

SEPTEMBER 1971

Aero Modeller

INCORPORATING
MODEL AIRCRAFT



HOBBY MAGAZINE

15p. U.S.A. & Canada 75c.

WORLD CHAMPS FOR FREE-FLIGHT EUROPEAN CONTROL-LINE CHAMPS



Radio Controlled glider plans



What's the 'BUZZ' ?
A new engine arrives !



CHECK THE FEATURES!

- Front rotary intake ● Twin transfer ports
- Quickstart fitted ● Full accessory range
- Made to top engineering standards
- Tough construction ● Factory checked
- Hi-power and Lo-price
- Replaceable glow plug

THE

QUICKSTART

WASP · 049 ONLY £2.99

see them at your model shop NOW !

accessories for the Wasp

Radial Tank/Mount 63p



General Purpose Tank 31p



Quick Glow Clip 36p

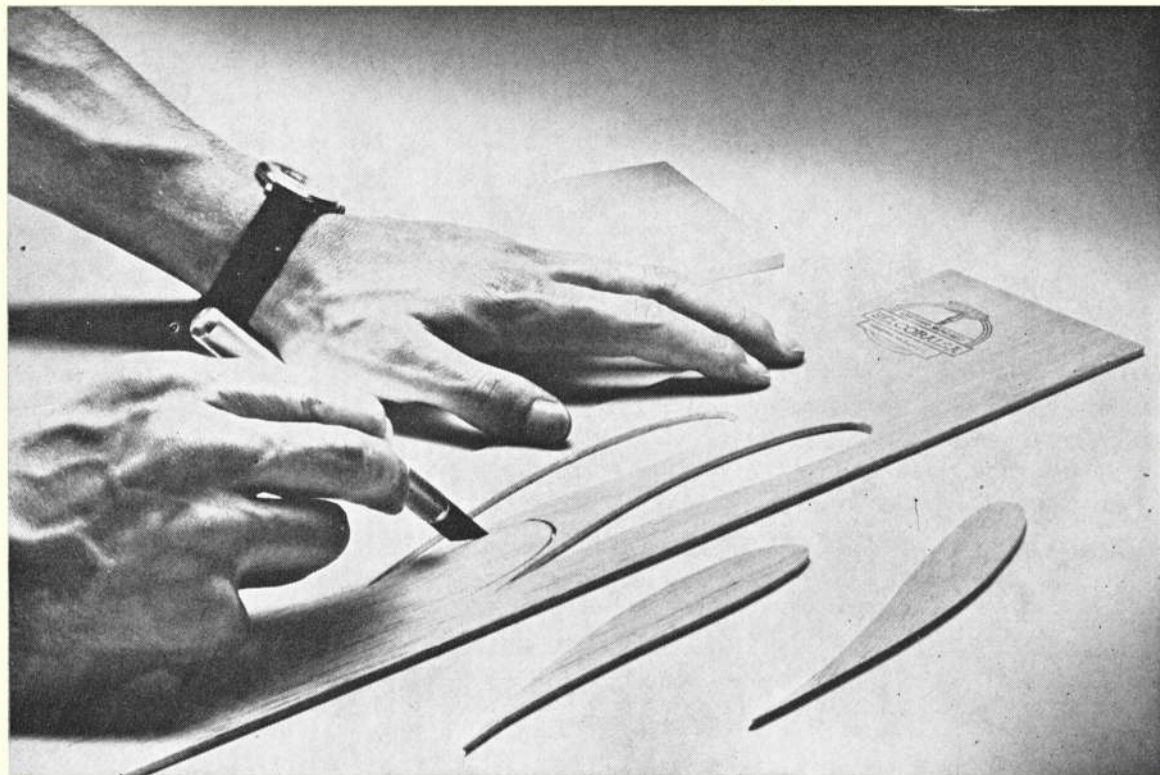
Special Wasp Spanner 26p

Exhaust Manifold (comes with collector) 60p



DAVIES-CHARLTON LTD. HILLS MEADOW DOUGLAS, Isle of Man

You
can be certain
of one thing...



BELCOBALSALSA

helps make you a top flight plane-maker

Ask any serious model plane maker what qualities he looks for in his Balsawood and he will tell you he searches for even grain, superb finishing, accurate grading and constant quality. He may well be looking at BELCOBALSALSA.



Not every Balsa tree finds its way to the Balsawood Company's factory but even fewer are processed out through the marketing section devoted to the modelling world . . . our quality control sees to that. The Belcobalsal symbol flies all over the world but it is down to earth keen understanding of the requirements of model men that promotes

BELCOBALSALSA — the stuff that flying is made of

ASK YOUR WHOLESALER

THE BALSAL WOOD CO. (IRELAND) LTD., Kinsale, Co. Cork



KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

"VERON" for VALUE!

VALUE IN QUALITY - IN PERFORMANCE - IN SATISFACTION!



52" span

Only 52" Span but ample area (wide chord wings) to carry Full House Miniaturised 'Propo' - still leaves enough room in the car for the wife and kids! Why did we choose the 'Tomtit'? - well, nobody's ever done it before! Something pleasantly different for a change!

WINGS ARE FULLY CANTILEVER

For motors of 23 up to 40 cu. in. (3.7 to 5.6 c.c.). The first in a long line of immortal Hawker Fighters, the only one with identical platform top and bottom wings - just build 2 wings - and cut the ailerons in the lower wings.

**KIT PRICE
£21.26**

OUR HAWKER 'TOMTIT' HAS ALREADY BEEN DESCRIBED AS THE WINNING KIT OF THE YEAR!

SCALE R.A.F. TRAINER
Circa: 1928 to 1939

PRE-CUT & DIE-CUT Balsa & PLY RIB & FORMER PARTS. HARDWOOD LONGERONS WITH PLY WEB, Balsa SHEET & STRIP ASSEMBLY. MANY PRE-CUT, PRE-SHAPED & PRE-FABRICATED PARTS. COMPLETE WITH PRE-BENT WING & UNDERCART STRUTTING. SCALE PLASTIC ENGINE PARTS. SCALE PALMER CORD WHEELS. SCALE SPINNER. AUTHENTIC VINYL DECALS.

VERON are now Sole Distributors for

R.C.P. RADIO

SUPER-HET

RECEIVER - RELAYLESS
5.5 x 3.8 x 2.3 cm.
Weight 40 grms.

RECEIVER - RELAY
5.5 x 3.8 x 2.3 cm.
Weight 40 grms.

Supply Voltage 9 Volts (P.P.3).
TRANSMITTER As for Super-Regen above.

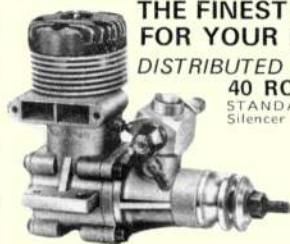
Tx's have colour-coding frequency tags on case.

PRICES
Transmitter Rx. Relayless Rx. Relay
£9.15 £11.85 £13.10
Harness: (for each) 90p.
Battery Box (for Electric Servo's) 38p.



40 RC

IDEAL FOR THE 'TOMTIT'



THE FINEST ENGINES FOR YOUR MODELS

DISTRIBUTED BY VERON

40 RC
STANDARD £22.09
Silencer £3.32

88 B.H.P. at 14,500 r.p.m.



SUPER-REGEN Above

RECEIVER - RELAYLESS
3.5 x 2.8 x 2.0 cm.
Weight 20 grms.

RECEIVER - RELAY
5.5 x 3.8 x 2.3 cm.
Weight 40 grms.

Supply Voltage 9 volts (P.P.3).

TRANSMITTER 10 x 13 x 5.5 cm.
Audio-tone Frequency 600Hz.

PRICES
Transmitter Rx. Relayless Rx. Relay
£7.35 £4.60 £5.90

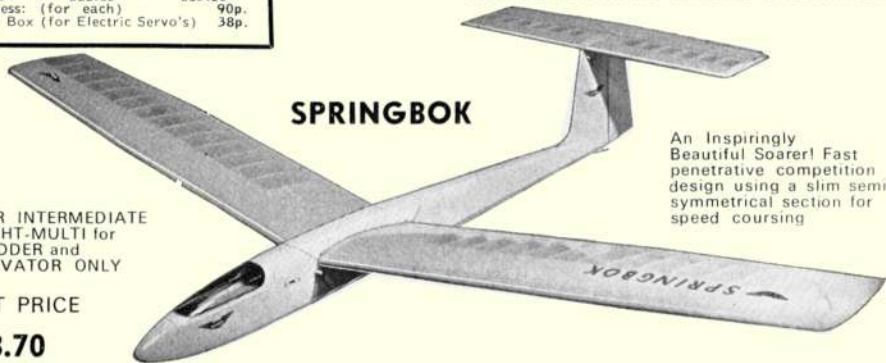
ECONOMY PRICE - SUPERLATIVE PERFORMANCE

72" T-TAIL HILLSIDE SOARER for INTERMEDIATE RADIO CONTROL

SPRINGBOK

FOR INTERMEDIATE LIGHT-MULTI for RUDDER and ELEVATOR ONLY

**KIT PRICE
£8.70**



An Inspiringly Beautiful Soarer! Fast penetrative competition design using a slim semi-symmetrical section for speed coursing

MODEL AIRCRAFT (B'MOUTH) LTD . NORWOOD PLACE . BOURNEMOUTH

DISTRIBUTORS IN CANADA: ACADEMY PRODUCTS LTD., 51 MILLWICK DRIVE, WESTON, ONTARIO.
DISTRIBUTORS IN AUSTRALIA: PIZZEY LTD., 1 CLARK STR., RICHMOND, MELBOURNE.

Aero Modeller

INCORPORATING
MODEL AIRCRAFT

September 1971 VOLUME XXXVI No. 428

CONTENTS

HANGAR DOORS	481
WORLD FREE FLIGHT CHAMPIONSHIPS	482
FLYING SCALE MODELS - Part VII	486
GOLDEN WINGS CLUB	499
OLD WARDEN	500
'JAGUAR'	502
AIRCRAFT DESCRIBED - S4 Kania-3	504
LATEST ENGINE NEWS	507
CONTEST CALENDAR	510
TOPICAL TWISTS	511
CRITERIUM OF EUROPE	512
CLUB NEWS	522
INDOOR AT CARDINGTON	523



HOBBY MAGAZINE



ALSO MODEL BOATS · MODEL CARS · RADIO CONTROL MODELS & ELECTRONICS · MODEL ENGINEER · MODEL RAILWAY NEWS · MECCANO MAGAZINE · SCALE MODELS · WOODWORKER and MILITARY MODELLING

This periodical is sold subject to the following conditions: that it shall not, without the written consent of the publishers, be lent, re-sold, hired-out or otherwise disposed of by way of the Trade except at the full retail price of 15p or 75 cents and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication of advertising, literary or pictorial matter whatsoever.

Second-class postage rates paid at New York, N.Y. Registered at the G.P.O. for transmission by Canadian Post. American enquiries regarding subscriptions, news stand sales and advertising should be sent to AERO MODELLER, Eastern News Distributors Inc., 155 West 15th Street, New York, N.Y. 10011 U.S.A. U.S.A. and Canada direct subscription rate \$6, including Index.

Advertisement and Subscription Offices: Model & Allied Publications Ltd., 13/35 Bridge Street, Hemel Hempstead, Hertfordshire. Tel. Hemel Hempstead 2501-2-3.

Direct subscription rate £2.35 per annum including December edition and Index.

CORRESPONDENCE anticipating a reply to addresses within the United Kingdom must be accompanied by a stamped and self-addressed envelope. News reports should be submitted to arrive not later than the 15th of each month for publication in the next immediate issue. Photographs should be accompanied by negatives where possible and can only be accepted for use on an exclusive basis for British Copyright.

AERO MODELLER incorporates the MODEL AEROPLANE CONSTRUCTOR and MODEL AIRCRAFT and is published on the third Friday of each month prior to date of publication by:

MODEL & ALLIED PUBLICATIONS LTD.

13-35 Bridge Street, Hemel Hempstead, Herts

Tel.: Hemel Hempstead 2501-2-3 (Mon.-Fri.)

Editorial Director **D. J. LAIDLAW-DICKSON**
Managing Editor **R. G. MOULTON**
EDITOR **P. S. RICHARDSON**
Advertisement Manager **ROLAND SUTTON**

COMMENT

Government money for subsidising overseas travel is to be increased by £43,000. The estimates for 1971-72 amount to a gross of £168,000. This has been officially announced by the Sports Minister, Eldon Griffiths. At the same time, the Minister stated that the Sports Council have recommended a limit of 50 per cent of approved travel costs for any one team unless the circumstances are exceptional and justify an increase. The significance is that the additional allowance, coupled with the restriction which has not been applied before, will provide a bigger spread over the sports involved.

Aeromodelling is not classified as a sport. Unlike Fencing or Archery, it is said not to involve physical exercise. The point is arguable but the fact remains that a British team has just competed against 36 other Nations in a World Championships at its own expense. Would that the Sports Council could donate just one quarter percent of its annual allowance to spare our aeromodelling representatives the embarrassment of being out of step with the rest of the world!!

on the cover

Miss Margaret Leicester poses with fiancé Dave Hipperson's Wakefield, which went on to win its contest in the British Nationals at R.A.F. Hullavington.

next month

Plans for Orcrist, Steve Jones' Nationals combat winner. For less experienced control line pilots, full-size plans of Reaction - a snappy 30 in. span stunter designed especially for Juniors. Technical and model developments from both the recent F/F World Championships and C/L Criterium of Europe. All this, plus regular features, on sale September 17th.

Model Railways

Model Railway News
THE BIGGER

£250
in prizes!
Locomotives
Layouts Trade

**August 26th—
September 4th**

EXHIBITION

CENTRAL HALL, WESTMINSTER, LONDON, S.W.1.

ANNOUNCING . . .

MODEL RAILWAYS, the new bigger, better Model Railway News, makes its bow to the public with the issue dated September and appearing in August. This issue will be in the new popular A4 size, that is 11½ ins. deep by 8½ ins. wide. This will give us more opportunity for bigger and clearer half-tone illustrations and bigger drawings and layout and more drawings of locomotives and rolling-stock.

We shall continue our policy of an all colour cover and add to it in the shape of some spot colour, that is to say a second colour, on some of the inside pages and where we get a really lovely picture we will try and manage an inside picture or page of colour pictures to really do justice to beautiful layouts or beautiful models.

We are happy to announce that Roy Dock has rejoined the team and will be editing MODEL RAILWAYS, he is renewing his acquaintance with all levels of the model railway world and will, we are confident, recruit a great team of expert contributors.

OUR EXHIBITION . . .

The new MODEL RAILWAYS comes at the traditional beginning of the model railway season and we had an opportunity of taking Central Hall, Westminster, over the Bank holiday period, so, for the first time, we are sponsoring an exhibition devoted to the smaller gauge of Model Railways. This differs from previous exhibitions in that it is at the beginning of the modelling season rather than the end. It lasts for nine days, which includes two Saturdays and a Bank holiday Monday so that we feel there should be a great opportunity for enthusiasts to visit us for many in London, perhaps on holiday, who would not otherwise have had the opportunity.

PROPRIETARY LAYOUTS

Will include LGB (the big garden size); Fleischmann - a special layout sent over from Nuremberg; Rivarossi - three different including scenic 00, the Atlas N gauge and an O gauge loop; Triang-Hornby - all the latest; Marklin - an old favourite; Minitrix - another popular small size. In many cases visitors will be allowed - even encouraged! - to try these layouts for themselves!

MODEL SHOPS

In addition to showing proprietary layouts, manufacturers or their U.K. agents will be offering latest catalogues and retail shops will be able to sell goods over the counter. Among those present we are happy to number Beatties, Chuffs, Studio-lith, Traction Engine Enterprises, Wholesalers and Sole Agents include A. A. Hales Ltd. and M. & R. Ltd.

CLUB & INDIVIDUAL LAYOUTS

Popular Tramway & Light Railway feature: Hornby Railway Collectors Association with collectors 'tinplate' layout; a grand scale-mile of American type scenic in HO, Southend's Oval; layouts in O, N, 3m/mm large and small . . . plus club and individual models on show.

Enquiries to
Exhibition Organiser

MODEL & ALLIED PUBLICATIONS LTD.

13/35 BRIDGE ST.
HEMEL HEMPSTEAD

This is it!

ON SALE

13th
AUGUST

20p



More &
Bigger
pages
Super
Features

11½ x 8½ ins.

ADMISSION . . .

Hours of Opening:-

The exhibition will be open on the 26th August 1971 at 10 a.m. and will continue through daily to 9 p.m. except Sundays when it will be closed, and will finish on Saturday, September 4th at 7 p.m.

It will be open on the two Saturdays and on the Bank holiday Monday all day.

Prices of Admission:-

Price of admission at the door will be 25p adult, 15p child. A child is regarded as anyone still at school. Children under 5 who have not started school and are accompanied will not be charged.

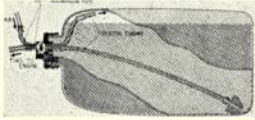
Reduced admission charges for pre-booking is under:-

Single and small number pre-booking tickets available from these offices. Adult 22½p, Child 12½p. Parties of more than 10: Adult 20p, Child 10p. Teachers i/c parties free - one per 10 in party.

A combined family ticket can also be bought in advance.

RipMax for all your ACCESSORIES

RIPMAX-IM PRODUCTS



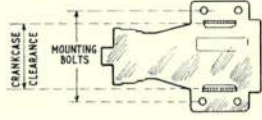
PROFILED CLUNK TANKS
The ideal tank shape. Neoprene plug (3 holes can be used); durable silicone flex tube and aluminium pipes.

2 1/2oz.	'Profiled' Klunk Tank	37p
4oz.	'Profiled' Klunk Tank	48p
6oz.	'Profiled' Klunk Tank	54p
8oz.	'Profiled' Klunk Tank	56p
10oz.	'Profiled' Klunk Tank	58p
12oz.	'Profiled' Klunk Tank	59p
11oz.	'Profiled' Extra Short	59p
3/32"	SILICON TUBING (40" l'g)	
	Thinwall ...	42p
	Heavywall ...	42p

SCREW-UP FILTERS

Tank type	... 29p
Line type	... 29p

ENGINE MOUNTING TEMPLATES (METAL)



Accurate patterns of engine plan views showing mounting hole positions and crankcase width. You can tell the difference between mounting holes of engines just by comparing the templates.

OS	09	05	60F
	15		60R
	19 all	ENYA	09 all
	30		19
	35		35
	40		45
	58		60
Mounting Template for	K&B 40R	...	14p



1/2 SCALE PAINTED PILOT 39p
ditto, with visor ... 48p
1/12 SCALE PAINTED PILOT 39p
(with detachable visor)

FULL LENGTH PILOT
Seated position in regulation flying clothes. Unpainted for colouring as shown (or to choice).
1/4 scale ... 95p
1/10 scale ... 79p
Moulded in white plastic.

