is the present system. Variable maxes are now being discussed in conjunction with an increased number of rounds. (Why not smaller slopes, which abound in Europe, where the max time is almost impossible to reach? This would differentiate between average, good and excellent flights rather than awarding all above a certain standard with a max).

Smaller slopes would demand more design development for slower-flying qualities, would make less demands on time-keepers eyesight, and would encourage the continued participation of our older colleagues. Shorter flights could still reflect the calibre of model and flier, but would have the decided advantage of making the contest take place NEARER THE SPECTATORS. An extra load would be placed on time-keepers, as I envisage them having at least 10 flights per entrant to supervise; similarly, recording would become more difficult, but all these factors could be overcome by deliberation beforehand, i.e. adequate provision of officials and reliefs.

In this way I could envisage the continued growth in importance and popularity of the F.1.E. class; after all, its ambassadors should be capable of differentiating between its future needs and those of other F.1.A. Free Flight categories.

### European Championships

Magnet Steering (Class F1E) - 78 entries	
1. P. Schobel (Austria)	1500+360+420 secs.
2. S. Puttner (Germany)	1500+360+154 secs.
3. A. Ghiotto (Italy)	1500+360+4 secs.
40. T. Faulkner (Gt. Britain)	1092
60. B. Faulkner (Gt. Britain)	852
78. P. Fynn (Gt. Britain)	27

### Team Positions

1. Italy	3921
2. Switzerland	3807
3. Austria	3640
5. Gt. Britain	1971

# CLUB NEWS

Left, John Shaw of FFACT displays his lightweight combat wing, which features a swept-forward leading edge, said to improve its manoeuvrability. Right, Steve Blake, British team manager at the recent Criterium of Aces, proved his ability at flying as well as organising when he qualified for the 1970 World Championship team - seen at London Gala, Greenham Common.



LOOKING through an old, pre-war *Aeromodeller* I came across an article advising the model flyer where he stood in relation to the law. Now, it is common to regard the law as an ass, but it is not nearly such an ass as some of the people who flout it. I am thinking in particular of those people who think they have a right to retain possession of a model aircraft which has landed on their property. Since reading that article, oddly enough, I have heard of several instances where model flyers have either been denied access for the retrieving of their models or have had their models actually impounded. Now, under the law of Detinue, it is illegal for anyone to hold on to other people's property, however justified they may feel in so doing. If, therefore, you have lost an expensive model in this way, and all courteous requests for its return are refuted, then a solicitor's letter can often work wonders. It may cost a pound or two, but this can be slight in comparison with the value of, say, a multi radio model. Best bet, of course, is to keep your model on the island, as it were.

Talking of Law, we British usually react against something we don't like by demanding a law again it. But what we can't get a law again, though we would dearly wish it, is the good old British weather. But do not think ourselves too oppressed by the depressions, for report has it from no less an authority on our weather than the Buckaneers Model Club - survivors of Cranfield '68 - that Belgian washouts are longer and wetter than the British variety. Testimony we are given is the very sploshy 1969 Criterium of Aces, held at Genk. Club hopes in the Stunt event lay upon the damp shoulders of Jim Mannall. Good for him that he was up to his best form, but such is now the standard of International Stunt that he could do no better than place 25th in a 34-strong field. Highest placed British Stunter, though. Back home, a taste of British summer weather for the Stunt Comp at Finmere gave cold comfort, dryable, flyable conditions. The seven entries included the whole Criterium team.

Jim Mannall flew his well-known orange and yellow 'Nimbus', whilst Mick Reeves, of Wanstead, demonstrated a superbly finished Mk. IV 'Dictator'. Only one prang during the whole event, and everyone returned two scores. Mick Reeves emerged as the winner, with Jim Mannall as runner-up. A good timekeeper is still a worthwhile asset, particularly if you have a set period of flying to observe on your local sports field. One flyer at the Manor Field site got his times slightly mixed with that of a cricket match, and got pitched off; though his crime was slight compared with that of one of his boating colleagues who got too close to the wild life on the club pond - though he, too, was out for a duck.