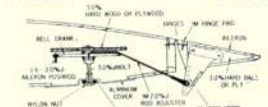
GRIP TUBES
A new positive type of binding for pushrod end fittings, etc., etc. Simply cut to length, slip on and heat-shrink in position.
Large Tube (18") 19p
Small Tube (18") 19p

NOISELESS THROTTLE LEVER

Moulded nylon throttle arm gives freedom from 'noise' on R/C models. Pack of 2 16p

NYLON HORN (RUDDER)
True geo-metric design for equal movement. Pack of 2 10p

SCREW-ADJUST HORNS (AILERON)
Metal and nylon. For strip ailerons. Pair 32p



DIFFERENTIAL CRANK KIT
A complete kit for providing selectable differential movement on conventional inset ailerons. 46p



COCKPIT INSTRUMENTS
True to scale and fully detailed printed instrument panel gauges (including alternative forms where applicable).
5 mm ... 39p
7 mm ... 39p
12 mm ... 39p
9 mm ... 39p

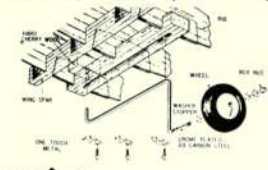
PUSH ROD EXIT GUIDES
Semi-hooded type (2) ... 13p

JUSTIK CABLE ANCHORS
Self-adhesive base with metal arms bent to anchor cables, etc. Packet of 6 ... 18p

JUSTIK SERVO RAIL SUPPORT
Self-adhesive brackets for mounting servo rails. Packet of 4 18p

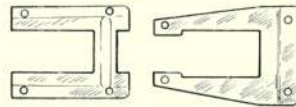
CAM LOCK FASTENERS
Complete with hardwood blocks and bolts, etc.
Small (pr) 44p
Medium (pr) 44p
Large (pr) 44p

LOW WING U/C ASSEMBLY
15-30" 57p 35-45" 65p 49-61" 69p



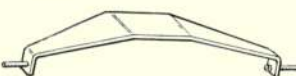
STEERABLE NOSEGEAR
Made of piano wire with hard nylon bearings (free from electrical 'noise'). Steering arm can be fitted above or below bearing.
Lightweight 77p
Heavyweight 1.05
Brake Assembly 29p

RIPMAX 'MK' ACCESSORIES



ENGINE MOUNTING PLATES
In heavy gauge high strength light alloy. In four sizes accommodating most engines.
0.06-0.12 ... 37p
0.15-0.19 ... 43p
0.29-0.40 ... 48p
0.45-0.61 ... 55p

STEERABLE NOSEGEAR
Single and twin leg designs with coil spring. Nylon steering arm and bulkhead mounting bearing. Complete with fixing bolts, etc.
09-15 size 79p
19-29 size 87p
35-45 size £1.21
49-61 size £1.33



DURAL U/C WITH AXLES
Heavy gauge high tensile metal.
0.09-0.15 model size ... 53p
0.19-0.40 model size ... 74p
0.45-0.61 model size ... 79p

NYLON IN-LINE FUEL FILTER
Packet of 2 ... 30p

CAM LOCK WING FASTENER
Packet of 2 ... 89p

KWIK KEEPERS
Ingenious clip-on lock device.
Packet of 6 20p

PUSH-ON GLOW PLUG CLIP
Complete with leads. £1.07

PUSHROD EXIT GUIDES
Fully faired design in moulded plastic.
Packet of 2 17p

AILERON ADJUSTAHORN
Small (pr) 17p
Large (pr) 28p

ELEVATOR HORNS
Complete assembly with bushings.
Centre horn 22p
Offset horn 22p
Differential horn 22p

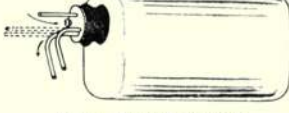
Suitable for control line or radio control models

NYLON SPINNERS
for 2-blade props.
1 3/4" dia. ... 64p
2" dia. ... 69p
2 1/4" dia. ... 76p
2 1/2" dia. ... 84p
2 3/4" dia. ... 94p

ADJUSTA-HORN (for RUDDERS)
Packet of 2 15p
(for AILERONS)
Small (pair) 17p
Large (pair) 28p

RIPMAX-MK LINKAGES

Long Yoke K-Link (pkt 2) ... 34p
Set K-Links with Rods, etc. ... 34p
Pushrod Holder & Keepers (2) ... 34p
Nylon Kwik Link (packet 2) ... 22p



OVAL CLUNK TANKS
50 c.c. (1 3/4 ounce) Tank ... 74p
100 c.c. (3 1/2 ounce) Tank ... 86p
150 c.c. (5 1/4 ounce) Tank ... 94p
220 c.c. (7 3/4 ounce) Tank ... 99p
320 c.c. (11 1/4 ounce) Tank ... £1.05
SQUEEZE BOTTLE with Spout 29p

NYLON C/L BELLCRANKS
2" 14p 2 1/2" 17p 3" 19p

RETRACTABLE UNDERCARRIAGES

MAIN U/C Nylon (pair) ... £3.95
NOSE U/C Nylon ... £3.95
MAIN U/C DURAL (pair) ... £10.50
NOSE U/C DURAL ... £7.45
MASTER RETRACT SERVO ... £8.75
AUXILIARY RETRACT SERVO ... £8.75

MINI CONNECTORS
Miniature plugs and sockets.
6-pin ... 30p
8-pin ... 40p

RIPMAX-MK 'FLATTIE' BRUSHES
1 1/2" ... 7 1/2p 1 3/4" ... 14 1/2p
3/4" ... 9p 1 1/2" ... 18p
1" ... 11 1/2p 1 3/8" ... 22p

MISCELLANEOUS
DC ENGINE RADIAL MOUNTS
Dart ... 27p Bantam ... 27p
ENGINE SILENCERS for DC, ENYA, HP, COX and other engines, from 57p.
THROTTLES & ENGINE SPARES for DC, ENYA, HP, etc.
ELECTRICAL ACCESSORIES
A complete range for R/C models.
Whatever your requirements, there is bound to be the item you require in
THE RIPMAX RANGE!

SEE THEM ALL AT YOUR LOCAL MODEL SHOP!

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

Michaels Models of Finchley

Selected Items

RADIO

Skyleader Clubman	
3 Tx & Rx	£48.65
4 Tx & Rx	£59.20
6 Tx & Rx	£71.70
FB3 Servo	£11.95

MacGregor Digimac III

MR 800 Tx	
MR 80 Rx	
AP04 Rechargeable power pack, switch and harness	
AP08 Tx & Rx Charging harness	
All for	£34.75
MR 10 Digimac Servo	£10.50
All MacGregor Single Channel available.	

ENGINES D.C.

Wasp	£2.99
Super Merlin	£4.39
Spitfire	£4.77
Sabre	£5.06

ACCESSORIES

MFA Glow fuel	
1/2 Gallon	75p
1 Gallon	£1.20
(Callers only, please).	
Micro Mold, Solarfilm, Devcon, P.B. R/C racing cars, Stabilit, Kavan, P.B. Low bounce wheels, Balsa block, sheet, strip, ply, tissue, paints, etc.	

Also Available: Flight Link, Futaba, K&B, Veco, Fox, Cox, Merco, P.A.W., O.S., Enya, Mercury, Contest Kits, RipMax, Graupner, Top Flite and many others.

Send S.A.E. for our list, state whether Kits & Accessories list or secondhand engine list. Barclaycard & Paybonds welcomed. P&P 5p per £1, over £5 free, except overseas.

MICHAELS MODELS

646-648 High Road, N. Finchley, London N12 0NL.
Tel. 01-445 6531.

Closed all day Monday.

Easy Parking

LONGER LIFE

BRIGHTER GLOW

JOY LUMINOUS PAINT

See in the dark with JOY Luminous Paint. Ideal for use on skeletons, toys, models, novelties, light switches, door numbers, paper, cardboard, and materials etc. Light active but not radio active. Outfits contain Base Reflecting Coat and Top Luminous Coat. Green shade only.

JOY is a registered trade mark of TURNBULLS LTD., LONDON, S.W.17.



See in the dark with JOY Luminous Paint. Ideal for use on skeletons, toys, models, novelties, light switches, door numbers, paper, cardboard, and materials etc. Light active but not radio active. Outfits contain Base Reflecting Coat and Top Luminous Coat. Green shade only.

JOY is a registered trade mark of TURNBULLS LTD., LONDON, S.W.17.

M MODEL HOBBY CONSORTIUM



ENGLAND'S LARGEST MODEL SHOP

Overseas Orders please deduct 14p in £ British Purchase Tax

363 Lewisham High Street, London, S.E.13

01-690 5885 PAYBONDS BARCLAYCARD

Mail order - instant turn round P.&P. UP TO £3, 15p; OVER £3, FREE EXCEPT OVERSEAS

Due to increased postal charges, it is regretted that no letters can be answered unless accompanied by a S.A.E.

DIESEL AND GLOW

ENGINES

D.C.	
WASP	£2.99
SABRE	£5.06
SPITFIRE	£4.77
MERLIN	£4.02
DART	£5.06
BANTAM	£3.03

MERCO	
61 R/C	£21.73
49 R/C	£20.65
35 R/C	£11.20
29 R/C	£11.20

O.S.	
15 R/C	£8.60
10 R/C	£5.99

FROG	
100	£4.30
150	£4.95

E.D.	
SUPER FURY	£5.61

ACCESSORIES

PUSH-ON GLOW CLIPS	£1.07
FULLY ADJUSTABLE GRAUPNER LINKS	31p
SWING-IN KEEPERS	16p
PLUG SPANNER	70p
HINGE MATERIAL	15p

BATTERY BOXES HP7	
2 CELL	20p
3 CELL	23p
4 CELL	25p

D.C. CONTROL LINE HANDLE	56p
K/K CONTOURED HANDLE	21p
K/K JUNIOR HANDLE	11p
ENGINE TEST STAND	£1.00
GLOW PLUG; CLIP & LEAD	34p
D.T. FUSE	7½p per 6 ft.
UNIVERSAL NEEDLE VALVE	32½p
INSTRUMENT SETS	25p
5" RODS & LINKS	(pair) 20p
DAVID 4-WAY PLANE	92p

GRAUPNER, KAVAN, MICROMOLD, MAINSTREAM, E.D., KEILKRAFT, RIPMAX ACCESSORIES	
DEVCON 5 min. EPOXY	44p
STABILIT 20 min. EPOXY	46p

KITS

R/C	
45" S/C OUTLAW	£5.95
56" M/C STUDENT	£12.60
48" S/C MINI SUPER	£8.95
63" S/C M/C SUPER 60	£10.95
54" M/C FLEETWING	£10.95
36" S/C GYRON	£5.95

CONTROL LINE	
26" SKYSTREAK 26	£1.40
40" SPECTRE	£4.20
22" RADIAN	£1.90
30" PACER	£2.20
30" MARQUIS	£3.50
30" DEMON	£3.30
19" JOKER	£1.40
26" RANGER	£1.90
32" FIREBIRD	£2.75

FREE FLIGHT	
42" LADYBIRD	£2.70
40" SNIPE	£1.95
42" HALO	£1.95

RUBBER-POWER	
32" SENATOR	85p
23" ROBIN	99p
30" ACE	75p
32" COMPETITOR	99p
40" GYPSY	£1.50
30" AJAX	85p
24" EAGLET	70p
20" FLAYBOY	45p

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS



*at your nearest
model shop!*

THE NEWEST! LATEST!

$\frac{1}{2}$ A class Glowplug

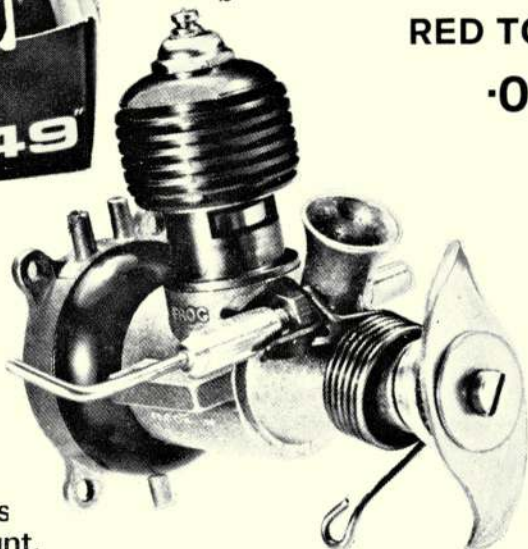
RED TOP

·049 engine

**HALES
FROG
VENOM**

£3.85

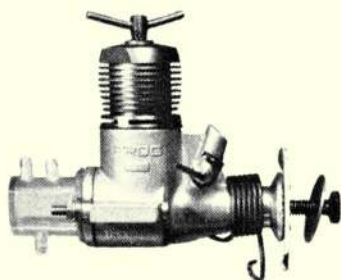
Full power porting with front rotary valve, twin transfers and two high speed exhaust ports make the VENOM a .8 c.c. contest/sport motor par excellence comes complete with radial tank/mount.



HALES FROG DIESELS

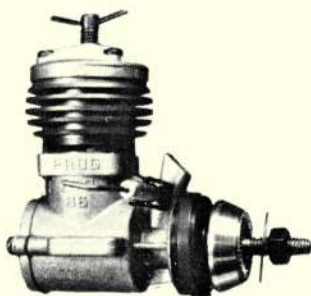
**FOR SPORT OR
CONTEST FLYING**

Choose FROG for easy starting and power to please



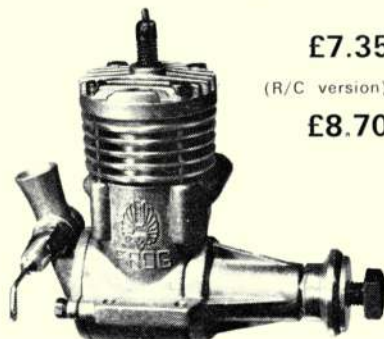
FROG 100 Mk. III £4.15

A high-speed rotary valve engine (16,000 r.p.m. plus) specially developed for easy starting.



FROG 249 BB £7.20

2.5 c.c. twin ball race racing engine. Develops well over $\frac{1}{4}$ b.h.p. whilst retaining easy starting and handling.



FROG 349

The ideal Power Plant for Combat or the larger sizes of free flight and control line models. Also Radio Control version.

£7.35

(R/C version)

£8.70

A. A. HALES LTD., P.O. BOX 33. HINCKLEY, LEICESTER, LEICS. Tel: Hinc. 4746

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

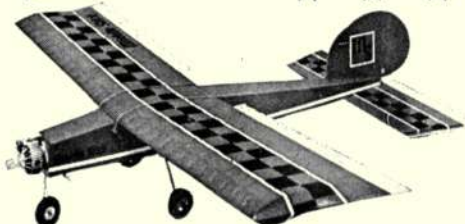
Graupner

AT YOUR LOCAL MODEL SHOP!

True super quality DE LUXE kits . . . Each kit is engineered from selected 'aircraft grade' materials throughout . . . and specially noted for the high degree of prefabrication and COMPLETENESS.

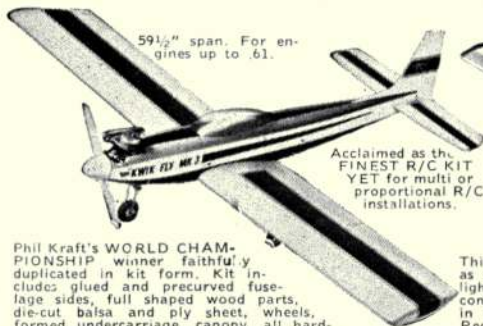


Phil Kraft's R/C 'Intermediate' MIDDLE STICK ... £15.65



KWIK FLY Mk 3 ... £19.65

59 1/2" span. For engines up to .61.



TAXI ... £12.80

59" span

Claimed as the **FINEST R/C KIT YET** for multi or proportional R/C installations.

This model has been specially designed as a trainer or 'Sunday flyer' for multi or lightweight proportional R/C gear. QUICKIE construction, the kit being extensively prefabricated in balsa, ply and balsa ply - plus all hardware, etc. Recommended engine sizes 1.5 c.c. up to 3.5 c.c. (09's to 19's).

Phil Kraft's **WORLD CHAMPIONSHIP** winner faithfully duplicated in kit form. Kit includes glued and precurved fuselage sides, full shaped wood parts, die-cut balsa and ply sheet, wheels, formed undercarriage, canopy, all hardware, decals, etc. Fully detailed plans with separate overlay plan of radio installation. Spare canopy 53p.

TOPSY ... £3.45

32" span

For long time a popular favourite in the Graupner range for 0.5 c.c. diesels or 049 glow engines. Originally designed as a free flight model, but equally suitable for radio control (rudder only). The kit is very well presented, and complete and makes a stable, easy-to-fly sports model.

OTHER POWER KITS (not illustrated)
41" CONSUL £9.95
 Single- or 2-channel R/C model with foam plastic wings, tail and fuselage.
46" KADETT £5.40
 High-wing cabin monoplane.
 For F/F or R/C.
28" MINI PIPER Fully prefab £5.90
QUICKIE KIT

FLOAT KIT £4.95
 For models under 7 3/4 lb. all up weight.

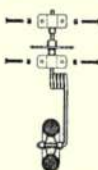
43 1/4" span R/C trainer or sports model for engines up to 1.5 c.c. Kit includes full length die-cut fuselage sides, other prefabricated parts, shaped wire parts, hardware, wheels, adhesives, decals, etc. An easy-to-build model with an exceptionally stable flying performance. Good looks, too!

AMATEUR ... £7.65



For 2- or 6-channel radio or lightweight proportional.

accessories



NOSELEGS (Steerable)

L/W Short £1.19
 L/W Long £1.19
 Bulkhead fit £1.98
 Belly fit £2.34
 (All the above are single leg steerable)
 Noseleg bracket £3p
 Jacket of 2 34p
 Steering arm (2) 34p

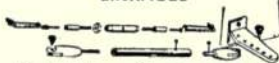
SPINNERS

1 1/4" 3-bl. 22p
 1 1/2" 3-bl. 26p
 1 1/2" 2-bl. 14p
 1 1/2" 2-bl. 15p
 1 3/4" 2-bl. 16p
 2 1/2" 2-bl. £1.15
 1 1/2" metal 62p



NYLON 3-BLADE PROPELLERS
 3 x 6 ... 64p 9 1/4 x 5 ... 72p
 Metal Hub Bush 1/4" or 1/8" 5p

HUB LINKAGES



Metal linkage (illus top) set 37p
 Moulded linkage, set 23p
 Extension tubes 20" x 5 mm 20p
 For above 20" x 7 mm 20p
 Quick-Clip linkage (pair) 37p
 Adjustable Throttle Linkage 27p
 Horn and snap-on link 37p
 Snap-on Aileron Link set 42p
 Clip-on Keeper 6p
 Metal Arm (horn) pkt. 2 35p
 Nylon Horn 9 1/2p
 90° Nylon Crank (pkt. 2) 24p
 120° Nylon Crank (pkt. 2) 24p
 Graupner Wing Bolts (set) 64p



Bowden Cable with Links 38p
 PUL LENGTH PILOT 76p

GRAUPNER RECORD WHEELS

1 1/2" (30mm) 34p 2 3/8" (60mm) 59p
 1 3/4" (40mm) 39p 2 1/2" (70mm) 78p
 2" (50mm) 47p 3 1/2" (90mm) 113p
 2" (50mm) Scale Sponge 62p
Graupner Round Clunk Tank
 Suitable for R/C or C/L models.

100cc 81p/oz
 35p
 200cc 77p
 90p
 300cc 10 1/2 oz
 99p

100 cc Square Clunk tank 69p
 250 cc Square Clunk tank 76p
 500 cc Square Clunk tank 84p
 20 cc Metal (for Consul) 80p
 60 cc Metal (for Amateur) 99p
 Graupner in-line Fuel Filter 30p
 200 cc Squeeze Bottle 29p
 500 cc Squeeze Bottle 43p
 Flat Nylon Hinges each 4p
 Capped Nylon Hinges each 4p
 One-piece Polypropylene Hinge 2p



GRAUPNER ENGINE MOUNTS
 049-09 19p 29-61 £1.79
 BACKPLATE MOUNT 29-61 64p
 ENGINE PULL STARTER £5.95

GLIDER ACCESSORIES
 TOWLINE H'DLE & LINE 38p
 TEMPO GEARED WINCH £3.90

CONTROL LINE KITS



FOCK WULF FW190 £8.90
 39" span. Engines up to 3.5 c.c.



DORNIER Do27 31 1/2" span ... £7.35
KLEMM KL-107 28" span ... £6.15
ULTRA STUNTER 35 1/2" span ... £5.40

Who better than a world-famous German firm to engineer a kit of this outstanding World War II fighter! Makes a really authentic model with a thrilling flight performance.

MUSTANG 29 3/4" span semi-profile scale Aerobatic model for quick assembly. £5.90

RipMax Ltd 80 HIGHGATE RD LONDON, N.W.5

other Graupner Agents include—

U.S.A.: POLKS MODEL HOBBIES, 314 Park Avenue, New York, N.Y. 10017

AUSTRALIA: PAUL GROSMANN, 184 Tinian Road, Adelaide, S.A. 5000

HONG KONG: RADAR CO. LTD., 2 Observatory Road, Kowloon, N.K.

N. ZEALAND: BUSTON BRADFORD, 261 Willie Street, Wellington, C.Z.

S. AFRICA: PHIL & BRUYN, 85 Priekard Street, Johannesburg.

top modellers choose

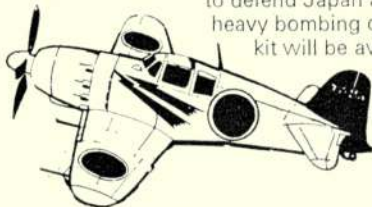
Revell[®] every time!

**H146 HUGHES CAYUSE
'CHOPPER'** This amazingly
versatile 'mini-chopper' has been
combat tested in hundreds of 'search and
destroy' missions. Returning fighting men to
base under fierce enemy



fire it proved capable of surviving severe
damage without being shot-down. Detailed
cockpit layout with clear windows. The
finished model has a fuselage length of 8½"
with a 9¾" rotor span. Scale: 1/32.

H288 MITSUBISHI RAIDEN J2 M3 The Japanese navy
'Thunderbolt' produced in 1943 as a swift interceptor fighter
to defend Japan against the ravages of the
heavy bombing of America's B 29's. (This
kit will be available October.)



**H280 P38 J LOCKHEED
LIGHTNING** The famous
'fork-tailed devil' of
World War II, this
superbly detailed kit
was scaled from the

actual aircraft at the Air
Museum in Ontario,

California. It bears the
personal markings of American air ace
Major Richard I. Bong, and the finished
model is 14½" long with a 19½"
wingspan. Scale: 1/32



For a faultless finish...

—always ask for Revell Paints and Cement

Make even better models! get the full colour Revell Catalogue

—now packed with expert hints and
tips for perfect modelling!



Simply send P.O. for 15p to:
**REVELL (G.B.) LTD.,
CRANBORNE ROAD,
POTTERS BAR, HERTS.**



KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

Veteran - Vintage

Aeroplane/Motor Rally 71

Wycombe Air Park, Booker, Marlow, Bucks
Sunday, 26 September 1971

Vehicles on Display from 10.00 a.m.

Air Display 2.00 p.m.

A fun gathering of some 500 veteran and vintage cars, fire engines, steam engines, buses, motor cycles

Aircraft and Gliders

Fun fair, Brass Band, Auto Jumble

'Hell on Wheels' Jeep Display Team

'Red Devils' Parachute Team

Flying Display of Vintage aircraft including:

Rothman's Aerobatic Team

Eindekker and Morane

(World War I Replicas)

Hart, Swordfish, Hurricane, Spitfires and many others

Joint Organisers: Mr. J. Atkinson, General Manager,
Airways Aero Associations Limited, together with
Mr. J. Burt-Smith

Admission: £1.00 per car including occupants

PROFILES of Windsor present ...



Me 163 Komet

(PROFILE No. 225)

by Col. Wolfgang Späte &
Richard P. Bateson

A brilliant collaboration between one of the best-known British historians on Luftwaffe aircraft and an illustrious name, one of the elite band associated with the revolutionary Me 163 rocket-fighter from 1942 onwards. The 24-page, 7,500-word narrative, with over 40 photos, is excitingly enhanced by four pages of full-colour artwork impressions . . . from the all-yellow D.F.S. 194 to the 'Richt-hofen red' Me 163 B-O V 41 flown by Späte on the world's first rocket sortie, May, 1944. An outstanding Profile!



ALSO READY NOW . . . F-105 Thunderchief

(PROFILE No. 226)

by Theodore van Geffen Jr.

Th. W. van Geffen Jr. makes no secret of his unbounded admiration of Republic's 'Thud' and its U.S.A.F. crews. As background to preparing the 24-page, 7,500-word F-105 story (45 photos and four pages of colourful Profile artwork views of F-105Bs, 'Ds and 'Fs), van Geffen flew from the Netherlands to visit many 'Thud' bases in the U.S.A. Like its glorious Thunderbolt predecessor, the F-105 proved to be a 'tough cookie' capable of absorbing fantastic combat damage. Very much a contemporary Profile!

Nos. 225 & 226 NOW AVAILABLE . . . and obtainable (along with No. 224 Supermarine Walrus I & Seagull V) from your local book shop, model shop and some newsagents. Only 35p each Profile (in U.S.A. \$1.50). In case of difficulty, write (enclosing for each Profile 40p incl. p.&p.) direct to the publishers. New! Send 3p s.a.e. for alphabetical and country-by-country Nos. 1-235 Aircraft Profiles Finder Folder List, just printed.

PROFILE PUBLICATIONS LIMITED

(Dept. AP AF) Coburg House, Sheet Street,
Windsor, Berks SL4 1EB

The Point Is....

that this X-acto knife is one of a family. There are nine different X-acto knives and 28 different interchangeable blades. There are tools and tool sets in the X-acto range designed to beat every conceivable building problem. Carving, sanding, slicing, stripping, routing, bending, sawing, soldering, clamping, drilling, gouging, there is an X-acto tool for all operations.

Once you have used these marvellous tools you will wonder how you ever managed without X-acto. Why handicap yourself by not having them? X-acto is on sale at all good modelling shops.

X-acto[®] tools

DISTRIBUTED BY:

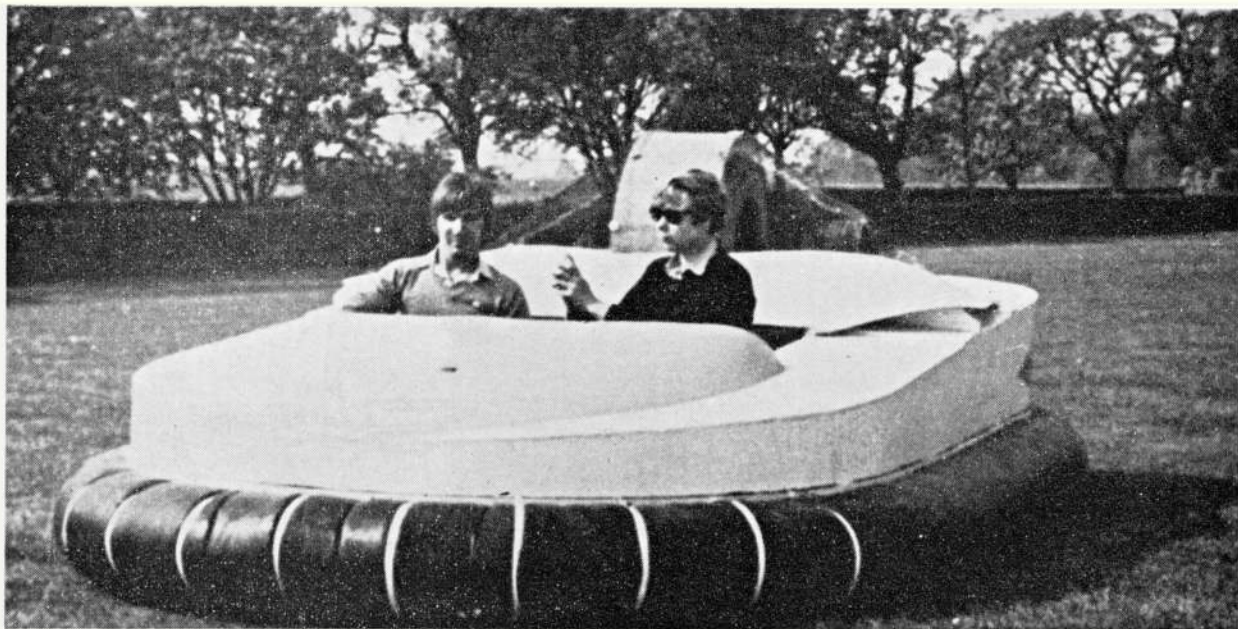
E. KEIL & CO. LTD.,

WICKFORD,

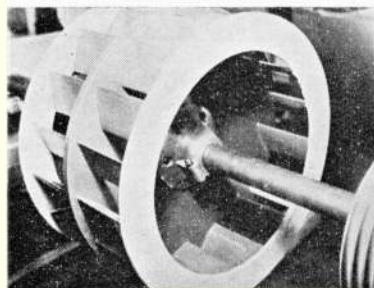
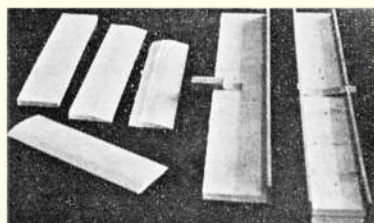
ESSEX



X-acto



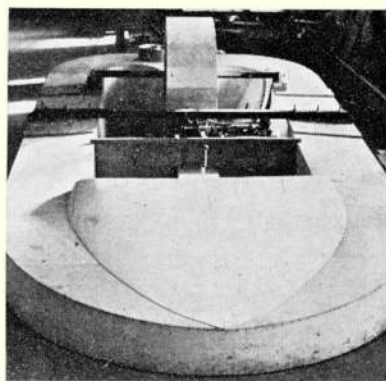
GETTING OFF THE GROUND with Balsa*



Top photo shows stages in blade construction. Bottom - fan assembly. Far right - the complete construction in stitch-jointed ply, covered with glass fibre tape. Photos from James W. J. Rawlings, of Gordonstoun School.

A group of enthusiasts at Gordonstoun School mean to get off the ground - literally. The photograph above is the first hovercraft they have built, and a second version is on the way. One of the most interesting features is that the fan is built with Balsa blades - first cut from thick sheet to rough shape and then sanded to final shape in two jigs. The finished blades are pressed into slots cut in the centre disc, glued and then covered with a layer of glass fibre tissue. The whole fan is then statically balanced. Power unit is a Hillman Imp 875 c.c. engine - driving the fan at some 5,000 r.p.m. plus. Quite a remarkable performance from a 'Balsa blower' - but it shows what can be done. And obviously the fan construction is successful, for there have been quite a few modifications made to the hovercraft itself, but the fan has been untouched. In fact, two more fans of similar design are under construction for future craft.

* The more critical the application of Balsa, the more important Balsa selection and grading becomes. This applies equally well to models as full-size hovercraft - or any other application where the ease of fabrication and the high strength/weight ratio of Balsa is advantageous. That's where Solarbo Balsa scores (and why most modellers specify Solarbo by choice). Solarbo Balsa is properly selected and graded aeromodelling quality - the top standard. The name also ensures that *extra* quality of reliability, which can mean so much.



Solarbo Balsa

SOLARBO LTD.,
COMMERCE WAY, LANCING, SUSSEX

ALWAYS ASK FOR IT BY NAME

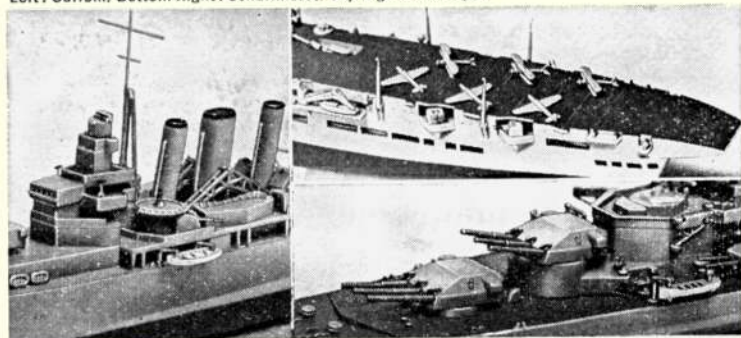
KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

Get every detail right with Airfix



It's the little things – like the helicopters, operating stern ramp and Landing Craft – that really make the model! And that's why Airfix Construction Kits are so fantastically popular. Every model is accurate to the smallest detail – a perfect replica of the real thing! There are nineteen different series, each made to a constant scale. Over 300 kits, at prices from 17p. At all good hobby shops and F. W. Woolworth. Ask for the catalogue.

Left: Suffolk. Bottom Right: Scharnhorst. Top Right: Ark Royal.



PLANES!

Over 150 to choose from, including aircraft from both World Wars, modern jets and airliners.



ARMOURD VEHICLES!

Tanks, trucks and missiles, all in 'OO/HO' scale, for use with Airfix figures.



STOP PRESS One of the most advanced British motor cars, the five-door Austin Maxi has five forward gears. The fascinating Airfix model features authentically detailed engine and interior trim. 34p.



The world's biggest range of construction kits

News, articles, conversions for modelling enthusiasts every month in AIRFIX MAGAZINE. 15p from your model shop or newsagent.

HEARD AT THE HANGAR DOORS

A NEW International trophy was accepted by H.R.H. The Duke of Edinburgh, K.G., on behalf of the *Federation Aeronautique Internationale*, from the donor, Sir Thomas Sopwith, C.B.E., on July 14th.

The trophy is in the form of a silver rose bowl, 10 in. in diameter and is a magnificent example of the silver smith's art. By remarkable coincidence the trophy was produced by the same craftsman who created the famous Wakefield Trophy in 1928.

Officially known as *The F.A.I. Pylon Racing Trophy*, it is to be awarded for the first time at the International races in Doylestown, U.S.A., in September. Inevitably, the Trophy will be called the 'Sopwith Trophy' by the model fraternity.

Sir Thomas Sopwith's name is synonymous with air racing and the pioneering days of aviation. When he presented his trophy to H.R.H. The Duke of Edinburgh, K.G. (who is Patron of the S.M.A.E.), Sir Thomas commented 'how remarkable it was that these remotely controlled models could be flown around the sticks and brought back so precisely - completely without instruments'. This reminded him of his own early days of flying. When handling a standard R/C transmitter to test the controls of the R.C.M. & E. Editor's pylon racer which was on display, Sir Thomas also reminisced that the two-stick system took him back to his early Wright biplane which he raced in Philadelphia. The Wright was also flown on a two-stick system. He was extremely pleased to present the Trophy to the Royal Aero Club, who would then hand over the Trophy to the F.A.I.

The world of modelling will be extremely grateful to Sir Thomas for his magnificent gesture.



Above, H.R.H. The Duke of Edinburgh K.G. (patron of the S.M.A.E.) receives the new trophy, on behalf of the F.A.I., from Sir Thomas Sopwith.



Right, the magnificent silver rose bowl is inscribed with the words *The F.A.I. Pylon racing trophy for radio controlled model aircraft presented by Sir Thomas Sopwith, C.B.E., Hon. F.R.Ae.S., 1971*

EACH MEMBER club of the F.A.I. is entitled to nominate two names annually for the award of a Paul Tissandier Diploma. The award is made to persons who have contributed noteworthy services to National or International aviation organisations. Since the award is made to all branches of Aero Club activity it is comparatively rare that aeromodelling features among the nominations. In fact, in our recollection the S.M.A.E. has only nominated three persons for the award in its 50 years of existence, and happily all three nominations have been accepted by the Royal Aero Club and put forward to the F.A.I. Alex Houlberg and Doug Gordon were early recipients, and now we

are pleased to report that Henry J. Nicholls has been honoured with the award of the Paul Tissandier Diploma with the following citation:

For his great contributions to Aeromodelling both on National and International levels, for 23 years, as an Officer of the S.M.A.E., Jury member of International Competitions many more times than any other individual, and successively Member, President and Honorary President of the International Aeromodelling Committee of the F.A.I.

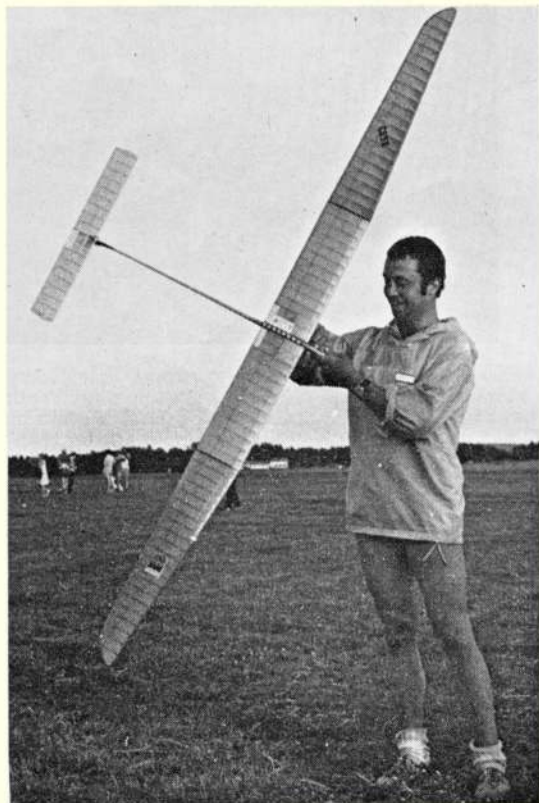
CONGRATULATIONS to Henry from AEROMODELLER and all aeromodellers!!!

WORLD FREE FLIGHT CHAMPS



John O'Donnell reports
from Säve, Sweden

Right, Wakefield winner Josef Klima of Czechoslovakia with his tubular fuselaged, pylon-mounted wing, model. Below, Dvorak also of Czechoslovakia was the winner of the A/2 event with a high aspect ratio, tapered tip design. For those who wonder, he is apparently no relation of Frantisek Dvorak who won Wakefield in '59!



THE CHOICE OF the military airfield at Säve, near Gothenburg, Sweden, as the venue for the 1971 Free-flight World Championships led to a considerable amount of pre-contest speculation. Although the site had obvious appeal from such very necessary considerations as adequate accommodation and easy travel facilities and the like, the actual airfield was rather small. Furthermore it was surrounded by woods and outcrops of rock.

To reconcile the field with the flying requirements the organisers (Sveriges Modellflygförbund) had scheduled the competition flights to be made in the early morning and evening - with a complete break from 10 a.m. till 6 p.m. It was anticipated that this arrangement would give both calm and relatively lifeless conditions and avoid retrieving difficulties.

The extensive advance literature about the contest and its organisation included airfield maps and a summary of the preceding years' weather statistics. I understand that analysis of this information had led to the bringing forward of the contest dates from late to early July. Prophecy is often dangerous, but it worked out very well on this occasion. The calm weather, on which so much depended, arrived as anticipated and the contests were highly successful in consequence. It must be admitted that in anything resembling windy weather the championships would have become little more than a retrieving contest! The organisers took a very definite 'calculated risk' - and got away with it! 'Arrival Day' was Wednesday, 30th June, although some contestants got to Sweden well before this. Test flying was possible at Trollhatten some 60 kilometres (say 40 miles) from Gothenburg. The Americans, in particular, took full advantage of this facility, and said the field was superior to Säve - even if they did land a power model on the roof of the SAAB factory!

On the Wednesday morning itself the officials at 'Reception' were soon swamped by the number of people who appeared bright and early. Subsequent arrivals found they were kept waiting outside the airfield gates until the queue inside had subsided. Whilst this procedure should not have introduced any additional delay it was rather a sour anticlimax to one's journey.

There was a formidable number of entrants - not to mention team managers, helpers, Press and spectators. All in all, 37 nations (official list, plus Bulgaria) had entered, and all but four (Greece, Iran, Turkey and Venezuela) materialised. It was claimed that the meeting had attracted more international participation than the Olympics! Whilst every-

one attending should have 'booked in advance' this was not the case in practice. There were last minute changes in some countries teams, not to mention details like failure to pay before arrival!

Contestants and others were housed in military billets within the airfield base itself. The accommodation was somewhat spartan; comprising a number of cubicles, each with four bunks, arranged dormitory fashion. This was not conducive to getting a lot of sleep! Conversely, the food supplied in the 'Dining Hall' was generally far better than expected. Refreshments (both solid and liquid) were also available from a separate canteen - but at prices that could only be described as frightening.

Being a military base there were the inevitable restrictions on car parking. There were also some petty regulations such as the prohibition on using bicycles for retrieving. Rather more serious was the presence of a wooded area (at one end of the drome) to which access was strictly *verboten*. Any models alighting in this region were to be retrieved by an official Swedish recovery team. There was mention of armed guards with orders to shoot!