A report from Stuart V. Tucker, Hon. Sec. of the Leatherhead Model Flying Club, tells of the large scale effort the club put in at Dorkings Hall Model Railway & Eng. Exhibition last September. We are told that the Exhibition is the largest of its kind held outside London; the model plane side alone taking six months of preparation. But a well-rewarding outlay of time considering the success of the show, of which one activated attraction was the club's enlarged electric r.t.p., showpiece. This year the electronics were of a more sophisticated order than hitherto, giving engine control over twin engine craft through the agency of realistic looking aircraft throttle levers. And this gadgetry was to provide one of the thrills of the event when Chairman Ian McConnell attempted the maiden flight of his modified P-38 Lightning on the 20 ft. circuit. Suspense built up as the plane made a couple of abortive starts, but finally the twin-engined craft got airborne, to the cheers of the quite dense crowd around the stand. No less impressive was the static display. This gave wide representation over

the whole range of the hobby, and in historic depth, too. An example being a 1913 compressed air model.

Lots of things in the offing down Mitcham way, where mums, wives and the better trained girl friends will be sewing the new club badges on the cement caked, oil soaked blazers of their control line mad menfolk. The badges, very noble, are embroidered with the club insignia and the words 'Three Kings'. It is hoped that they will not be mistaken either for a carol singing group or a pub dart team. But from badges to badgering. Do not, repeat, do not, use nitrobenzene as a fuel additive. The grim warning comes from a technician aeromodeller who cites horrific cases of the insidious substance seeping through the skin to affect liver and kidneys to a fatal degree. Feeling here is that it should be totally banned from the aeromodelling scene. In more cheerful mood, there is news of members getting bitten by nothing more innocuous than the Goodyear bug. Attacks have mainly occurred since word went round that the Feltham Club is running such an event in October, and might well include one in next year's Nats. A number of promising Scale efforts are already sporting the Three Kings' insignia - these including a 'Gray Ghost', a 'Mew Gull' and two 'Shoe Strings'. Also, as yet a gleam in the eye of Geoff Burckett, a 'Chance-Vought Corsair'. For those interested in the 100% Scale model, there is soon to emerge Wal Cordwell's 'Cessna 177 Cardinal'. It will have a span of 45 in., the power of an Enya .19 under throttle control, and the blue and white finish should go well with the cabin, trike undercart and other decorative features. Putting the Scale order of things in reverse, as it were, young Brian Cordwell did a grand de-scaling job on his 'Bell Airacobra'. In a moment of aberration Brian lost control and the model lost its lovely hindparts as a consequence. But, lo and behold, it was up flying in this attenuated state ten minutes later, with the flaps operating as elevators. Bricks-on-string critics are asked not to crow too loudly. The club meets at the White Hart, Mitcham Cricket Green, on each fourth Tuesday. Telephone Norman J. Chapman, 01-640 0030, for particulars, if you are any sort of competent handle waver.

Now that we are getting into the icy grip of our model-grounding winter, let us turn to the euphoric, sun-filled voice of 'Satellite', Newsletter of the San Valeers, coming to us from the warm depths of California. In these days of catalogue buying, the editorial exhorts its readers not to bypass the local model shop but rather to give it their enthusiastic support. I straightaway took this advice, but only to find that my local model shop had gone completely over to fishing gear. The theme is, though, that the folksy model shop, which, in the past, has provided a focal point of modelling interest in the district, is threatened by the undercutting mail order firms. However, it is stressed that it can be more economical in the long run to get the personal guidance of the model shop when buying expensive kits and equipment. His expert advice could perhaps steer you from the glittering to the more practical commodity. There is certainly a lot to be said for this - but also, may I add, for the local balsa dispenser to have expert knowledge of his trade; not always the case where the model wares are served along with Action Man jungle kits. Has heard of the famous Sepulveda Basin, the Californian aeromodelling resort? Seems that of late it has undergone a measure of diminution, since which, we are told, the max limit has been reduced from five to three minutes, mainly in deference to the uncluttering of the ten lane highways. For Power models this means a new seven second engine rule. Soon the short sharp audio burst will beat the human-ear/manual-watch combo (already there is the sound travel-prop stop credibility gap), and some sort of electronic

timing will become a must. Still hotter news comes from President Lee Polansky, who gives thirst slaking advice on flying in the desert. It is very much a battle of survival (The Thirst of the Pew?) where you take one water container for yourself and one each for your friends - and drink the lot.