Test flying got off to a slow start on the arrival day as the afternoon was hot and breezy. The evening was better, and activity increased as the wind dropped. It did not go really calm, however, so practically everyone was out very early the next morning. As the first round of all events was scheduled to run from 4.30 to 5.30 a.m., there was an obvious need to evaluate the conditions and perhaps one's model performance. The sun rose at about 3.20 a.m. - and most modellers as well. Whilst it was certainly calm I gather that there was evidence of weak, but positive, lift as early as 4.00 a.m. This was hardly the thermal as usually envisaged - but the slightly 'helpful' air that produces A/2 flights of over three minutes.

The three British glider fliers had all produced a model intended specifically for the early morning rounds - with all the emphasis on glide rather than on thermal-riding ability. Elton Drew had a solid sheet winged model that looked like a cross between an SPL and a normal British 'fishing rod' A/2. Tony Young had a very high aspect ratio constant chord model of very functional appearance. Mike Woodhouse's model still looked like a *Wichita* despite higher aspect ratio and a turbulator in front of the LE of his version of the Kaczanowski GF8 section. In the early morning conditions at Säve they reckoned to be getting 2:55, 2:50 and 2:45 respectively.

In Wakefield Bryan Spooner had a duplicate (with slightly different prop) of the model he used at our Trials - and was satisfied that both it and its predecessor could do comfortable 3½ minute flights. Laurie Barr had a model with solid, high A/R wings, and a new version with conventional built-up surfaces. He survived a spectacular test flight that shed the wing when the pylon-to-fuselage joint sheared under the shock load of the tension in the V.I.T. lines!

The power team were rather less fortunate with their troubles. Ray Monks put his latest sheeted-wing model out of commission through first bending and then breaking the Culpin engine-pan. Bob Bailey was even more afflicted as he broke two of the *World Engine* Seelig-style pans in successive D/T landings of the same model. These pans have a very sharp corner between the engine-mounting surface and the backplate - but a filed-in groove to provide a radius did not help.

It is common at the test flying sessions to try and pick out the eventual winner - and even to claim success. This is an idiosyncrasy that I do not intend to indulge. What was apparent from watching the testing was that there were quite a number of very good models with more than enough potential to win their events - providing their fliers both made no mistakes and 'got the breaks'.

This was particularly noticeable in Power where there were plenty of very fast models (and motors) in evidence. What registered even more strongly was the percentage that exhibited trim troubles. The modern trend in V.I.T. power models seems to have produced a set-up prone to flatten out under power, and make a long flat sweeping turn to the right - at tremendous speed but with little gain in altitude! The manoeuvre just described was commonplace on test, and proved to be only too frequent in the contest proper.

One model (or rather pair of models) that could hardly be overlooked was the much discussed 'flapped' design of Thomas Koster. They were distinctive in outline, test flown constantly and the centre of much interest. From test it was apparent that the concept had considerable potential - and that success was going to depend on whether or not the pattern was right on his 'officials'. Test flights were spectacular but hardly consistent.

Wakefield and A/2 are inherently less spectacular than Power and correspondingly harder to evaluate as regards genuine performance. Slight 'ups and downs' affect flight time drastically - and when watching a Wakefield climb, one really needs to know whether or not it is fully 'wound up'. What did emerge was that either the air or the models, or both, was usually very good.

Processing proved to be a major undertaking. In theory models are supposed to be checked for conformation to

specification *before* they reach the Championships, and have F.A.I. stickers affixed to confirm this. Processing *should* then be merely an inspection of the said stickers followed by a weight check. This idealistic assumption, plus that of assuming the models would be correct, seemed to have led to the tight processing timetable. A mere 15 minutes were allowed per team, which could involve dealing with 27 models. Delays commenced right from the start and were lengthened by models needing markings (by felt-tip pen) and/or ballast. In the end processing continued until late into the evening.

The system used was for models to pass down a line of officials who each dealt with one facet of the requirements. Models were checked for stickers, national markings and weight. If applicable engines (plus any loose 'spares') had a number engraved on their mounting lugs 'to prevent interchange between contestants'. Models were then stamped and had an 'If found . . . ' label affixed. Contestants were issued with numbered cloth squares to be worn during the actual competition. This was one idea I was very glad to see - as it simplifies the problems of identifying the competitors!

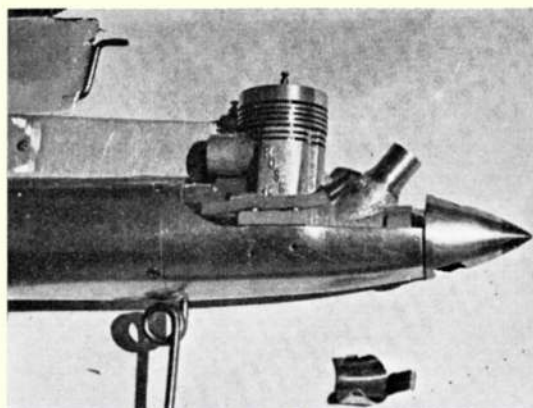
Partly due to the 'slippage' of the processing schedule a large crowd of models and modellers assembled outside the building where checking was being done. This provided a marvelous opportunity to meet old (and new) friends, inspect models and take photographs. Many entrants were only too pleased to demonstrate their showpieces to anyone interested. Much of what I saw at this stage will be included in the technical feature intended as a sequel to this report. What did surprise me was the way in which models were left unprotected in any way from the strong sun for considerable periods, an open invitation to heat warps.

Some interesting tit-bits were learnt at this and other discussions. The Hungarians were represented solely by a power team as their country is short of 'hard currency' and funds were not available for three teams. They sent the one with the best chance!

The French made a very late change in their Power team. One member (Zimmer) had lost a model in the woods whilst trimming, and had wrecked another. These misfortunes put Michel Jean, who had attended as reserve (complete with models and photogenic wife) into the contest.

Rolf Hagel won the power event with a model utilising a Rossi 15 mounted at 45° to the vertical and fully cowled in sheet metal. Glass fibre prop needed to withstand the high r.p.m.





Americans Jim Taylor and Buzz Averill had to remove exhaust deflectors fitted to their motors (under the 'no exhaust extensions' rule) and fit deflector plates attached to the pylon to keep oil off the timers.

One of the Australian Wakefields intended to be flown proxy did not arrive. Bob Greenhill had his car stolen just two days before the models were due to be despatched – and lost his Wakefield propellers in the process. The car was recovered but not the airscrews! His proxy, Jan Zetterdahl, subsequently flew Bob Emslie's models, and was showing a machined prop. assembly that he had fitted to one. This might be more than is expected from a proxy, but is only comparable with Pete Stewart re-equipping Brian Roots' power model with a much better engine.

The processing had an intermission for the official *Inauguration of the Championships*. This commenced at 6.00 p.m. with a parade and march-past of the teams. Differences in National outlook were immediately apparent. Some teams were uniformly attired, often in track suits, and invariably marched in step. (The Russians were even arranged in order of height!) Such could not be said of the British and some other teams. An address, in three languages, was made by the Mayor of Gothenburg. Proceedings were wound up by a model flying demonstration. This started with free-flight and was followed by control-line and radio – and was presumably intended for the non-modellers present. Flying, even with short D/Ts, so close to the woods hardly showed free-flight in the best light.

F.A.I. Power

Contrary to previous practice, the Championships commenced with the Power event. Far from being arbitrary, this decision was based on the probable numbers involved in flyoffs, and the likelihood of the power event requiring several extra rounds. In the event of weather difficulties demanding any form of postponement, then the event could be continued the following day. This, in fact, proved to be a very wise precaution.

It might also be appropriate to mention at this stage that the whole contest was flown under the 'old' rules of a 100 x 50 metre launching box, and using a progressive (increasing max) flyoff. The concept of a starting line, etc., were deemed not to apply until 1972. Nonetheless, binoculars were used for the first time at a Championship – they seemed to work very well and I heard of no complaints.

Power test flying must have commenced very early in the morning – and there was considerable activity right up to the start of the contest (in fact even during the contest it was permitted to test provided that it was done downwind of the launching area). A literally last-minute disaster overtook Franz Baumann when he had an engine shut-off failure – but still had the auto-rudder and V.I.T. operate. This produced a mid-air structural collapse with at least five separate pieces descending! I was surprised, upon inspecting the debris to find just how soft was the wing sheeting!

Although scheduled to commence at 4.30 a.m. the first round did not get under way until half an hour later. Conditions were dead calm with the bubbles from Jack North's machine drifting upwards in an encouraging fashion. As far as I could tell, Thomas Koster was first away – only to record an over-run. His repeat attempt was not quite on trim but still adequate for a max.

As the round progressed it became increasingly apparent that a surprisingly high percentage of fliers had trim or pattern problems. Without an actual count I would estimate that about half the first round flights were 'off' to a greater or lesser extent. Nevertheless many of these flights

still produced a max. It was also apparent that engine tuning has progressed sufficiently since Wiener Neustadt to more than compensate for the ban on tuned pipes!

Trouble struck the British camp right from the start of our flying. Pete Buskell had his model 'tighten up' under power and cut with insufficient height to max. Ray Monks had opted to use his oldest and usually so-reliable model – only to have the engine richen in the air, and die prematurely at only 6 seconds. That the flight was still 2½ minutes shows just how good were the conditions. As this was the end of Ray's engine troubles, he could only speculate that the forcing through the tank system of copious quantities of the supplied standard fuel (so as to satisfy the time-keepers) might have dislodged some sediment and hence altered the initial needle setting. Only Bob Bailey managed to provide a British max.

The West German's had a most unfortunate repetition of their 1969 experience of a member losing a first flight completely. Anton Weber had his first model go flat and then dive into a group of trees still under power. He subsequently went on to record a string of six maxs. This illustrates one way in which World Championships differ from almost all the other contests. Everyone continues flying right to the end however dismal their initial attempts may be.

Few people had any doubts that the five morning and two evening rounds were only a preliminary to the real contest that would be provided by the flyoffs. In this context it would seem superfluous, even if it were possible, to describe how maxs were recorded by those competitors in whom one is interested. Likewise statistics concerning numbers of maxs per round, or those with unblemished scores at the end of each round, can be extracted from the full results.

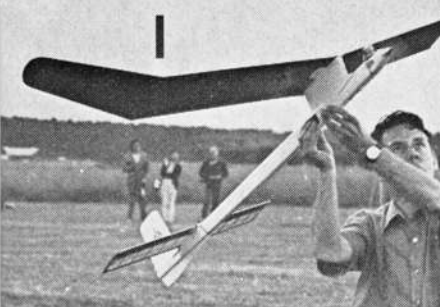
It is more practical, and I trust not too morbid, to recount how and why some contestants came to grief. The second round saw Alain Landeau (of Cd'H fame) have his G15 'cough' just after launch – with dire results to the power pattern. Sten Agner (Denmark) has his motor cut at about 20 feet high, due to a flood-off leak, but got away with an attempt. Dusan Varda (Yugoslavia) crashed onto the runway in the fourth round. Shortly afterwards Sergio ('Joe') Savini had his model D/T at 40 odd seconds to give a flight of just over a minute. There was consternation amongst the rest of the Italians and Joe was all but lynched! He still doesn't know what really happened, but it was not the common error of putting the D/T arm in the wrong part of the Seeling timer. The time didn't tally with that explanation.

As the morning progressed it did not take long to become very bright and hot. It slowly became 'less calm' and had become breezy by the fifth round. The initially clear blue sky began to sport a few white clouds. It was apparent that closing the morning's activities at 10 o'clock was a very good advance estimate. There was a period when models were drifting onto the 'forbidden area' but the official recovery arrangements worked well there. Most teams had their own helpers downwind to augment the Swedish system. Much walking was eliminated by having a couple of Volkswagen buses running a shuttle service between the landing and launching spots!

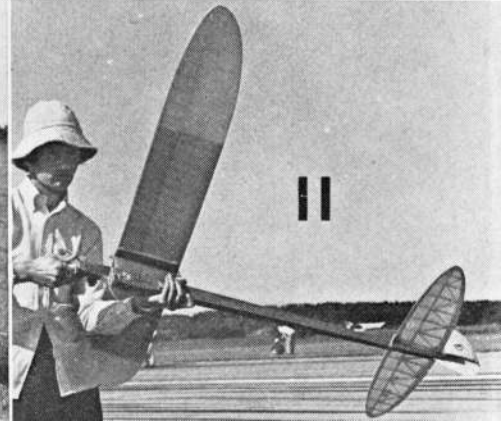
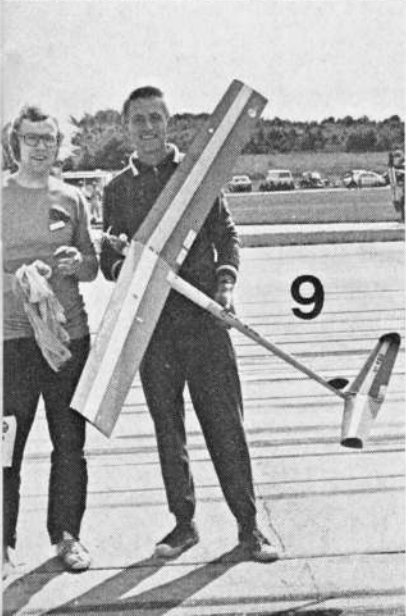
British hopes were dashed in the fifth round when Bob Bailey dropped a flight badly. He launched a shade left, had the model go left under power, poor transition in consequence, and poor air – all at once. Until then his very new *Night Train* development had been more than promising. Power unit was a home-tuned Rossi. In the same round Monks was visibly shaken when he changed a prop only to have the timers suggest the model be check-weighted! They took much convincing that this was unnecessary.

Vebitsky used a home built engine which turned a Russian 7½ in. x 4 in. (or 4½ in.) nylon propeller at 21,000 r.p.m. Neat cast engine pan installation.



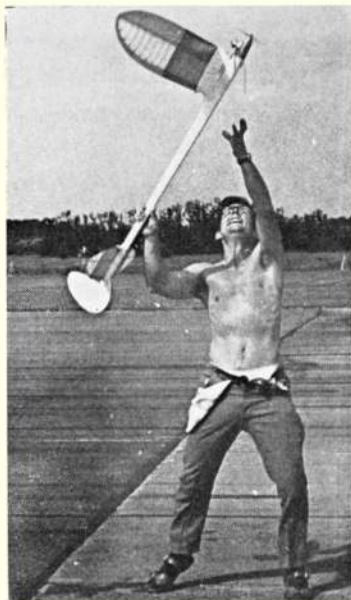


1. Dave Sugden (Canada) launches for a 4 minute max. Rossi 15 turning home made 7 in. x 3 in. GF prop. 2. Onoufrienko (a well known C/L team race competitor) used a Verbitsky built motor. 3. Another Rossi user was John Foley of Canada. Graupner grey 7 in. x 3 in. prop. 4. Far travelled competitor, New Zealander Paul Lagan flew in all events. 5. Baumann of West Germany, who won the power event in '69 World Champs. 6. British competitor Pete Buskell had pattern problems. Note reserve model in foreground. 7. Hungarian models are always immaculately finished - Csizmarik's Moki glow engined design is no exception. 8. Sergio 'Joe' Savini (Italy) with his new Rossi powered model. 9. Most interesting model of the meeting was Thomas Koster's *Flapped Cream* (held here by Verbitsky) - certainly a trend setter. 10. Buzz Averill with his TWA powered model (his others use Rossi's). Monokote covering over sheeted wing. 11. Pete Stewart proxy flew for Brian Roots (N.Z.) using his own modified G15 (Cox .09 head). *Night Train* surfaces on altered fuselage.

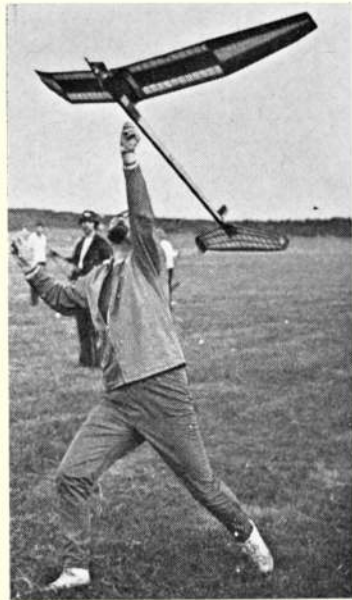




Koster gives the 'heave ho' to his ingenious *Flapped Cream*. Very sophisticated, but not too consistent.



Bob Bailey launches on his fatal fifth flight - model was released a shade left, which was exaggerated under power.



Rolf Hagel, Rossi screaming on its glass fibre 7 in. x 3 1/2 in. prop based on a Cox product, launches for another classic climb.

The evening rounds saw few 'dropouts' from the large number who survived the morning with perfect scores. Strangely enough, those who came to grief included both Americans. Jim Taylor had a flight tighten and flatten - his trim troubles were a matter of some speculation. Both he and 'Buzz' Averill reported increased engine revs in the lower altitude relative to their Albuquerque homeland - but Jim also had qualms about the rigidity of his *Super Monokote* covered surfaces at high speed. Tom Kerr forgot to set his D/T and had the tail tip as the motor cut! I have seen few modellers so upset - or get it over it so quickly. The other casualties in the final rounds were Franz Baumann and Klaus Englehardt (of West and East Germany respectively) and P. Stoilov of Bulgaria - all of whom dropped a few seconds. The nearest miss of all was that of Paul Lagan, over from New Zealand in person - who dropped but a single second in the fourth round. Team Manager Dave Tipper said that he could hardly criticise the timers - as he made the flight only 2.58!

The Team Event was decided by the seven rounds - with only the Swedes managing the unblemished 21 maxs that were possible. They nearly spoilt more than their score in the evening when Urban Nygren crashed his *Special Eagle* (with aluminium tube front and built-up box rear fuselage) in the midst of a crowd of people - but he continued to max thereafter! Second and third team positions were very close - with just one second between the Russians and Danes - both of whom had two representatives in the flyoff.

There were 19 qualifiers for the flyoff - the largest number yet at a World Championship (compared with 16 at Kauhava in 1965). It is also noteworthy just how many were regular World Champs finalists. There was a suggestion of a weight-check on the flyoff models but it didn't materialise. The flyoffs were flown to a progressive max using the normal 10 second engine run throughout. Following current F.A.I. procedure meant that the actual launch had to take place within a four minute period - although half-an-hour was to be allowed for retrieval.

Flying off to a four minute max commenced at about 8.35 pm, and was signalled both by the P.A. system and very light. It was cool with little wind - and little sign of lift. Dave Sugden was first away with a very smart start and launch whilst his compatriot, John Foley, was last to fly some 3 1/2 minutes later. Bruno Fiegl failed to start his engine, despite having taken two models out to the flying area. Five others missed the max, although they all did over 200 seconds. Very 'close' maxs came from Pete Stewart (flying proxy for Brian Roots) with four seconds clearance, and John Foley with six.

There were still a round dozen fliers left in the battle, and they assembled to try for the five minute max, just after 9 o'clock. It was still cool and quite calm, although the drift had swung onto the woods just to the right of the

runway. Again Dave Sugden was first away, and on-pattern, to record a comfortable 5:35 D/T'd down in front of the trees. Koster had the opposite approach and did an 8 minute flight that cleared the wood. Hagel and Mildner had trouble with the Swedish model remaining out overnight (till found the next morning by the Danes) and the German one suffering considerable damage. Verbitsky was having to use fuse for his D/T having expected the engine run to be cut for the flyoffs, and hence having a timer that only ran for 3 minutes odd.

Pete Stewart provided the only near miss of this round with a 4.45 flight from Roots' model. This had *Night Train* surfaces on a different fuselage - and was steady rather than spectacular. Using Pete's own modified G15, and a Meissner prop borrowed from Martin Dilly, it was a real co-operative effort - and the highest placed proxy model for years. Other fliers had real trouble. Meczner's model came down in a series of violent stalls. Michel Jean had his model 'wind in' and crash upwind very close to numerous people - perhaps through gadget failure. Sten Agner ran into trouble with a motor that ran, but very roughly. This was found to be due to a flood off pipe leaking fuel into the air intake - but there was no time to rectify it. As he was already down to his last model there was no question of using a spare. The Bulgarian, Goramov, also recorded a zero this round, but I am afraid I do not know why. The improvement in standard of the Bulgarian flying in the past two years since Wiener Neustadt is remarkable.