Staying in the friendly sunshine for a while we come next to a most curious Newsletter, scorchingly titled 'Hot Leads'. It hies from the SCAMPS, The Southern Californian Antique Model Plane Society. Dedicated though it is to 'Old Time Flying' it does not disclose just how old a model design must be to qualify as antique - surely not a hundred years? Anyway, the flying programme looks intensive enough for any would-be time traveller, being all Gas and Garters (Petrol and Old Rubber) with the odd glider or two thrown in. Not that I'm criticising - I've caught something of the vintage bug myself, at present casting a beady appreciative eye over a plan of a 1937 Wakefield. Personally, I can't say I go overboard for the circa 1950 ultra lightweights which seem to be dominating the Vintage event.

Back to brave Britain, and to what we find at the end of the bubble making machine, 'The Thermal'. Though, in point of fact, the Newsletter (smashing duplicator!) of the St. Albans M.A.C. doesn't exactly eulogise over the use of such thermal detecting devices. Rather does it suggest that infernal engines of this kind, demanding a concerted group

effort, give a definite advantage over the lone hander or small club member, and, since this is the case, the question arises: should such aids to contest winning be banned, or should they be accepted as a genuine extension of model flying technique. Personally, I am in two minds about this. Such gadgets are the result of much ingenuity and hard work and add colour to the model scene, but at the same time they tend to narrow contest participation to a select, highly equipped field. And talking of narrowing the field, I am not sure that the current tendency to push up entry fees to the five bob mark is as much a deterrent to wide participation as the thermal machine. Prize money must be found, of course, but ten half crowns are worth more, in this context, than five five bobs. Anyway, back to St. Albans, and to the promise of what has been sadly lacking of late in the free flight arena (too many grey heads), a number of up and coming young model flyers. Mentioned are Chris Fuller, son of famous tactical scoring Dad, Martin Shepherd and Chris Batty. Surprisingly good, some of these young modellers, often giving greater application to points of fine finish than many of their elders - and they talk of impetuous youth! Odd comp held back in June was a glider towing event. Top glider kiter was Vic Driscoll. He kept his string extended for over eleven minutes; owing his success as much to a lively wind as pure technique, whereas later arrivals got into the doldrums and had to outrun the common to get six minutes. Still gliding along, I wish I could have got up to St. Albans for one of the evening R/C Soaring events - at least I might have got in a flight. As it is, all the flyable sites I visit are stiff with multi flyers operating down the wrong end of the field.

The contest calendar of the Leicester M.A.C. mentions a Ladies Sealed Time Event. This, however, is not a re-enactment of the Crusades but a simple model flying event for the girls. Rules insist that the weaker sex are not so weak as to be excused launching their own (?) models, but are not asked to jeopardise the nail varnish in flicking the props. Yes, it was a trifle on the windy side at Cranfield. Leicester members, like many other visitors, kept their models safely tucked away. Only Derek Sirrell took up the challenge of the battening breeze and the rock hard airfield with his 'Inchworm' glider. Unhappily, he came to grief on his second flight when his model landed okay, but a few unseemly ground flips resulted in a broken wing. Also ruined by the wind was the fly-for-fun outing at Sywell. Compensated, however, from the club point of view, by Ken Worrell winning the Concours event with his C/L B.26 *Marauder*. And with such fine models knocking about, it is little wonder that the Lutterworth Arts Council sent along a £5 donation to the club for the fine static display put on by the members. Next such display is to be at the Granby Halls Chrysanthemum Show in November - but no wall-flowers, we hope - at the Social and Dance to be held in December at the Shakespear Inn.

We make no apologies for jumping out of the Contest Calendar to remind you that the Blackheath M.F.C. is to hold the Bill White Gala on the 11th January at Chobham. Open R/G/P and All-in F.A.I. Unlimited re-entry and modest entry fee of 2/6d. So get your Balacavas at the ready. And you club types - why not go along to a Rally? It is worth it just to see the top model flyers in action.

The Model Section Club News of the Shuttleworth Veteran Aeroplane Society is now quite the magazine for the oldie Scale fan. Plenty of drawings and photos to live up the pages, and lots of gen on the planes of yesteryear and the activities of today. Part of such activity is flying on the field at Old Warden, although Shuttleworth would seem to be the watchword, as you are required to move sharply to the edge of the field whenever a full size machine hies into sight - though with the size of some of the oldies you see about you could get confused. Incidentally, since the ladies seem to be very much in evidence in the mag., why not call the Ornithopter Cup the Flapper Trophy. Very vintage touch.

Complaint from the Heswall M.A.C., anent the Woodford Rally, is the disregard shown by the Radio flyers towards other airfield users. Only one incident is cited; that of a radio modeller deliberately using the control line area as a take-off strip, so it is difficult to determine whether this incident was typical or singular. However, the Radio boys didn't hog the whole show at Woodford: quite a spectacular was the formation flying of a Crusader and a Smoothie. Variations included upright and inverted flying in opposed circuits. Do not think, though, that Heswall has nothing on its agenda plate but control line; the members can wield a mean wing or two in other directions. In fact, in just one line of reportage on activities at Storeton, mention is made of a Dart powered Sport model, a S/C 'Tony' Jap fighter and an o/d slope soarer. Altogether the club covers the whole range: C/L, F/F and slope soaring, with lots going on in all spheres.

Someone has loaned me a copy of 'Free Flight', the journal of the National Free Flight Society Digest (Perhaps they could put us on their mailing list - all mags and bulletins welcome to these columns). And much good stuff to digest in this issue, which is devoted entirely to the F/F

## RALLY RESULTS

### S. MIDLAND AREA RALLY - CRANFIELD SEPT. 21st

**FREE FLIGHT Open Power:** 1. G. Fuller (St. Albans) 9:00 + 4:00, 2. R. Peers (Congleton) 9:00 + 3:09, 3. A. Moss (Congleton) 8:46. **A Power:** 1. G. Fuller (St. Albans) 8:35, 2. R. Bailey (St. Albans) 7:04, 3. M. Bradley (Grimbsy) 4:10. **Coupe D'Hiver:** 1. J. O'Donnell (Whitefield) 4:20, 2. H. Tubbs (Baildon) 3:55, 3. D. Tipper (St. Albans) 3:32. **Open Rubber:** 1. J. O'Donnell (Whitefield) 9:00 + 3:21, 2. F. Sharp (Norwich) 9:00 + 2:31, 3. G. Tideswell (Baildon) 9:00 + 1:26. **Tailless:** 1. H. Tubbs (Baildon) 8:58, 2. K. Attiwell (Halifax) 7:37, 3. A. Wydes (Crawley) 4:51. **Open Glider:** 1. M. Fantham (Richmond) 8:45, 2. J. Baguley (Hayes) 7:05, 3. D. Bailey (Swindon) 6:19. **Chuck Glider:** 1. W. Houghton (C/M) 3:00, 2. R. Roberts (C/M) 2:59, 3. J. Mayes (South Bristol) 2:25. **Helicopter:** 1. F. Boreham (Southampton) 3:00, 2. Hesson (St. Albans) 1:14, 3. R. Bail (Aston Clinton) 1:13.

**CONTROL LINE Mouse Race:** 1. Halman/Copman (RAFMAA) 10:54.4, 2. Smart/Hayward (Finchley) 11:30.2, 3. Hunscliff/Handley (RAFMAA) 103 Laps ret'd. **A Team Race:** 1. Turner/Hughes (Wharfedale) 7:42, 2. Campbell/Perkins 9:06, 3. Heaton/Ross (Leigh) Ret'd. **F.A.I. Team Race:** 1. Heaton/Ross (Leigh) 9:09, 2. Smith/Harknett (Feltham) 9:49, 3. Turner/Hughes (Wharfedale) 10:26. **Stunt:** 1. M. Reeves (Wanstead) 1,001 pts., 2. M. Harvey (Three Kings) 850 pts. **Carrier:** 1. M. Reeves (Wanstead) 285 pts., 2. D. Bird (C/M) 190 pts. **Rat Race:** 1. D. Rudd (Feltham) 5:53, 2. J. Dixon (Feltham) 6:14, 3. Taylor (Southend) 6:15. **Combat:** 1. R. Morgan (Finchley), 2. S. French (Scunthorpe) 3rd equal. Langridge (Elliott), Reeve (B.C.M.E.)