The announcement that the next flyoff (to a six minute max) would be held at 8 o'clock the next evening, caused a certain amount of surprise and considerable comment. There is little doubt, however, that a further round on the Friday would have given visibility troubles in the failing light. Leaving a description of the intervening A/2 contest for the time being, it is convenient to continue with the power event.

What proved to be the final and decisive fly-off got underway around 8.10 or 8.15 under a clear blue sky. The wind was not strong enough to feel - but the drift was still onto the wooded area adjacent to the launching area. This time Hans Friis was first to fly, although he was closely followed by Sugden. Dave had found his model move trim during testing just before the flyoff. This led to a left bias on climb and a stally transition. Hagel, Koster and Onoufrienko launched all but simultaneously - with Hagel appearing to gain the most height. Horst Mildner followed, only to have his model flatten under power. Although the motor cut in the air, the dive-in continued. His troubles began with damage sustained in the woods, and more during the necessary retrim. Even so he reckoned everything was 'go' for the flyoff. Verbitsky was next (with a spiral type climb, but lots of height) with John Foley waiting till near the end.

1.	R. Hagel	Sweden	1,260	+ 240	+ 300	+ 328								2,128
2.	T. Koster	Denmark	1,260	+ 240	+ 300	+ 321								2,121
3.	B. Onoufrienko	U.S.S.R.	1,260	+ 240	+ 200	+ 289								2,089
4.	E. Verbitsky	U.S.S.R.	1,260	+ 240	+ 300	+ 287								2,087
5.	J. Foley	Canada	1,260	+ 240	+ 300	+ 284								2,084
6.	H. Friis	Sweden	1,260	+ 240	+ 300	+ 262								2,062
7.	D. Sugden	Canada	1,260	+ 240	+ 300	+ 239								2,039
8.	H. Mildner	W. Germany	1,260	+ 240	+ 300	+ 16								1,816
9.	B. Roots	N. Zealand	1,260	+ 240	+ 285									1,785
10.	A. Meczner	Hungary	1,260	+ 240	+ 96									1,596
11.	M. Jean	France	1,260	+ 240	+ 10									1,510
12.	I. Goranov	Bulgaria	1,260	+ 240	+ 0									1,500
12.	S. Agner	Denmark	1,260	+ 240	+ 0									1,500
14.	U. Nygren	Sweden	1,260	+ 234										1,494
15.	M. Pavlov	Jugoslavia	1,260	+ 220										1,480
16.	R. Guilloteau	France	1,260	+ 212										1,472
17.	P. Maurer	Switzerland	1,260	+ 207										1,467
18.	F. Cszmarik	Hungary	1,260	+ 205										1,465
19.	B. Fiegl	Italy	1,260	+ 0										1,260
20.	P. Lagan	N. Zealand	180	180	180	179	180	180	180	180	180	180	180	1,259
21.	U. Gogorcena	Spain	180	175	180	180	180	180	180	180	180	180	180	1,255
22.	F. Baumann	W. Germany	180	180	180	180	180	172	180	180	180	180	180	1,252
23.	K. Engelhardt	E. Germany	180	180	180	180	180	180	169	180	180	180	180	1,249
23.	P. Stoilov	Bulgaria	180	180	180	180	180	169	180	180	180	180	180	1,249
25.	V. Hajek	Czechoslovakia	180	180	180	166	180	180	180	180	180	180	180	1,246
26.	G. Barbarella	Italy	180	180	180	163	180	180	180	180	180	180	180	1,243
26.	Y. Waltonen	Finland	180	170	179	180	180	174	180	180	180	180	180	1,243
28.	H. Huyben	Netherlands	180	180	180	180	161	180	180	180	180	180	180	1,241
29.	J. P. Taylor	U.S.A.	180	180	180	180	180	157	180	180	180	180	180	1,237
30.	H. Keinrath	Austria	180	155	180	180	180	180	180	180	180	180	180	1,235
30.	R. Monks	G. Britain	155	180	180	180	180	180	180	180	180	180	180	1,235
32.	H.-J. Benthin	E. Germany	158	180	180	177	176	180	180	180	180	180	180	1,231
33.	P. R. Buskell	G. Britain	167	180	175	180	160	180	180	180	180	180	180	1,222
33.	A. Grechin	U.S.S.R.	180	180	147	175	180	180	180	180	180	180	180	1,222
35.	P. Jorgenson	Denmark	164	178	180	180	161	178	180	180	180	180	180	1,221
36.	O. Velunsek	Jugoslavia	180	180	140	180	180	180	180	180	180	180	180	1,220
37.	J. Sedlak	Czechoslovakia	139	180	180	180	180	180	180	180	180	180	180	1,219
38.	C. S. Averill	U.S.A.	135	180	180	180	180	180	180	180	180	180	180	1,215
39.	F. Hartwagner	Austria	180	180	180	173	148	164	180	180	180	180	180	1,205
40.	R. L. Bailey	G. Britain	180	180	180	180	110	180	180	180	180	180	180	1,190
41.	E. Brambock	Austria	180	180	170	180	109	170	180	180	180	180	180	1,169
42.	G. Simon	Hungary	180	122	180	130	180	180	180	180	180	180	180	1,152
43.	S. Savini	Italy	180	180	180	66	180	180	180	180	180	180	180	1,146
44.	A. Denkin	Bulgaria	180	180	162	74	180	180	180	180	180	180	180	1,136
45.	B. Krycer	Czechoslovakia	50	180	180	180	180	180	180	180	180	180	180	1,130
46.	T. C. Kerr	U.S.A.	180	180	180	180	180	180	41	180	180	180	180	1,121
47.	M. Doujle	Ireland	180	180	180	118	99	172	180	180	180	180	180	1,109
48.	A. Weber	W. Germany	0	180	180	180	180	180	180	180	180	180	180	1,080
49.	A. Landeau	France	180	42	180	180	123	180	180	180	180	180	180	1,065
50.	J. B. Brooks	Canada	166	180	140	87	180	174	136	180	180	180	180	1,063
51.	I. Fuji	Japan	180	54	153	176	120	180	180	180	180	180	180	1,043
52.	P. Emilian-Cringo	Rumania	180	164	180	180	7	180	140	180	180	180	180	1,031
53.	M. Blanco Hoa	Cuba	120	125	180	180	124	106	180	180	180	180	180	1,015
54.	D. Varda	Jugoslavia	180	180	180	9	180	180	94	180	180	180	180	1,003
55.	J. Johnsson	N. Zealand	115	180	141	119	180	180	77	180	180	180	180	992
56.	O. Torgerson	Norway	152	154	122	180	161	90	119	180	180	180	180	978
57.	J. Ferro Diaz	Cuba	96	141	180	119	180	159	101	180	180	180	180	976
58.	S. Haapalainen	Finland	130	141	180	133	96	102	42	180	180	180	180	962
59.	R. Del Castiilo	Cuba	103	126	57	79	164	120	115	180	180	180	180	764
60.	M. Pyykko	Finland	135	180	113	128	0	0	0	556	23	180	180	556
61.	F. Jackson	Ireland	180	180	83	5	0	0	0	443	24	180	180	443
62.	D. Ducklaus	E. Germany	180	175	0	0	0	0	0	355	25	180	180	355

POWER CLASS F.I.C.

Friday, 2nd July

Team Results

1.	Sweden	3,780
2.	U.S.S.R.	3,742
3.	Denmark	3,741
4.	Hungary	3,672
5.	Italy	3,649
6.	G. Britain	3,647
7.	Bulgaria	3,645
8.	Austria	3,609
9.	Czechoslovakia	3,595
10.	W. Germany	3,592
11.	France	3,585
12.	Canada	3,583
13.	U.S.A.	3,573
14.	N. Zealand	3,511
15.	Jugoslavia	3,483
16.	E. Germany	2,835
17.	Finland	2,761
18.	Cuba	2,755
19.	Ireland	1,552
20.	Switzerland	1,260
21.	Spain	1,255
22.	Netherlands	1,241
23.	Japan	1,043
24.	Rumania	1,031
25.	Norway	978

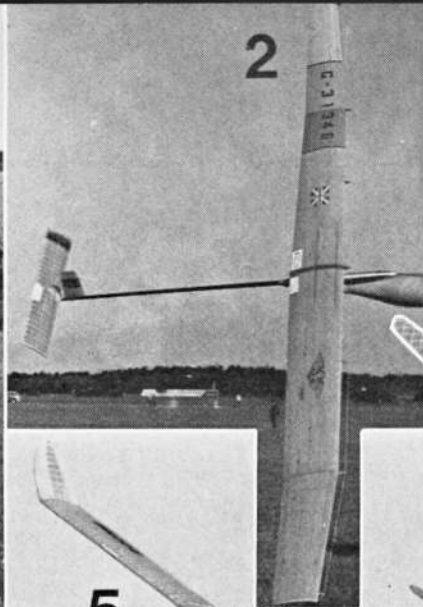
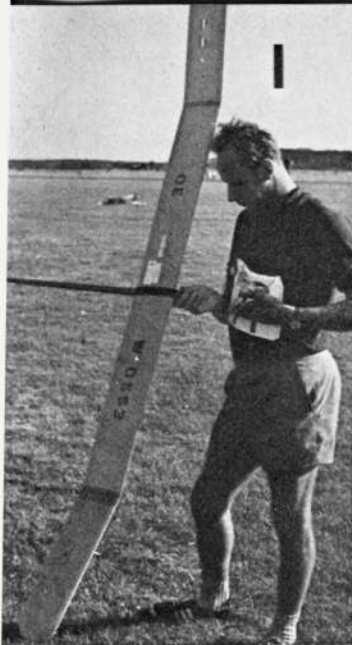
It was impossible to watch or time all seven models but there did seem to be four close together, all gliding well, with Koster's appearing to sink slowest. Flights continued down to the tree-line with at least one model 'flitting' in and out of the trees and doubtless giving trouble even to the binocular-equipped timekeepers. As models were not timed to the ground, this flyoff was the least satisfactory of all. The top two scores were very close with Rolf Hagel having seven seconds lead over Thomas Koster (the Danes were not pleased with this result as they claimed Koster did longer in the air). The next three were significantly less but only spread over a range of 5 seconds! Victor Onoufrienko edged out Eugene Verbitsky from third place whilst John Foley was fifth. Both the Russians used Verbitsky's home-made engines whilst Foley had transformed his old models by re-powering them with Rossi's.

Rolf Hagel's win made him World Champion for the second time - as he was one of the five joint winners in 1960 at Cranfield. Always renowned for having powerful engines, this year was no exception. He used a self-tuned Rossi, with modified intake and transfer ports for 'better breathing'. The races had been freed, and the larger changed to a better Swiss one. The whole motor was inclined at 45 degrees to the vertical and hidden inside a metal speed-type cowl. Prop used was a glass-fibre example, made by friend Ake Quarstrom, and based on the grey Cox 7in. x 3 1/2in., but with slightly wider blades. The Cox worked well, but shed blades on two occasions - hardly surprising at 24-25,000 rpm. Hagel's model is far from the modern

trend, having swept back tapered wing tips with plenty of dihedral and the Scandinavian favoured triple-fin tail unit. Wing section is a Swedish derived one, resembling NACA 6409 but with a much sharper L.E. Three views of an earlier version were in the 71/4 issue of *Free-Flight News*.

Thomas Koster has devoted his energies recently to power models rather than Wakefields. A lot of work has gone into developing his *Flapped Cream* and there is more to be done. Koster is reported to have built six of this design - but only appeared to have two left for the Championships. Certainly they were the most discussed models on the field and the centre of much attention and interest. As a means of reconciling the conflicting demands of power and glide, flaps have much to offer - and Koster demonstrated the potential of the system. Main problem would appear to be consistency, as despite almost continuous test flying the trim seemed really knife-edge. His official flights were mostly on-pattern but test flights were 'all over the sky' at times. I hope to be able to give further details in the technical report intended as a sequel to this article. It might also be the best place to describe Verbitsky's models and motors.

There is no doubt that for success in the FAI power event the first essential is a very fast motor, with tuned Rossi's being the current favourite. Having got such an engine, there seems to be problems in persuading the modern V.I.T. model to be consistent. For those prepared to cope with the mechanics and development programme a flapped design is worthy of consideration.



1. Chmelik (Austria) uses wing sheet covered top and bottom. 2. Elton Drew's new still-air A/2—note turbulator forward of L.E. 3. Two-piece fuselage—hardwood front, balsa tube rear, used by Cosma. Eggbox construction rear of sheeted L.E. 4. Australian model of Pete Nitschke in the hands of Jan Zetterfall and sister Ann. 5. Dave Linstrum (hatted) and Tom Hutchinson with Dennis Bronco's elegant machine. 6. Ex-Wakefield winner Löffler with Hirschel's A/2. 7. Tee-tail, straight dihedral wing used by Nummukka. 8. Another view of Nitschke's proxy flown, rather old fashioned looking design. Shirt inscription reads 'Eat more porridge!'. 9. Cuban A/2 of Marsella, held here by Menendez. Nicely finished with contrasting tissue trim. 10. North Korean team member Hong Sun Hen, with colleague using walkie-talkie. 11. Tom Hutchinson (editor of Sun Valeers Newsletter) releases Langerin's A/2.





Larsen's A/2 has unusual curved wing dihedral. Note also the fin position - midway down the fuselage. Placed 19th.

A/2 GLIDER

The A/2 event scheduled to commence at 4.30 a.m. on the second 'flying' day - Sat. 3rd July. It started promptly on time - and hence illustrated how the Swedish organisation rapidly improved as it 'learnt by doing'. This in fact, is one of the signs of a basically sound setup. Certainly the remainder of the events ran like clock-work!

Glider is often treated purely as a thermal-catching contest, and usually rightly so. However, an event flown so early in the day was liable to be rather different. Many entrants had produced special models for the early round(s), including the British Team as already recounted. Pre-contest flying had revealed that the conditions were not likely to be true 'still air' - and this was confirmed in the contest.

It was hardly surprising that there was little rush to fly. The first to make an official flight was Markov of Russia, some 8 minutes after the round began. Presumably judging conditions beforehand, he simply towed up straight, then veered into a smooth 'catapult' release that gained valuable height for the contest's first max. The flight was also interesting that it was made from the *wrong* launching area. There were two equal sized boxes next to one another. The purpose of the second was to provide space for the model launcher - but it certainly confused quite a number of fliers. The flights stood, however, as did one or two isolated examples of line (or winch) release that passed unobserved

Munnukko of Finland placed second in A/2 with his silk-covered wing design. Unusual in employing a fuse D/T.

by timekeepers steadfastly watching the model.

The second Russian, Ehtenkov, demonstrated the circular-tow that they used extensively throughout the contest. This has been rendered considerably more reliable by the use of a spring-loaded towhook complete with a positive lock to retain the ring and line. (Further details of this gadget next month.) Their whole technique looked most impressive and professional.

As it became apparent that maxs were far from impossible and that there must be lift, there was some signs of tactical flying, this was hardly safe as one 'mass' launch at around 5 o'clock showed. The lift was very small as well as weak, and a model had to be released just at the right time and place.

British World Champ, Elton Drew spoilt his chances with a stalled release of his dead-air model, and a 2:25 first round score in consequence. Mike Woodhouse did little better despite flying as the bubbles from Jack North's machine were rising. It was left to Tony Young to uphold British hopes with an initial max. His very high A/R sheeted-wing model worked its way into ground lift and eventually D/T a few feet up at 3:50.

This was by no means the longest flight. I saw Herbert Schmidt O/T around 4 minutes with at least another half-minute in hand. This *looked* like a thermal flight, apart from the immense circles in which the SPL was flying!

All in all there were 38 maxs in the first round, out of 89 competitors, and five countries with all three members having maxed!

The second round saw the weather warming up right from the start although it was still very calm. There was one real example of 'piggybacking' - twenty models in the same patch of air around 6 a.m. One regulation that soon proved an irritation was that of requiring a line check before each flight. Giving the winch back to the time keepers after flying (for them to impound) might be considered an adequate safeguard but is not what the F.A.I. Sporting Code requires! Lines do stretch in use, as Martin Dilly (proxy for Trevor Martin of New Zealand) found to the tune of 14 inches!

There was a variety of techniques used to try and detect lift. These in-

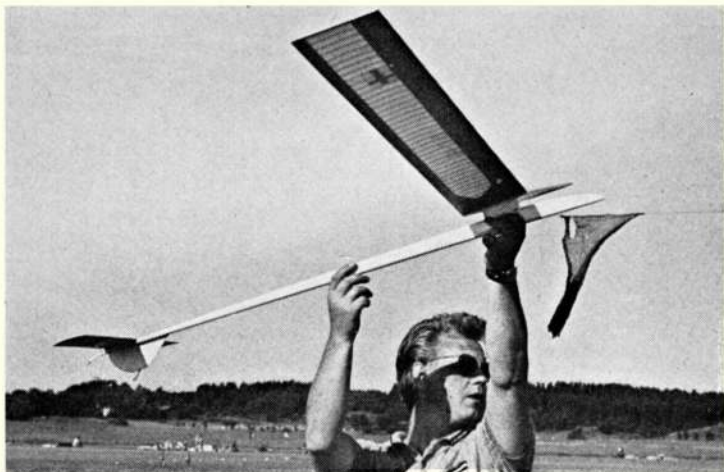
cluded thermistors (sometimes in walkey-talkie contact with the teams manager or other helper who relayed information to the competitor), soap bubbles (or the talcum 'baby' powder) I saw used instead and straightforward tactics. It was still rather calm for many minutes in this fashion, ignoring a mass launch and rising bubbles, surviving a line tangle with an Egyptian and a subsequent towup when the model was within 2 or 3 feet of the ground, before releasing for a max.

All the British team scored maxs in the second round - but only Mike Woodhouse in the third. He caught 'ordinary' lift, and precipitated a group of 7 or 8 into following. Tony Young missed a max by nine seconds, though he considers using his dead air model for a round too many. I contacted lift but was 'pushed out' rather than the opposite. This in fact was to prove fatal to Tony's hopes as he maxed out for the rest of the contest.

There was a 15 minute break between the end of the third round at 7.30 and the start of the next. This allowed those who wished to attack the packed breakfast provided at the contest area.

By 8 o'clock it was getting really hot, and the first real thermal was seen in the shape of 2 or 3 models climbing rapidly. British fliers all remarked on the weakness of the lift, especially considering how hot all three days became. There were very few up currents in which a complete flyaway would have been possible! The wind had begun to appear after breakfast and models were heading towards the woods. These were unquestionably within normal flying distance during the last two rounds in the morning. By now normal tactical flying was prevalent, even if not particularly well done. Elton Drew, for example, found lift in the fourth round only to be ignored by the opposition. Yet in the fifth round, he had many followers who released into doubtful air (that proved more than adequate) whilst Elton still continued to tow upwind.

Surprisingly the 'thermal rounds' seemed to give trouble. There were only 8 contestants with trebles, and the number with 'full houses' decreased to 3 by the end of the fifth round. This of course, left the contest much more 'open', with those who had



only dropped a few seconds still very well placed. There were, in fact, half a dozen people within 20 seconds of the leaders.

The evening's flying started at 6 o'clock, as originally decided. It was still sunny and hot, but cooling noticeably. It was breezy enough for long straight tows without difficulty. Tactical flying was common - Hugh Langerin of the U.S.A. towed for a quarter of an hour! The Russians still used their circling tow, but were able to work their way downwind of the launching box. They were invariably accompanied by a team member in walky-talkie contact with an upwind thermster! Even with all this 'applied science', Ehtenkov failed to max in the sixth round - to leave Pavel Dvorak and Niilo Munnukka as the only ones able to force the contest to a flyoff.

It was obvious that Tony Young had a good chance to place. As he lifted (or was forced) to find his own lift via lengthy tows upwind, he was accompanied by Jack North who surveyed the ground for likely pitfalls.

The seventh round started with a good big thermal right at the start, and very little afterwards. About 10 models got away in the early mass launch - whilst many more were simply not ready in time. There was nearly no need for a flyoff. Dvorak flew 'on his own', started well, and then fell through the lift! Despite the binoculars there was a slight discrepancy between the two timers' watches with one under and the other over the max. There was quite a discussion before the card was filled in with the crucial max. Incidentally, there were separate flight cards for each round, with a carbon copy being provided for the Team Manager or flier!