**RADIO Multi:** D. Spreng 2,154, 2. S. Foster 2,001, 3. T. Cooper 1,907. **Single:** 1. G. Clarke 43, 2. G. Croson 67, 3. J. Smith 77.

**LONDON AREA RALLY - GREENHAM COMMON, OCT. 26th**  
**FREE FLIGHT Open Power:** 19 entries: 1. R. Pears (Congleton) 9:00+3:44; 2. R. Johnson (St. Albans) 9:00+3:31; 3. G. Fuller (St. Albans) 9:00+3:11. **Open Glider** (38 entries): 1. G. Clarke (M'head) 8:35; 2. P. Trenchard (FAACT) 8:34; 3. J. O'Donnell (Whitefield) 8:21. **Open Rubber** (11 entries): 1. B. Edwards (Richmond) 9:00; 2. D. Hipperson (Croydon) 8:43; 3. P. Digby (Leatherhead) 8:39. **CONTROL LINE F.A.I. T/R** (10 entries): 1. Harknett/Smith (Feltham) 9:20.8; 2. King/Rudd (Feltham) 10:26.8; 3. Bedford/French (Feltham) 11:21. **Handicap Speed** (11 entries): 1. M. Billington (Brixton) 161.5 m.p.h. (10 cc.); 2. M. Redcliffe (Feltham) 135.6 m.p.h. (5 cc.); 3. J. Panton (N. Sheffield) 133.1 m.p.h. (5 cc.). **Rat Race:** 1. Willoughby/Webber (Feltham); 2. Dell (Feltham); 3. Rudd/King (Feltham). **Combat** (14 entries): 1. J. Shaw (FAACT); 2. Martin (M'head).

**RADIO CONTROL Multi Aerobatics** (18 entries) 1. M. Birch 2414.5, 2. D. Hamant 2331.5; 3. S. Foster 2228. **Pylon Race** (8 entries) 1. C. Wall 1:49.5; 2. J. Ralph 1:49.8; 3. D. Scott 2:65.

**S.M.A.E. TEAM TRIALS FOR THE 1970 WORLD CONTROL LINE CHAMPIONSHIPS. Team Race:** 1. Turner/Hughes 4:45 & 4:41; 2. Harknett/Smith 4:41 & 4:46; 3. Heaton/Ross 4:45 & 4:47. **Reserves Place/Howarth. Speed:** 1. (equal) B. Jackson and B. Firbank 123 m.p.h.; 3. P. Halman 120.4 m.p.h.; Reserve J. Dixon. **Stunt:** 1. M. Reeves; 2. J. Mannall; 3. S. Blake. Reserve M. Mayne.



Very fast 'Go-Go Fli' pylon racer. Note aileron on outboard wing only, anti-vortex tips and exposed K & B 40 RV. The Merco silencer has been 'modified' by removing all baffles, drilling holes opposite the exhaust stack, as well as being shortened. Noisy! Tighen those rules, men!



side of the American Nationals. Events multitudinous and a mixed bag of weather. All the usual contests featured plus a few alien to our slightly greyer skies. For instance, Payload, which made a brief appearance on the British scene back in the early fifties, is featured carrying its cargo aloft as doughtily as ever. Intriguing, too, was the B Gas event, which, besides being v.t.o., was run to a system of rounds where the engine run was progressively reduced in two second stages. Wakefield and Coupe D'Hiver were as universally familiar as you might expect, but Rocket, which looks suspiciously like something we used to call Jetex, had quite a lot of support. Used to be popular here, back in the early fifties, and could make something of a comeback given the right conditions. Ideal sport for the small field.