The British teams had a rather mixed final round. Elton Drew had his model fall-off the line prematurely for a sub-max flight. Tony got the max he needed to place fourth, just behind Herbert Chmelik (of Austria) who dropped two flights to Tony's one. Mike Woodhouse towed for 20 minutes, finally being forced to release by the round close becoming imminent.

As already described the final power flyoff took place immediately after the end of the seventh A/2 round. The power event decider was then followed by the glider flyoff. This was announced as the usual 4 minute period. Although Munnukka trooped out to fly in leisurely fashion, Dvorak was still getting ready in the Czech tent - and

had to run out to the launching box.

The two lined up side by side as the flyoff beginning was signalled - and stood watching each other for over 3 minutes. Then Dvorak started to tow and was immediately followed by Munnukka. They both towed up and released without hesitation, with Munnukka fractionally the sooner. The real difference came in their manner of release. Whilst the Finn floated his model off in the textbook fashion, Dvorak managed a catapult launch. This was not very energetic but it did gain a few valuable feet altitude. The two models drifted down the runway circling together for what was obviously going to be a very tight finish. There was a bit of coast waving under the models at one stage - but this stopped as the models got lower. The Finnish model touched down first, leaving Dvorak to become the winner by a mere 12 seconds. Without his gain of height off the tow, the result could have been almost a dead heat.

Dvorak's model was quite high aspect ratio with very long and highly tapered tips. The wings were mounted by a tongue plugging into slots in ply root ribs, and were silk covered. The fin area appeared very small, partly through its disposition partly above and partly below the fuselage. I understand that both *Model Airplane News* and *Free-Flight News* are likely to print 3 views. Munnukka flew two models in the contest. Both were straight dihedralled, 'T' tail designs, again with silk covered wings! He used a constant chord model, with a very narrow pylon wing mount, and fuse D/T for the early morning flights and the flyoff. In the middle of the contest he flew a taper tip model, without pylon, but with D/T timer.

Somehow the Team event seemed well and truly overshadowed by the individual situation. This is not intended to detract from Austria's achievement in topping the list. They managed individual placings of 3rd, 8th, and 25th to beat the Russians by a scant 9 seconds. Third place went to the U.S.A., closely followed by the Italians and Czechs.

On balance the event worked out well. It was not a still air event despite the times at which it was flown. Nevertheless there was a need for performance as well as lift detection. That conditions were far from easy is reflected by the small fly-off. This made for a good mixture and a good contest.



The North Korean team were most impressive, indeed quite a threat, with their predominantly hardwood constructed models. Here Li Sung Chan winds his D/T timer.

WAKEFIELD

The third and last flying day of the Championships saw the Wakefield event - or class F1B as some would like to call it. Once again the weather was to behave itself - and run true to forecast.

At the start of the event, dead on 4.30 a.m. it was cool, calm and with a clear sky overhead - with cloud evident on the horizon. Test flying had demonstrated that there was already the weak lift that had almost come to be expected. The officials had banned the erection of lofty thermal detectors of any sort (thermistors, bubble or streamer) inside the launching box as these could prove a serious obstacle whilst launching. Even North's portable 'bubble machine' had to remain upwind of the box - to his evident displeasure.

It was very soon apparent that the conditions were no problem to the sort of Wakefields possessed by most entrants. Performance is clearly well above the max - at least in the prevailing weather. There were numerous models with V.I.T. and auto-rudder, mostly operated by Seelig timers, with but a handful of torque-operated examples. Most models with timer operated tails exhibited a slightly uneasy transition stage between the actual power burst and the remainder of the climb. There were also lots of machined prop assemblies and aluminium tube front fuselages in evidence. Why the latter is so extensively preferred compared with the 'conventional' winding tube is not apparent. Certainly there can still be trouble when winding inside the fuselage proper, as unfortunately demonstrated by Dieter Siebenmann (Switzerland) when a broken motor shot through the motor tube and wrecked the tail boom and tailplane.

There were maxs aplenty in the first and subsequent rounds. Like the power event, the contest was really a 'game of no mistakes'. As the morning progressed the conditions became first

British A/2 team. At left Elton Drew the reigning (now sadly 'ex'!) World Champion, Mike Woodhouse and Tony Young (right) who placed fourth, our best individual performance of the meeting.



GLIDER

CLASS F.I.A.

Saturday, 3rd July

1. P. Dvorak	Czechoslovakia									1,260	+ 168
2. N. Munnukka	Finland									1,260	+ 156
3. H. Chmelik	Austria	180	180	180	179	180	176	180	180	1,255	
4. A. G. Young	G. Britain	180	180	171	180	180	180	180	180	1,251	
5. H. L. Langevin	U.S.A.	175	180	170	180	180	180	180	180	1,245	
6. C. Varetto	Italy	180	180	180	180	168	180	175	1,243		
7. Ehtenkov	U.S.S.R.	180	180	180	180	180	142	180	1,222		
8. H. Kumhofer	Austria	167	180	180	180	148	180	180	1,215		
9. D. Ducklaus	E. Germany	161	180	180	180	180	160	173	1,214		
10. K. Abadjiev	Bulgaria	180	180	131	180	180	180	180	1,211		
11. A. Bucher	Switzerland	180	127	180	179	180	175	180	1,201		
11. Markov	U.S.S.R.	180	180	180	180	121	180	180	1,201		
13. H. Motsch	W. Germany	169	180	178	128	180	180	180	1,195		
14. F. Gaensli	Switzerland	180	180	137	180	180	180	151	1,188		
15. Lepp	U.S.S.R.	177	164	180	139	180	180	167	1,187		
16. P. Soave	Italy	180	180	180	105	180	180	180	1,185		
17. D. L. Bronco	U.S.A.	163	180	152	180	180	156	163	1,174		
18. I. Horesji	Czechoslovakia	180	180	155	180	116	180	180	1,171		
19. L. Larsson	Sweden	180	147	140	180	180	178	164	1,169		
19. G. Arghir	Rumania	180	180	147	180	180	151	151	1,169		
21. C. Martensson	Sweden	180	180	180	180	178	132	138	1,168		
22. J. Schreiner	E. Germany	180	125	180	180	180	180	138	1,163		
22. R. Sung Chan	N. Korea	152	180	180	180	180	111	180	1,163		
24. L. F. Polansky	U.S.A.	180	174	152	180	154	138	180	1,158		
25. R. Hobinger	Austria	174	180	130	131	180	177	177	1,149		
25. H. Sun Hen	N. Korea	180	180	140	180	180	124	165	1,149		
27. J. Sillgren	Finland	180	180	113	179	180	131	178	1,141		
28. T. Martin	N. Zealand	174	174	119	180	180	151	157	1,135		
29. A. Cosma	Italy	180	180	155	180	76	180	180	1,131		
29. E. P. Drew	G. Britain	145	180	175	180	180	136	135	1,131		
31. F. Bjerrre	Denmark	180	141	167	180	180	161	109	1,118		
32. A. Eldik	Netherlands	180	165	141	180	89	180	180	1,115		
33. V. Morizo	Japan	176	142	142	180	180	112	180	1,112		
33. G. Anestev	Bulgaria	180	139	163	180	180	112	153	1,112		
35. J. Michalek	Czechoslovakia	180	180	106	180	180	132	153	1,111		
36. K. Sin Duk	N. Korea	180	180	121	111	180	157	180	1,109		
37. A. Coppelock	Australia	149	180	136	170	123	180	169	1,107		
38. M. Hirschel	E. Germany	175	180	119	166	133	180	151	1,104		
39. J. Ensoil	N. Zealand	143	180	115	125	180	180	180	1,103		
40. M. Van Dijk	Netherlands	167	180	147	180	180	135	112	1,101		
41. H. Schmidt	W. Germany	180	180	127	180	111	180	139	1,097		
42. W. R. Thompson	Canada	166	156	172	180	180	67	164	1,085		
43. M. J. Woodhouse	G. Britain	156	180	180	180	92	125	167	1,080		
44. E. Romero	Argentina	169	180	126	180	97	180	146	1,078		
45. R. Katajamaki	Finland	180	179	130	180	116	145	142	1,072		
46. E. Huges	Belgium	180	154	106	158	159	139	161	1,057		
47. J. Lopez	Spain	180	165	139	180	75	137	180	1,056		
47. J. Guffens	Belgium	140	146	137	180	143	163	147	1,056		
49. A. De Mello	Canada	180	104	135	95	180	180	180	1,054		
50. S. Kosorus	Jugoslavia	180	164	154	98	180	96	180	1,052		
51. K. Andersson	Sweden	87	180	180	180	78	180	163	1,048		
52. Z. Orlio	Jugoslavia	164	180	132	180	96	115	180	1,047		
52. A. Leeuwangh	Netherlands	124	167	141	06	180	180	149	1,047		
54. M. Thies	Luxembourg	137	160	142	180	169	116	138	1,042		
55. J.-M. Berthe	France	180	180	180	146	79	124	149	1,038		
56. Y. Fishler	Israel	154	160	117	180	180	109	137	1,037		
57. D. Vishnitzer	Israel	160	152	139	180	91	129	172	1,023		
57. S. Popov	Bulgaria	180	120	180	180	126	95	142	1,023		
59. U. Fernandes Polo	Cuba	151	115	121	180	180	128	138	1,013		
60. A. Gastelon	Spain	169	133	126	180	103	180	111	1,002		
60. G. Mackenzie	Canada	81	95	162	175	180	180	129	1,002		
62. O. Torgersen	Norway	180	180	97	180	131	105	122	997		
63. G. Hertzberg	Israel	171	129	145	180	180	30	155	993		
64. G. Mussig	W. Germany	158	180	121	180	66	103	180	988		
65. L. M. C. Valdez	Cuba	152	112	134	180	123	106	180	987		
66. M. Torres	Spain	157	129	50	180	180	114	176	986		
67. K. Appleby	S. Africa	151	129	108	180	72	131	180	951		
68. L. Bernisson	France	44	152	119	180	180	162	108	945		
69. S. Hesthagen	Norway	180	141	156	180	71	75	141	944		
70. A. Bailly	France	57	180	116	180	180	180	45	938		
71. P. Lagen	N. Zealand	145	180	124	112	90	124	149	924		
72. J. Calefate	S. Africa	141	150	147	180	24	180	99	921		
73. P. Lommer	Luxembourg	121	51	120	180	180	117	143	912		
74. P. Grunnet	Denmark	157	177	63	180	103	82	139	901		
75. N. Merttes	Luxembourg	180	180	143	136	74	63	120	896		
76. I. Poots	Ireland	150	145	97	140	87	117	147	883		
77. S. G-Fredriksen	Denmark	172	131	140	59	83	116	180	881		
78. S. Waide-Soliman	Egypt	127	110	99	180	120	120	115	871		
79. E. Mikulicic	Jugoslavia	144	50	131	180	73	93	154	825		
80. W. Haller	Switzerland	180	165	31	136	68	103	126	809		
81. L. Godwin	S. Africa	145	101	109	180	134	55	80	804		
82. P. Nitschke	Australia	138	154	104	117	80	96	113	802		
83. S. Penate Marsella	Cuba	180	35	97	158	49	99	129	747		
84. C. Doyle	Ireland	84	126	95	82	107	137	115	746		
85. L. Rooney	Ireland	146	140	22	129	31	150	116	734		
86. H. Mena Tadros	Egypt	131	117	102	40	0	161	146	697		
87. L. O'Reilly	Australia	149	104	107	61	58	85	111	675		
88. A. Herzog	Belgium	113	98	132	41	58	46	180	668		
89. M. Fathy A. Amer	Egypt	110	80	83	180	2	50	107	612		

Team Results

1.	Austria	3,619
2.	U.S.S.R.	3,610
3.	U.S.A.	3,577
4.	Italy	3,559
5.	Czechoslovakia	3,542
6.	E. Germany	3,481
7.	Finland	3,473
8.	G. Britain	3,462
9.	N. Korea	3,421
10.	Sweden	3,385
11.	Bulgaria	3,346
12.	W. Germany	3,280
13.	Netherlands	3,263
14.	Switzerland	3,198
15.	N. Zealand	3,162
16.	Canada	3,141
17.	Israel	3,050
18.	Spain	3,044
19.	Jugoslavia	2,924
20.	France	2,921
21.	Denmark	2,900
22.	Luxembourg	2,850
23.	Belgium	2,781
24.	Cuba	2,747
25.	S. Africa	2,676
26.	Australia	2,584
27.	Ireland	2,363
28.	Egypt	2,180
29.	Norway	1,939
30.	Rumania	1,169
31.	Japan	1,112
32.	Argentina	1,078

Dvorak readies his A/2 for the fly-off, in which he managed a successful 'catapult' launch which gained a little extra altitude, sufficient to give him a winning total. Wing section is 'own designed' with a slightly flapped T.E.





Vilim Knoch of Yugoslavia (left) took two near 'identical' models to the fly-off, in which he placed second, just six seconds behind Klima.

warm and then distinctly hot. I personally was amazed at the lack of protection afforded the models, that were left lying about on the grass between flights. Only three teams (Czechoslovakia, North Korea, and New Zealand) put up tents to shelter their models. It is interesting to remember that the N.Z. proxy fliers were British!

The British flights started disappointingly for Bruce Rowe when he failed to max by a mere three seconds. Thereafter he and the others max'd all morning. At the end of the first five rounds we tied with the Italians for top team position. But it was going to be a case of 'many a slip . . .'

Like the two previous days the lift increased (and holes appeared) as it got hotter and breezier. The fifth Wakefield round was apparently the most difficult, as all three teams (North Korea, U.S.A. and Yugoslavia) with 12 initial maxs then dropped scores. By this stage the green track suit-clad North Koreans had been recognised to be a real contest threat—despite it being their first appearance at a World Championship. They obviously were far from new to the game, however, as their models and attitude revealed. Presumably they gained experience at Soviet Bloc events, as their models displayed a certain amount of Russian influence. The models were also in-

teresting from the amount of hardwood utilised in their construction.

The morning's flying had a second intermission—a quarter of an hour break between the fourth and fifth rounds—whilst the launching box was rotated. The wind had veered onto the woods in its customary fashion, but even further round than on the previous days. This had led to the box having its length along the direction of drift during the fourth round, and encouraging tactical flying. Whilst rearranging the 'box' complied with the F.A.I.'s stipulations for contest procedure, a complete re-location was really needed. A lot more airfield could have been used to advantage.

Inevitably there were incidents that only happen at inopportune moments at important competitions. The sole Spaniard C. Merseburger, had the misfortune to launch just as a parked 'spotter plane' started its engine just upwind of the flying area. This produced turbulence (and dust) to an extent severe enough to shift the Spaniard's tailplane in mid air—leading to some indescribable manoeuvres and a 30 second fifth round score. Rather luckier was American Bob White a round earlier. He had his motor peg come out letting the motor fly forward and causing the model to dive in amongst the parked cars upwind. Miraculously only the prop blades were damaged. New blades were substituted and the same model used again!

The weather was still hot when the contest was resumed at 6 o'clock in the evening. Bright sun with but a few white clouds gave the promise of lift to be found. The wind was still blowing straight on to the woods—but dropped as the evening cooled.

Out of the 17 fliers with five maxs apiece at the end of the morning only five failed to qualify for the flyoff. Disappointingly those five included Laurie Barr and Bryan Spooner. They both did under three minutes in both sixth and seventh rounds. Laurie had been suffering warp trouble during the contest, but found that twisting the wing prior to launch provided a satisfactory, if temporary, remedy. His sixth flight started tight, but improved afterwards only to 'fall out' of lift on the glide. His final flight simply lacked lift. Bryan

Left, East German Joachim Loffler prepares to wind—missed Wakefield fly-off by just five seconds. At right, Cuban Wakefield of Manuel Menendez Rico (right). Model held by Fernandez Polo.



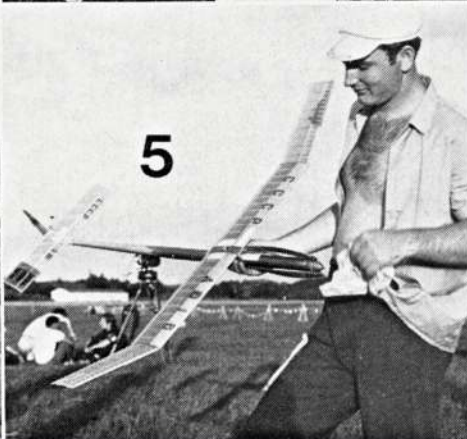
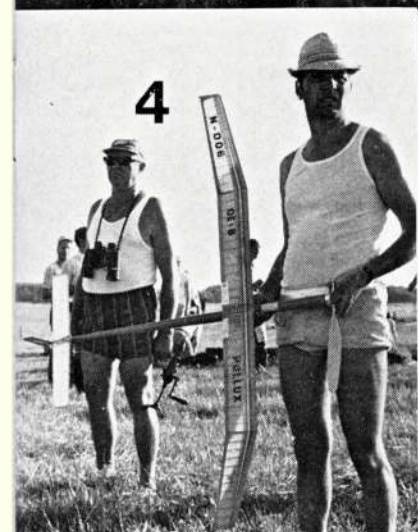
had a mysterious stalled glide after getting a good height on his sixth flight. The model was perfectly satisfactory on test both before and after! He changed models (to his Trials one), only to launch left of wind, and loop. The air was good—but not good enough for a max. (The British team had flown almost completely on the indications of the soap bubbles, and had remained at the upwind end of the 'box' during the evening. In comparison almost everyone else had retreated to the downwind end where they could attempt to fly tactically).

Whilst sub-max flights were disheartening to our hopes, there was worse to come. Bruce Rowe was among those subjected to a 'spot-check' for weight prior to the sixth round. Like three others he was found slightly underweight and provided with ballast to compensate. His model continued to belie its old-fashioned appearance with another max. Those underweight were recalled in the final round and scrutinised by the FAI Jury as well as by the processing officials.

Upon removing the ballast that had been so recently added, Bruce's model and that of the best performing Cuban were adjudged to be over 2 grams underweight even assuming the rubber weighed exactly 40 grams. The other two were less than 1/10 gram short. Models were checked on two different laboratory scales. Even these were not considered accurate to 1/10 gram when weighing a complete model. The Jury concluded that Bruce and the Cuban were unquestionably underweight and would be disqualified from the whole contest—whilst the other two would be let go. It is appropriate to mention that the contest organisers were far from happy at having to disqualify competitors—but were also faced with enforcing the regulations. They also went out of their way to ensure that I was given the 'full story'!

Bruce's troubles seem attributed to his model drying out during the very hot weather experienced throughout the contest period. Even so, 2 grams is more than anyone might have anticipated. Bruce himself took the affair much more calmly than the rest of the British contingent. Perhaps it was as well that he had dropped those few seconds in the first round as he was already out of the flyoff. Even a seventh round max plus the rest of his score would not have given us a team place.





1. Kim Dong Cik (N. Korea) with typically well finished Wakefield. 2. Aluminum front tube and sheet surfaces on Bulgarian model. 3. Bob White launches for second attempt in the fourth round with triple-finned Wakefield. 4. Hans Martin, of Austria, with his familiar 'Pollux' design. 5. Rearward fin and tubular fuselage employed by Jourov (Russia). 6. Mike Thomas (Canada) launches 'Slab' model has timer operated V.I.T. 7. Paul Lagan lights the D/T - model is fully wound! 8. Bob Wells flying proxy for Allan Douglas (New Zealand). 9. Another North Korean, Kim In Sik, uses dural motor tube, balsa tail boom. 10. Christian Schwartzbach with model using 22 in. x 28 1/2 in. (nominal) prop., as widely publicised since NFFS Symposium article. 11. Jan Zethoridahl with Wakefields of Australian Robert Emslie. 12. Kingsley Appleby (S. Africa) has fuse lit. Winds from the rear.