'Seadog', the Newsletter of the South East Area, publishes an extract from a letter received from the Conservators of Ashdown Forest. Would seem that the question of model flying is under scrutiny, but it is not foreseen that Area meetings will be affected. Fair enough, but, in the name of our so-called democratic island, who are the Conservators of these various open spaces? If model flying is one of the public activities with a tradition of usage, then I feel that a model flying representative should be elected to the Conservatory Council. Too often we model flyers, many of whom fought for this land of ours, are treated as alien intruders. Still, plenty of contest flying activity down in the South East, in spite of flying space difficulties. Odd feature of the South Coast R/C Rally at Golden Cross was the absence of an Aerobatic event. Not being too expert in R/C matters I can only assume that Pylon Racing is taking over this area of multi flying. A report on the S/C Championship held at Sevenoaks from Dave Bishop includes his very convinced view that Spot Landing is the best bet for S/C comps - always draws the biggest entry. I can't help feeling, though, that R/C contest flying is somewhat in the melting pot. Received from D. N. Greig, Treasurer of the 'Seven Springs' Cheshire Home is a thank you letter for the cheque of £168 10s. 0d. This money was raised by a display given by the Area, and I think we all share the view of Mr. Greig that this was a truly magnificent gesture. Hardly the time of year to talk of holidays, but an advert is included in the newsletter for a £10 a week holiday caravan adjacent to a disused airfield in Devon.

Don't believe it. 'Nitro', mag of the Belfast M.F.C., talks of the impassivity with which the veteran model flyer faces up to those minor flying field disasters, like piling his brand new Wake into the deck, or testing the resilience of the tarmac with his new Super Tigre. The reaction, at any age or experience, is a good old nut-doing tantrum. Even model flyers are only human. Safest model of all for a good old bash about without tears in the Coupe D'Hiver. Five entrants braved the stiff breeze at Bishops Court for a little 'un event, but all got through the seven flight schedule. D. Wilson, the winner, managed two maxes, but times generally indicated that a spot of warm air does not come amiss with these very low powered models.

Swinging Swindon is descriptive of the high activity that has characterised the club of that name during our very fine summer; and, from this we gather that the increase in membership to over the fifty mark is a demonstrable as well as a paper one. As with the modern scheme of things, Radio control is the main centre of interest, but I trust the reference to two such models coming in vertically from 200 feet within an hour of each other on the same afternoon has been duly noted from the safety point of view. Would it not be a good idea when such incidents occur for the club committee to hold an 'inquest'. If causes of radio crashes could be thoroughly investigated, the results, if circulated throughout the club, could have a cautionary effect on people 'chancing' it with ill-prepared and ill-functioning apparatus. From Radio to general, the club has devised a unique way of spreading club contests over a period of six or eight dates during the season. Thus can be eliminated those Sundays when the Sou' Westerlies rage across the airfield. The idea is that the entrant on any, or all of, the prescribed dates can make three comp flights, with the best aggregate of any one day being his score. Only one snag, however, you have to provide the necessary time-recording organisation on each occasion. You may elect to fly on a windy day, perhaps because it is the only one the wife will give you off, and you go out to an empty airfield.

October is not the month one would by choice select as a time for thermal soaring - however, the weather at R.A.F. Henlow for the South Midland Area's first Thermal Soaring Contest was as good as many a summer's day. This in no small measure contributed to the undoubted success of the meeting for both competitors and spectators. As one member's wife put it, 'How nice to see so much flying

without any engine noise', sentiments that would no doubt be echoed by other dutiful spectators!

Limited to Area members only due to Airfield restrictions, the R/C contest served to give the organisers experience for the National Thermal Soaring Event the South Midland Area intends running in 1970. In fact, 10 entrants took part and several other models were present on the field, including two examples of the new Graupner 'Cirrus' soarer.

One unexpected and disconcerting event for the organisers was the touch down of a full size ATC T21 glider in the centre of the landing square!

Best flight during the meeting was 11.30, by Geoff Dallimer's 'Thermal Rider' in thermal activity over the hangar roofs, although these buildings caused much turbulence at lower altitude. Dave Dyer also found this lift area and his consistent flying again brought him first place.

This was an informal meeting where all competitors received a prize, from Sherry for the leaders, miniatures for the middle places, and a bottle of Wine for the hard-fought 'second last' place!

R/C - 3 flights of 6 min. max.

1. D. Dyer (Stevenage), 14.14 2. G. W. Dallimer (Stevenage), 13.46; 3. N. Webb (FACCT), 10.33; 4. T. Clark (Luton), 6.58; 5. E. Clark (Luton), 5.51; 6. F. Catt (FACCT), 5.42; 7. T. Dowdeswell (Luton), 3.26; 8. A. Hester (High Wycombe), 3.12; 9. R. Sexty (Stevenage), 1.08.