It is relevant to recall that Wakefields had been weighed *without* motors during the pre-contest processing. A model dead on weight at 190 grams structure would require exactly 40 grams of rubber to meet the specification (which is based on 230 grams a.u.w.) A certain amount of safety margin is obviously needed. This is unlikely to be overlooked in the future, but it was a hard way to learn. Incidentally, Wakefield motors were weighed the day before flying, impounded and held by the timekeepers from whom they were obtained as required. The heaviest motor offered to the processors weighed 46 grams!

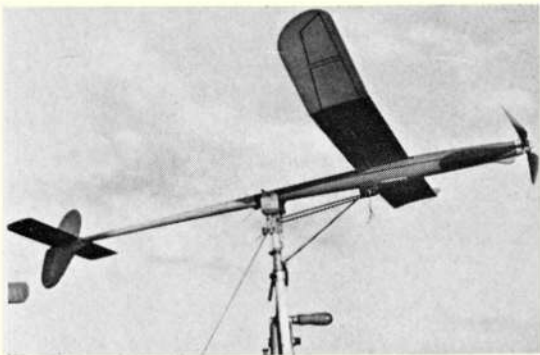
The controversy just described caused quite a diversion from the contest proper — which had continued uninterrupted! A round dozen of the Wakefield fliers managed a seven max total to qualify for a flyoff. The Danes, West Germans and the North Koreans had two representatives apiece. It was announced that the 'first' (and as it proved, only) flyoff would be held commencing at 8.10 p.m. This seemed very close to the finish of the round but didn't seem to embarrass anyone.

Conditions for the flyoff were coolish with a low sun. The sky was blue overhead — but had masses of cloud downwind. The start of the four minutes was signalled — and practically everyone started to wind. I think that at least one competitor had started to wind beforehand — a perfectly legitimate procedure with obvious advantages. I was also told that some timekeepers would not allow their charges to do this, and even made one contestant unwind what he had put on!

First away was Josef Klima, a move that may well have given him the slight edge that was all he needed for first place. His model certainly climbed well, and all but managed the four minute max. Other models followed in quick succession. Reiner Hofsass continued to fly his very high A/R solid wing model, and, but for an indifferent launch that produced a flat region in the initial climb, might have been placed even higher.



At right, Dupuis' model held in its very neatly made self-wind stand. Large fin area extends above and below tailplane.



Below right, Monique Jean poses with Emile Gouverner's Wakefield. Judging by the shadows in the background several other camera operators appreciated her photogenic properties!



Bob White launched to excited cries of 'Go-go' from several Americans. Kjeld Kongsberg managed three wind-ups in the four minute period! He broke the first motor in his best model. Whilst his helpers sorted out the pieces and replaced the motor, he then wound up his reserve model. This was then held ready by a helper, whilst he rewound the first model. The motor held and he launched it with but seconds to spare. The model and Very light went up almost together. Klaus Leissner was not quite so quick at coping with a motor break and launched just a second or two after the round ended. (It seems that the start of the 'finish' signal is the cut-off point.) As he only did 2½ to 3 minutes his final place was unaffected.

Final scores were really very close with Klima top with 3:52 and the tenth man (Christian Schwartzbach of propeller theory fame) clearing three minutes, followed by Dupois only a few seconds under. Quite a remarkable show of consistency especially when compared with power!

For an event crowded with models displaying complex construction and gadgetry the winner was remarkably straightforward. I believe he flew the model depicted in *Free Flight News*, issue 5/71, for the seven maxs and changed to a new model for the flyoff.

Left, Bryan Spooner launches his model which was unfortunate to drop short of maxs in the last two rounds.

Below, second British Wakefield team member (and best placed at 27th) Laurie Barr, prepares to give a javelin-like launch.



Both are tubular fuselage designs, with taper-tip wings, pylon mounted. Klima upset the officials by removing his rubber motor after the flyoff but before the model was impounded for post-contest checking. In consequence it was checked weighed with every motor that he had submitted, and only just passed the weight check on the lightest!

Runner-up Vilim Knoch of Yugoslavia, is an old hand at Wakefield and has been in the final flyoff before (1965). He took out a pair of very similar square-tipped circular fuselage models to the flyoff. Bob White's models did not really follow modern trends with their high pylons and twin fins — but flew well enough for third place. Reiner Hofsass' high aspect ratio model looked like the one he flew at Wiener Neustadt two years ago, and which was described quite extensively then.

The Wakefield Team event had quite a clear cut win for the Danes who only missed a single max out of their 21 flights. France, Russia and East Germany filled the next three places with very little separation in scores. The remarkable consistency of the Russians in placing second or third in all three team events should not go unnoticed.

The unusual contest hours also meant an unusual arrangement for the traditional prizegiving dinner. This was held in the evening of the day following the Wakefield event. The celebrations were preceded by an afternoon's sightseeing via a coach ride to and round Gothenburg and a boat trip up the archipelago. Most of the modellers looked much too tired to really appreciate their role of tourist.

1. J. Klíma	Czechoslovakia									1,260	+	232
2. V. Kmoch	Yugoslavia									1,260	+	226
3. R. P. White	U.S.A.									1,260	+	214
4. R. Hofsass	W. Germany									1,260	+	210
5. A. Lonardi	Italy									1,260	+	199
6. K. In Sik	N. Korea									1,260	+	187
7. K. Kongsberg	Denmark									1,260	+	186
8. K. Dong Sik	N. Korea									1,260	+	186
9. Jourov	U.S.S.R.									1,260	+	184
10. C. Schwartzbach	Denmark									1,260	+	182
11. L. Dupuis	France									1,260	+	174
12. K. Leissner	W. Germany									1,260	+	0
13. J. Löffler	E. Germany	180	180	180	180	180	175	180	180	1,255		
14. Melenciev	U.S.S.R.	180	180	180	180	172	180	180	180	1,252		
15. H. Martin	Austria	180	180	180	176	180	180	173	180	1,249		
16. P. Lagan	N. Zealand	180	172	180	180	175	180	180	180	1,247		
17. E. Nienstaedt	Denmark	162	180	180	180	180	180	180	180	1,242		
18. A. Oschatz	E. Germany	180	180	180	160	180	180	180	180	1,240		
19. A. Landeau	France	168	180	170	180	180	180	180	180	1,238		
19. A. Hakansson	Sweden	180	180	180	176	180	170	172	180	1,238		
21. D. Dopof	Bulgaria	180	161	180	176	180	180	180	180	1,237		
22. E. Gouverne	France	180	175	180	180	165	168	180	176	1,228		
23. W. Dohne	E. Germany	180	180	146	180	180	180	180	176	1,222		
24. F. Geansli	Switzerland	171	180	180	180	180	180	149	180	1,220		
24. H. P. Benedini	Argentina	180	180	180	180	142	178	180	180	1,220		
26. P. Gervasi	Italy	180	180	180	180	180	180	137	180	1,217		
27. L. G. Barr	G. Britain	180	180	180	180	180	145	171	180	1,216		
28. K. Jusufbasic	Yugoslavia	180	180	180	180	180	165	147	180	1,212		
29. Zilberg	U.S.S.R.	180	180	168	180	143	180	180	180	1,211		
30. H. Zachhalmer	Austria	169	162	160	180	180	180	176	180	1,207		
31. M. M. Rico	Cuba	180	180	158	180	180	180	146	180	1,204		
32. D. Siebenmann	Switzerland	180	171	130	180	180	180	180	180	1,201		
33. J. W. Allen	U.S.A.	180	180	180	180	127	172	180	180	1,199		
34. J. B. Spooner	G. Britain	180	180	180	180	180	154	144	180	1,198		
35. F. L. Parmenter	U.S.A.	180	180	180	180	159	132	180	180	1,191		
36. O. Yasuo	Japan	180	180	180	180	103	180	180	180	1,183		
37. A. Morrison	N. Zealand	122	180	180	180	180	157	180	180	1,179		
38. B. Chang Sun	N. Korea	180	180	180	180	96	180	180	180	1,176		
38. O. Hintz	Rumania	180	131	180	180	180	180	145	180	1,176		
41. J. Zolcer	Czechoslovakia	180	147	168	160	161	180	179	180	1,175		
42. E. Oskamp	Netherlands	139	178	180	175	180	176	139	180	1,167		
43. M. Thomas	Canada	173	172	180	162	180	115	180	180	1,162		
44. J. Dobelmann	W. Germany	180	174	178	180	128	139	180	180	1,159		
45. J. D. Van Rij	Netherlands	162	161	164	164	180	180	146	180	1,157		
46. R. Licen	Italy	180	180	180	177	180	96	160	180	1,153		
46. R. Johansson	Sweden	180	143	180	180	110	180	180	180	1,153		
48. E. Reitterer	Austria	152	141	144	180	180	179	176	180	1,152		
48. H. Schweinsberg	Netherlands	180	180	180	159	113	180	160	180	1,152		
50. J. Kuchta	Czechoslovakia	180	180	180	110	180	155	163	180	1,148		
51. U. Schaller	Switzerland	180	180	180	180	105	126	180	180	1,131		
52. G. McGlashan	Canada	177	175	132	135	180	143	167	180	1,109		
53. S. Stamenof	Bulgaria	170	166	180	180	95	180	120	180	1,091		
54. M. Goldberg	Israel	175	171	144	133	128	180	156	180	1,087		
55. N. Alujevic	Yugoslavia	180	180	180	180	135	141	88	180	1,084		
56. R. Emslie	Australia	132	136	155	180	180	131	146	180	1,060		
56. O. Nerud	Sweden	165	165	180	180	114	118	138	180	1,060		
58. P. Aalto	Finland	157	163	149	180	180	105	122	180	1,056		
59. A. Douglas	N. Zealand	153	166	100	180	126	180	147	180	1,052		
60. V. Dan	Rumania	134	180	180	122	180	177	65	180	1,038		
61. M. Segrave	Canada	180	180	139	61	177	151	129	180	1,017		
62. L. Stajnov	Bulgaria	136	180	174	180	76	120	145	180	1,011		
63. P. Pasanen	Finland	43	169	119	180	180	142	161	180	994		
64. A. Edwards	Australia	176	152	144	180	100	112	118	180	982		
65. A. R. Perez	Cuba	138	149	139	139	74	180	123	180	942		
66. Szabo	Rumania	164	141	153	180	104	75	103	180	920		
67. J. Calefato	S. Africa	120	140	76	180	180	91	92	180	879		
68. K. Appleby	S. Africa	112	125	60	97	61	180	96	180	731		
69. H. Marttila	Finland	123	156	95	65	135	97	45	180	716		
70. P. Hearn	S. Africa	53	80	70	85	180	83	106	180	657		
71. C. Merseburger	Spain	121	135	117	112	34	105	0	180	624		

WAKEFIELD

CLASS F.I.B.

Sunday, 4th July

Team Results

1.	Denmark	3,762
2.	France	3,726
3.	U.S.S.R.	3,723
4.	E. Germany	3,717
5.	N. Korea	3,696
6.	W. Germany	3,679
7.	U.S.A.	3,650
8.	Italy	3,630
9.	Austria	3,608
10.	Czechoslovakia	3,583
11.	Yugoslavia	3,556
12.	Switzerland	3,552
13.	N. Zealand	3,478
14.	Netherlands	3,476
15.	Sweden	3,451
16.	Bulgaria	3,339
17.	Canada	3,288
18.	Rumania	3,134
19.	Finland	2,766
20.	G. Britain	2,414
21.	S. Africa	2,267
22.	Cuba	2,146
23.	Australia	2,042
24.	Argentina	1,220
25.	Japan	1,183
26.	Israel	1,087
27.	Spain	624

The dinner and presentation were held in a restaurant-cum-ballroom adjacent to the main amusement park of Gotherburg. The prizegiving was dramatised with bugle blasts, but speeches were commendably short - with many in English. But it is best not to dwell upon the actual meal - which compared unfavourably with those served at Säve, whilst being several times the price.

'Goodbyes' came the next morning, just as the weather broke! It was cool and windy, and underlined just how lucky - or clever - were the Swedes to get the ideal weather on which they had relied for the success of the Championships. To run a present-day F/F Championship is a mammoth undertaking - and this year's organisers did it well.

NEXT MONTH

John O'Donnell reviews the technical developments in contest model design



Vic Driscoll of St. Albans flew this magnificent free flight *Westland Wapiti* so impressively it became clear winner of its class at our Annual All-Scale Rally this year at Old Warden. It weighs 30oz., uses a Marown Snipe 1.5 c.c. diesel.

Part VII: Covering the Airframe

FLYING SCALE MODELS by Eric Coates

THE LAST THREE ARTICLES have dealt almost exclusively with the structure of free flight scale models. I realise that I have far from covered all aspects of construction which has altered considerably in recent years, but have dealt in greatest detail with the structure which is most peculiar to this class of model, and biplanes in particular, because I feel that this is where most people, or their models, come unstuck. One could go on *ad infinitum* on scale model structures but I think now is the time to look at covering the airframe. I may return to the structural theme again at a later date (Editor permitting).

Having completed the structure of a scale model and rigged it, it always seems such a shame to cover up so much of one's handiwork. I have known modelers who, in fact, can't bear to proceed beyond this stage and leave their models naked for years! I usually allow myself a week of such indulgence during which time I take a picture or two and weigh the thing. Large clatter from kitchen scales and a shudder down the spine when you realise that you have only got $\frac{1}{2}$ oz. left for covering, doping, detail and 3 oz. of lead in the nose to balance it; if you are to make your target weight!

As stated before, the covering of full sized aeroplanes falls into three categories: fabric, plywood and metal (painted or unpainted). Most aeroplanes are a combination of two materials. Early aircraft usually were a combination of plywood and fabric, while between the Wars aluminium plate replaced the plywood and in the last 30 years has replaced the fabric also. However, most of the subjects suitable for free flight have large areas fabric covered, the flying surfaces almost entirely so, which is just as well as fabric is the lightest, and by far the cheapest form of covering to simulate.

Irrespective of the size of the model I recommend only one form of covering to represent fabric: lightweight Jap silk laid over doped lightweight Modelspan tissue. Up to, and including, my $1\frac{1}{2}$ Strutter built in 1959, I used paper only for covering purposes - lightweight Modelspan for models up to about 36 in. span and heavyweight Modelspan for larger machines.

'Before and after' views of the authors 1/12th scale *Hawker Nimrod* show the model as it was test flown (top) when just covered and 'metalskinned', and its final form after these tests proved satisfactory. This scheme may indicate lack of confidence, but it saves work if the worst is apparent!



tissue on its own is not an ideal covering for scale models. Although light and easily filled with dope it is not very strong and becomes brittle with age so that holes and splits are forever appearing. As the model becomes more and more patched it soon looks more like a well worn duration model than a scale model. I then experimented with nylon and silk. The former is suitable for models around 6 ft. span, i.e. scale radio models, on which it is used extensively, but falls down on three counts when used on the size of model we are interested in. Firstly, it is too heavy, particularly when filled with dope, for which it has a greater thirst than aeromodellers have for beer! Second, it doesn't like 'bending' around sharp corners of which we have plenty, and thirdly, its weave is too coarse to represent Irish linen reduced to around 1/12th scale. It is, however, immensely strong. My next experiments were with Japanese silk used on its own. This I found to be ideal in fineness of weave and also very light and flexible, although unfortunately it is hardly stronger than lightweight Modelspan, being very prone to splitting.

It was about this time that I had a long discussion with John Simmance, in a hut at Linton-on-Ouse one wet Northern Gala, during the judging of the *Selby Trophy* event which the Northern Area used to run for free flight scale models in the 1960s. I had always admired John's finishes and was amazed how well his covering stood up to the battering which his, far from lightweight, models received. It was then that John let me into the secret of the 'silk on Modelspan' technique he used. I tried it out on my next model, a Blackburn Airedale, and found it to be very successful - which is more than can be said for the Airedale which absolutely refused to fly - my only total failure in the last 20 years or more! Nevertheless, it proved the covering technique for me. Both Terry Manley and myself have used it exclusively for all our scale models ever since - it is lighter than heavyweight Modelspan (with the usual four coats of dope necessary to eliminate that hairy-spider effect) and far stronger. The lightweight Modelspan underlay completely eliminates any tendency to split under normal loading.

Before describing the covering technique in detail a word or two about the materials. Scale models use dope in copious quantities. I always use *Titanine Clear Glider Dope* to specification M.A.3. This is pretty thick stuff which I thin to various degrees for different applications. I always buy it in gallon tins which works out much cheaper than half pint tins. The only time I use it at full strength is for adhesive purposes, when attaching the Modelspan to the airframe. I know a lot of people have trouble with doping tissue on and prefer to use paste but I would recommend perseverance with the use of dope because once it is mastered it is a far superior method; giving a neater bond, without lumps and, what is more, does not impair the strength of the tissue when in contact; allowing it to be pulled around more to eliminate tip wrinkles.

Lightweight Modelspan hardly requires any description - it has been the standard covering material since the last war. It has risen in price less than any other modelling commodity in the same period and still costs less than a tanner (old fashioned variety!) a sheet. Invariably white is the chosen colour because the silk is only available in white these days and we invariably paint over it. Try and buy it uncreased, but if this is impossible iron it before use.

Lightweight Japanese Silk appears to be available



Another advocate of 'painting when proved' is J. Turvey, seen here test gliding his unpainted Sopwith 1 1/2 Strutter, built to 1/12th scale, and powered by a Mills .75 c.c.

in spurts. Quite often it is impossible to obtain for months on end and then everybody stocks it. It is advisable, therefore, to hold a couple of yards or so in stock. The price varies but it is usually about 50p per square yard. Again iron out the creases before use.

Now for the covering in detailed stages:

1. Break the model down into as many components as possible: i.e. de-rig and separate ailerons from wings, and elevators from tailplane, etc.
2. Apply two coats of 50 per cent thinned dope to the entire airframe, sanding after each to swell the grain. If there are extensive areas of sheet balsa give these a third coat.
3. Cover the entire model with lightweight Modelspan, preferably using dope as the adhesive. Stick the tissue to each piece of structure, in particular undercambered wing ribs. Cover all sheeted areas as well as areas to be 'silked' as this strengthens the sheet covering tremendously. Lap all edges of tissue over. Cover complex curves on rounded fuselages and wing tips with several small pieces to avoid wrinkles.
4. Dope the entire airframe with 75 per cent strength dope. With good dope at high strength, water shrinking is unnecessary. If the structure has been made on the lines described in previous articles there is no need to pin down; which I regard as a terrible chore anyway!
5. Give the fuselage a second coat of dope at 50 per cent strength.
6. Lightly sand entire airframe.
7. If parts of the fuselage are sheeted and are to be painted without any form of overlay covering, such as metal foil, then these should be filled at this stage before applying the silk to the rest of the fuselage. I find a couple of coats of *Belco Primer Surfacer* usually does the job. This material contains lead however and is rather heavy so confine it to the nose-end only. I find this form of filler far better than proprietary sanding sealers which tend to be greasy and give a poor key for colour dopes. They are also prone to cracking.
8. Now for the application of the silk. I have tried many ways but find the following the best. It may seem a little tricky at first but you soon get the hang of it. Silk is much more flexible than tissue

The A.P.S. plan for the V.A. *Walrus* (FSP 661 price 40p) has always been a popular challenge. This fine example was at the all-scale Rally, Old Warden, among R. Hibbert's collection from Coventry.

and will cover more compound curves without resorting to nicking; which always looks unsightly. A pair of really sharp scissors are essential for cutting silk, it is worthwhile investing in a new pair and keeping them for this job. That old pair most modellers possess, which double for tinsnips, are not really good enough. Carefully cut the silk to the shape required with about $\frac{1}{2}$ in. overlap. Lay the silk over the tissue covered surface, dry and smooth down as close as possible. The electrostatic effect will tend to pull the silk down close. With a soft camel-haired mop, brush 50 per cent thinned dope through the silk. Start in the centre of the area and work out to the extremities taking care to avoid trapped air 'bells'. Elimination of air bells is the reason for ironing the silk and smoothing it down dry. If one tries the traditional double covering technique of doping the Modelspan and then laying on the silk you get in a hopeless mess because silk saturated in dope is virtually impervious to air. Cover all undersurfaces first and trim with a slight overlap which is doped down. The upper surfaces are covered in a similar manner but with no overlap. If any airbells have formed under the silk then nick the silk, but not the Modelspan, with a sharp balsa knife and push dope into the bell with a brush. Smooth the offending silk down with the fingers.