Free Flight

1. J. Steel (Luton), 5.57; 2. P. Shindler (Stevenage), 3.00.

The Clubman

#### LONDON AREA GALA - R.A.F. GREENHAM COMMON

Held on a very misty day, on a very long airfield, this rally attracted surprisingly few competitors. The length of the runway (10,000 ft.) and the restricted visibility, meant that the free flight competitors never even saw their 'controlled' counterparts!

In Rat Race, some very good times were achieved - there being some keen rivalry between the Feltham and F.A.C.C.T. clubs, although the final was once again an all-Feltham affair. This time, newcomer Stewart Willoughby emerged the winner, despite a shaft run after hitting King's model. Harknett/Smith notched up yet another victory in F.A.I. Team Race, which attracted only 10 competitors, few of the top names entering, although Brian Turner was present, flying in the stunt event, where he took an unaccustomed back-seat behind Messrs. Reeves, Mannall and Blake. These three pilots seem so evenly matched that their names appear at the top of the majority of contest results, in varying sequences!

Handicap speed provided plenty of excitement when Mick Billington flew his S.T.ABC 60 powered model to the fastest time of the day. The centrifugal force was so great that he had difficulty in maintaining his balance before he could enter the pylon! Gordon Farmsworth's flying was also spectacular, as he seemed intent on establishing a maximum penetration record - bending a succession of models in the process.

Combat winner, John Shaw (FACCT) achieved the unique distinction of beating both his opponent and on R/C model during the final. Anybody want a Kwik-Fli wing tip? Proof that at least one radio model was flying less than 50 feet above the combat area...

Mick Reeves' second success came in the scale event where he flew his 'Turbulent' in such a manner as to make flyers of the full-size blanche!

The multi R/C event was run to the full F.A.I. schedule by members of the Eastcote club - who did the job very efficiently in contrast to the control-line events which were a little slack. Eventual winner, Mike Birch, made an immaculate landing as he touched down on a broad white line and stopped, brakes squealing, still centrally placed upon it. The Pylon race was very exciting and closely fought - the winner, C. Wall, establishing a new British record of 1:49.5 with his 'Go Go Fli' - a Phil Kraft design with no rudder control, anti-vortex tips and one aileron only!

# 1970 S.M.A.E. CONTEST PROGRAMME

**March 22nd** (x) R/C and C/L Centralised Meeting R.A.F. Cottessmore  
**March 22nd** 1st Area Centralised Meeting Area Venues  
 (PL) FAI Glider (KMAA Cup)  
 Open Power (Frog Senior)  
**April 26th** (C) Open Rubber Meeting Area Venues  
 2nd Area Centralised Meeting  
 (PL) FAI Power (Halifax Trophy)  
 Open Rubber (Gamage Cup)  
 (C) Open Glider  
**May 10th** (Provisional) **SOUTHERN GALA**  
 Open Rubber (Flight Cup)  
 Open Power (Short Cup)  
 Open Glider (Pilcher Cup)  
 $\frac{1}{2}$ A Power (Quickstart Trophy)  
 Chuck Glider  
 (x) R/C Multi Aerobatics (Aeromodeller Trophy)  
 $\frac{1}{2}$ A Team Race  
 FAI Team Race  
 C/L Aerobatics  
 Combat  
**May 24th** 1st Day **BRITISH NATIONALS**  
 (C) Open Rubber (M.A. Cup)  
 (C) Open Glider (Thurston Cup)  
 (C) Open Power (Sir John Shelley Cup)  
 Tailless (R/G/P) (Lady Shelley Cup)  
 Junior R/G/P (Frog Junior)  
 R/C Scale (Radio Modeller Trophy)  
 Multi R/C (SMAE Trophy)  
 C/L Aerobatics (Gold Trophy)  
 C/L Scale (Knokke No. 2 Trophy)  
 Handicap Speed  
 Combat  
 R/C Pylon Race

$\frac{1}{2}$ A Team Race (RAFMAA Trophy)  
 C/L Carrier (Provisional)  
 Rat Race  
 Mouse Race (Under 0-9cc)  
 Novelty Event (Evening Event)  
**May 25th** 2nd Day  
 FAI Glider 5 Flights  
 FAI Rubber 5 Flights  
 FAI Power 5 Flights  
 $\frac{1}{2}$ A Power  
 FAI Team Race (Davies Trophy)  
 Women's Cup R/G/P  
 Other Events Continuing  
 From 1st Day  
 Multi R/C, Scale R/C, Pylon R/C, Combat,  
 C/L Carrier  
 Extra Events:  
 Junior kit contest, Vintage  
**June 14th** 3rd Area Centralised Meeting Area Venues  
 (PL) FAI Rubber (Weston Cup)  
 (C) Open Power (White Cup)  
 Open Glider  
**June 21st** 4th Area Centralised Meeting Area Venues  
**July 12th** Meeting  
 (PL) Team Glider (M.E. Cup)  
 (C) Open Power (White Cup)  
 Coupe D'Hiver  
**July 19th** (x) R/C Centralised Meeting (Taplin Trophy)  
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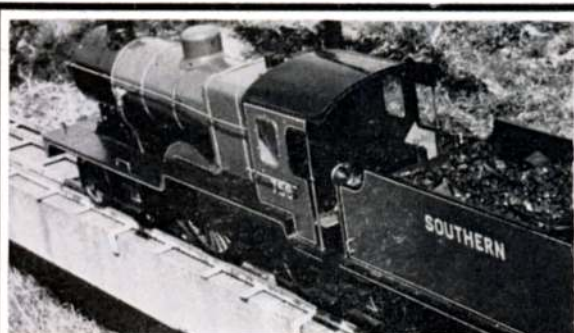
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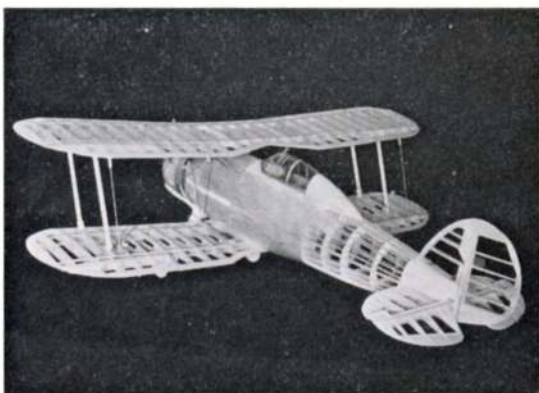
### MODEL ENGINEER November 7

Taking a short break from *County Carlow*, Don Young describes his modifications to a 'Maid of Kent'. R. M. Tyrrell argues the case for lineside accessories to add realism to garden railways, and demonstrates the ease with which they can be made. 'Artificer' submits a report of the M.P.B.A. International Regatta held in September at St. Albans. For the workshop methods and equipment enthusiast, 'Modifications to a Myford Lathe', by J. L. Blacklock, should provide some food for thought. Continuing his instructions for building *Royal Scot* in 'O' Gauge, Martin Evans describes the valve gear for this propane-fired 4-6-0.

### November 21

The Birmingham S.M.E. dynamometer car aroused great interest at the International Model Locomotive Efficiency Competition, held at the Birmingham track in June. Now at last, readers can study its design and construction, comprehensively described by Brian Hughes. Also, this issue of M.E. features the story of the first steam locomotive in Canada, and the 2½ in. gauge fraternity receives attention in an article about an 'Atlantic' locomotive in this gauge. Meanwhile, further instalments of 'the regulars', including 'Flash Steam', 'M.E. Traction Engine', 'Kitson and Hewitson Ploughing Engine' and *County Carlow*, while Martin Evans returns to the 5 in. gauge ring for another round of *Nigel Gresley*.

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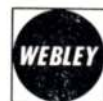
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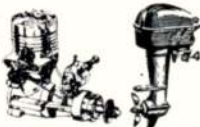
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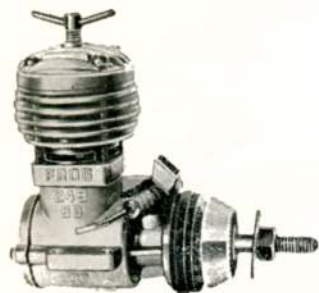
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