9. If the subject is a W.W.I machine, we don't want a smooth finish on the silk, therefore a further coat of dope, at 25 per cent strength, is all that should be applied on top of the silk. The edges of surfaces are then lightly sanded and a further coat of 50 per cent strength dope applied at the edges only to obviate the hairy look. If the subject is of a later vintage, with a better fabric finish, then two coats of 50 per cent strength dope can be applied all over.

It is now worthwhile rigging the model again and checking that everything lines up O.K. The tail surfaces can be permanently attached at this stage.

Although far from complete and looking very plain in its off-white finish the model is now in a condition in which it can be flown. I always test fly my models at this stage because of a number of advantages: the

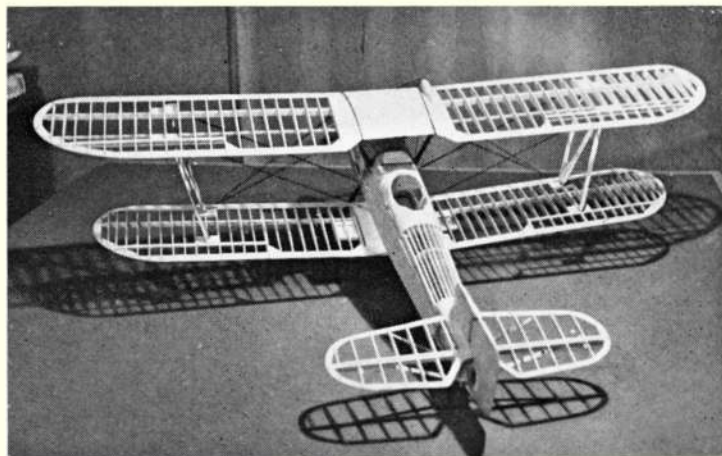


model is much lighter than when complete with all paintwork and details and, therefore, is less likely to damage itself in the first crucial trimming flights. If one is unfortunate enough to damage it at this stage, and let's face it the risk is rather high, then it is a much simpler task to repair and disguise with paint later. Finally if the thing just will not fly, or you write it off completely, one has not wasted one's time painting and making all the fiddly details; which can account for 50 per cent of the time expended on the model.

I shall devote an article to trimming and flying later in the series.

Assuming that we have successfully completed our trimming flights we can return to finishing the model off with great encouragement knowing we have a flying proposition, or alternatively throw the thing on one side and start looking for a more suitable prototype! A heart breaking decision, but worth making rather than waste time finishing it. To me if the thing can't be made to fly, a bonfire is a better death than a dust collecting ornament.

Two things require doing to the average flying surface prior to painting: rib tapes and control horns, and these two items, plus the various types of finishes and methods of applying them will be dealt with in the next issue.



A similarity of poses caused us to caption D. P. Golding's *Hawker Hornbill* in the last issue as his *Fairey Fox Mk. I*. This is the 38 in. span, Mills 1.3 c.c. powered *Fox*, last month's illustration being of his 25 in. span, E.D. 46 c.c. (later .75 c.c. D.C. Merlin) powered *Hornbill*. Apologies for the confusion but both in fact illustrate the high standard of construction, with the builder showing preference for 'non-working' rigging (i.e. shirring elastic), as well as spars let into the lower surface of the ribs only - not in accordance with Eric's views.



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

JUNIOR CONTESTS AT CRANFIELD

Further to last month's announcement that the South Midland Area of the S.M.A.E. will be holding a *Junior Kit Contest* at their rally, to be held at Cranfield on September 19th, comes the good news that a *Junior Stunt Contest* (again as per National rules) will be held as well. Both these events cater for modellers under 17 years of age on September 19th, and who are *not* members of an S.M.A.E. South Midland Area Club - the reason for the latter being that Area members are needed to help organise the events, this rule being applicable to all the contests at this rally.

Contestants must provide proof of third party insurance, this being in the form of an S.M.A.E. or M.A.P. card, or the policy for a similar scheme.

The Junior Kit event will be organised by Mr. Ray Favre who will be found near the general free-flight area, upwind of the airfield, from 10 a.m., while in charge of the Junior Stunt contest is Mr. Steven Blake who will be located near the remainder of the control line contests, also from 10 a.m. Entries may be made on the day from the relevant control points.

Dear John,

In answer to M. Dorian's letter as to the identification of small engines, I paint the connecting rod of my engines so as a minor inspection will reveal if it is your engine or not. By the way, what happened to *Gadget Review*? That was a very good series full of useful tips.

C. Cattigan.

Wembley, Middx.

Painting the con-rod is a good idea for identification, although it is rather awkward to check easily and rapidly! Also, make sure that you use a fuel proof paint . . .

Rather than 'what happened to Gadget Review', we should ask 'what has happened to the aeromodellers' inventiveness that comprised Gadget Review?' Surely not everything is bought ready-

made these days, someone must still be designing special devices to suit different needs. Don't keep it to yourselves - share it with everyone else!

Dear John,

My Uncle recently gave me a D.C. Dart engine and I have mounted it inverted in the A.P.S. free flight scale model of *Fokker E-IV Eindecker*, but the motor refuses to run on the flying field. The engine runs O.K. on the engine test bed. Can you give me a reason for this?

I. Scott.

Wembley, Middx.

Inverted engines can be tricky to start, and it is often best to turn the model upside down when starting the motor but make sure that the fuel does not run out! The reason for difficulty in starting the motor is the fuel running down the cylinder walls and flooding the motor. This is particularly true of glow motors, when the excess fuel can 'drown' the plug. Often blowing through the ports will 'dry out' the motor sufficiently to start it.

Dear John,

Please can you tell me the best way of cutting out wing ribs when building a model from plans etc. Whenever I try and cut them out from sheet they are never consistent in shape.

R. Macmillan.

Renfrewshire, Scotland.

There are several ways of cutting out wing ribs, the simplest being to mark out the rib outline onto a piece of 1/16 in. plywood, using carbon paper. Then simply cut out this master rib (or template) taking great care to ensure that it is accurate. This is then simply pinned to the balsa sheet and a sharp blade run around the outline to produce the ribs, which will of course each be identical.

An alternative method is to make two such plywood templates, and then to cut out suitable rectangular blanks for the ribs, which are then sandwiched between these templates, holding them together with bolts and nuts. Sand the blanks to conform to the templates, and cut the spars etc. with a fine file. This

is probably the quickest way of making a large number of identical ribs, such as in a big glider.

Dear John,

I have recently come into the possession of a D.C. Merlin; however, the piston has snapped. As Gig Eifflander has ceased his re-boring service except for his own engines, is there anyone else you can recommend to overhaul and repair motors.

J. Stoa (15).

Farnborough, Hants.

Suggest that you send your motor back to Davies Charlton for repair, in fact it is always best to return engines to their manufacturers for servicing. I am sorry to say that as far as we know, no-one else does a re-boring service now, although until recently there were several such people advertising for this work. Send your engine to Davies Charlton Ltd., Hills Meadow, Douglas, Isle of Man.

Dear John,

I recently was given the Airfix 1/24 scale Spitfire kit for my fourteenth birthday, and I am having difficulty with the painting. My father, who was a member of the ground crew at Manston during the *Battle of Britain*, says the colours on the instruction sheet are wrong. Could you please tell me where I could get the correct colours for this plane?

Richard Jeffries.

Greenford, Middx.

Humbrol make a set of six matt camouflage paints for the R.A.F. European aircraft, and these colours can be bought separately. For further colour details, I can recommend the Ducimus book 'Camouflage and Markings No. 1' which concerns the Spitfire, price just 30p.

Dear John,

I have just completed, apart from painting, the A.P.S. design *Bristol Fighter* by H. F. Palmer. It is powered by an Allen Mercury 10 diesel and looks very good. However, I am not sure as to what the correct colours were on these planes. Could you please tell me what they were as I want to finish the model as soon as possible.

David Stokes.

Wembley, Middx.

The Bristol Fighter (and other British aircraft of this period) were given a coat of P.C.10 (Protective Covering No. 10) on their upper surfaces. This gives a colour which ranged from brown-green to almost chocolate, dependent on the surfaces it was applied to, and the ratio of paint mixes. Under surfaces were left clear doped which gave a buff translucent effect. The best way to achieve this is to dye your tissue/silk covering with tea (yes, tea!), to achieve the right effect. Metal parts such as nose areas were either painted P.C.10 or light grey. Struts were varnished natural wood. Note, the outer rings of the roundel markings of that period were not dark, but almost powder, blue.

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 25p (5/-) 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.

171 150 in the £1 Rabate purchase coupon Golden Wing Members



FOR A WEEK IT POURED by the bucket. Flaming June indeed! Gloom descended on prospects for a bright and sunny mid-year all scale rally at Old Warden. Worse still—the rain made hay cropping impossible. The field was still under 18 inches of grass, damp to the roots, only the Wednesday before our day of days.

No-one—save the Managing Ed. and R.C.M.&E.'s technical Ed. will know what it meant to mow the R/C patch. Control-line was in a better position both in terms of being on higher ground, and in more advanced state of preparation. S.V.A.S. Model Section members buckled down to that task and soon had a smooth green disc. Then all out effort with the rotary mowers hacked out a square amid the rough cut grass. And as they did so, the wind dropped and the sky cleared for the calmest evening one could ever wish for before the big event.

Optimism was soon to be shattered ten hours later when most people were checking the weather before setting off to the Shuttleworth Aerodrome. It was windy—and how! It was showery, and it was over-cast.

Yet come they did. The keenest are not to be put



Left: J. Blagg of St. Albans Club winds up his Eastbourne Monoplane which earned a creditable third prize. Below, a rare sight was Bob Ivan's Boeing Crewmaker in Control line scale with its acres of glazing and unfamiliar shape.



OLD WARDEN hey ~ day

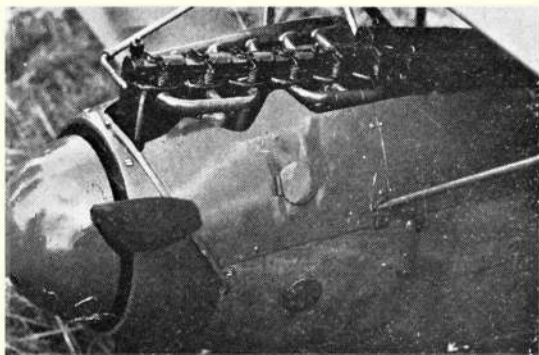


Top: Bert Etheridge, who is making the first British Pitts Biplane (full size) examines Norman McFarland's. Quarter scale replica of Mary Gaffney's 'Special' which has Merco 61 and Futaba Radio. Above David Brebner of Woking readies his 68 in. Swordfish (OS 80) which flew very well to get a third prize. Note Jack Morton's Tiger Moth climbing in background. Below, one of two almost identical, and new Mustangs, was this one with one of the finest scale props yet seen by P. Thorn of Yeaden, Leeds.





Dennis Bryant produced his remarkable Grainger Archaeopteryx tailless scale R/C model and it was awarded the Shuttleworth Trophy as most outstanding replica of a Museum subject. 75 in. span, it has a Merco 29 and tip controls. Real machine is also flying from Old Warden. Top right is the power department on the Albatros DV by R. Geall to 1/6th scale. Merco 61 is completely hidden, Dummy exhaust valves, water coolant pipes and exhausts look fine in a glass fibre structure fuselage.



off by a breeze, and Old Warden's reputation for its hospitable shelter when all around is unflyable attracted over 40 R/C Scale registrations and many more in free flight and control line. Cups and reference books were awarded by the Shuttleworth Collection and M.A.P. Ltd. to those who put up most outstanding performances, and this photo spread illustrates some of the winners.

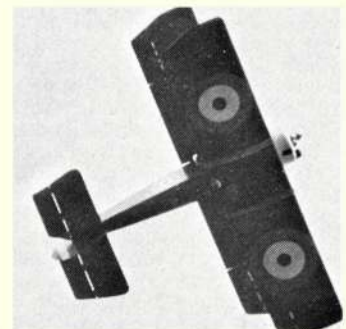
In their marquee, the Trent branch of I.P.M.S. put on a fine show of plastics, with innumerable special conversions and by close of play, everyone agreed that it had been a grand day despite the unseasonal weather.

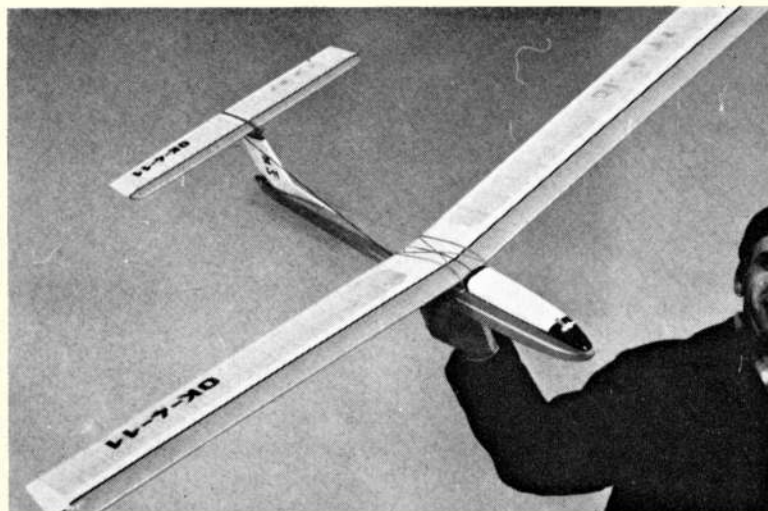


Constantly airborne was the Sopwith Pup by Colin Inwood of Chobham. He won top R/C prize for making most flights and spectacular performances. It spent as much time upside down as upright! Made to D. Boddington design, Merco 49, Sky-leader R/C.



Left, Free Flight Neuport 28 by D. Collin all the way from Bristol was an outstanding flyer, casting all its cares to the stiff breeze. Below right, D. Vaughan's Miles Master 1a cockpit, never ceases to astound one for its realism. U/C temporarily fixed.





JAGUAR

an R/C glider
for thermal or
slope soaring

by R. Cizek

ONE OF THE MOST RECENT 'trends' to have emerged in aeromodelling is that of radio controlled glider flying - this being particularly true on the Continent where there is a tremendous following for this sport.

Full size gliders and Czechoslovakians seem inseparable, and this affinity is also the case with models, the nation having produced innumerable attractive, high performance designs of all types. Radoslav Cizek is no stranger to *Aeromodeller* readers, having produced such popular plans as the *La Mouette*, *XL-56B* and *Minx*, and this latest design *Jaguar*, is a very modern, attractive glider of excellent performance which may be flown with single channel radio control equipment (or single function proportional) controlling the rudder, and has a variety of uses. It can be used as a slope soarer (in which case spruce spars are advised, as shown on the plan) or as a thermal soarer, for either towline or 'bungee' launch, whichever is your preference.

Many contests, both club and 'open' are held for thermal and slope soarers - so here is your chance to join in the fun. Even if your interests do not include competition work, this model can give you hours of *silent* fun, whether you live near a suitable hill or in 'open' country! Just one word of warning from the designer - keep the weight down as much as possible, preferably around 28 ounces complete, as the Eppler 374 airfoil used will provide a fast flying model if the wing loading is excessive. Strength is provided by the model design, not by the use of hard (i.e. heavy) balsa - use the grades specified on the plan for best performance.

Cut the basic fuselage sides from 3/32in. medium sheet balsa, and then add the 1/4in. square spruce longerons and the 1/4in. x 1/4in. spruce strengthener at the nose. Be sure to make two 'handed' fuselage sides! The 1/4in. balsa wing mount doublers may also be added at this stage, as can the 1/16in. ply nose reinforcement pieces F1A and F2A. Position these latter pieces carefully as they will provide a key for formers F1 and F2.

All the fuselage formers may now be cut to size, noting that some are laminated for extra strength combined with lowest weight. Lay one fuselage side flat on the building board, and glue formers F4 and F5 to it, using a set square to ensure that they are at right-angles to it. When the cement has thoroughly dried, add the opposite side.

While this is setting laminate the nose block from 3/8in. obechi sheet, roughly shape, and cut the 'step' for the fuselage sides. Now bring the fuselage sides together around this nose block, checking that the fuselage is straight and true. Similarly, join the rear fuselage around the soft tail block, again checking that the fuselage is not warped.

The remaining formers may now be added (including F11 and F12) followed by 1/4in. square spruce towhook runners, and sundry gussets etc. Bind and epoxy the 16 swg towhook to the spruce runners, then add the fuselage top and bottom sheeting between the side pieces. Accuracy is important here to avoid unsightly gaps. The 1/4in. ply keel and 3/16in. balsa fairings may then be glued in position.

At this point the radio control installation is best planned, remembering to keep the batteries as far forward as possible - both to prevent damage in a 'prang' and also to maintain the correct C.G. position.

Carve the detachable hatch from 1/4in. balsa, hollow as shown, add the locating dowels, and lightly tack cement in position. The whole fuselage may now be finally sanded to shape, blending in the nose portion and hatch, the keel fairing and rounding off the corners to produce a smooth streamlined shape.

Use hard balsa throughout when making the fin as this unit must carry the stress of the tailplane without twisting. Firstly make up the 'T' sectioned spar R6 and cut out the leading and trailing edges, plus cement yet. Slide the leading edge in position, then pin over the plan with 1/4in. packing underneath. Pack up R5 with 1/4in. balsa, then align the ribs and glue securely. When dry, add the trailing edge and then construct the rudder in a similar fashion. Remove from the board and add R7 followed by the 1/4in. sheet side pieces. Glue the tailplane mount in position followed by the 3/8in. square fairings. The whole unit may now be securely cemented to the fuselage ensuring that it is vertical. Add the 3/8in. sheet fairing and sand smooth.

Wing construction is quite conventional, and the finished article is an extremely rigid, warp resistant structure. If your model is to be used as a slope soarer, it is recommended that spruce spars are used in preference to balsa, as these models can take a lot of punishment in less experienced hands!

Cut the trailing edges to shape and insert the

hardwood reinforcement, then carve and sand to section before cutting the notches for the ribs. Laminate the double spars at the centre section area, noting the degree of taper of the reinforcing spar; this is essential to provide a gradual lessening of strength.

Roll the tubes for the dowels from ordinary writing paper. To make these take a strip of paper somewhat longer than is necessary and begin to tightly wind it around a piece of 14 swg wire, at the same time applying a generous amount of cement. Continue winding until the roll is $\frac{1}{4}$ in. in diameter. Now withdraw the wire and dry in front of a fire. It may then be cut to the required length with a razor saw. Pin the trailing edge to the plan, packing up its front edge $\frac{3}{16}$ in. to comply with the airfoil section, and also packing up the T.E. at the tip $\frac{3}{16}$ in. from the point 'x' indicated, to provide washout. Pin the lower $\frac{1}{4}$ in. x $\frac{1}{4}$ in. spar over the plan.

Now cut out all the wing ribs from the materials indicated, and slide over the rear $\frac{1}{4}$ in. x $\frac{3}{16}$ in. hard spar. Glue the ribs to the trailing edge and front spar, while angling the root ribs to suit the required dihedral angle. Insert the paper tube and box-in within the ply reinforcement - use plenty of glue for this purpose. When quite dry add the $\frac{1}{4}$ in. x $\frac{3}{16}$ in. leading edge portion, followed by the top spars. Apply glue around the joints between the rear spar and the ribs.

Glue the gussets in place, then trim the top edge of the sub leading edge to suit the wing section. Using P.V.A. glue, add the top leading edge sheeting. The wing may now be removed from the board and the lower sheeting applied, followed by the remaining centre section sheeting. Add the $\frac{1}{4}$ in. x $\frac{3}{16}$ in.

leading edge, followed by the $\frac{3}{16}$ in. sheet tips. Glue the tip gussets in place, sheet the tips with $\frac{3}{16}$ in. balsa, then carve the leading edge to section. Finally, the plywood WI ribs may be glued to the roots.

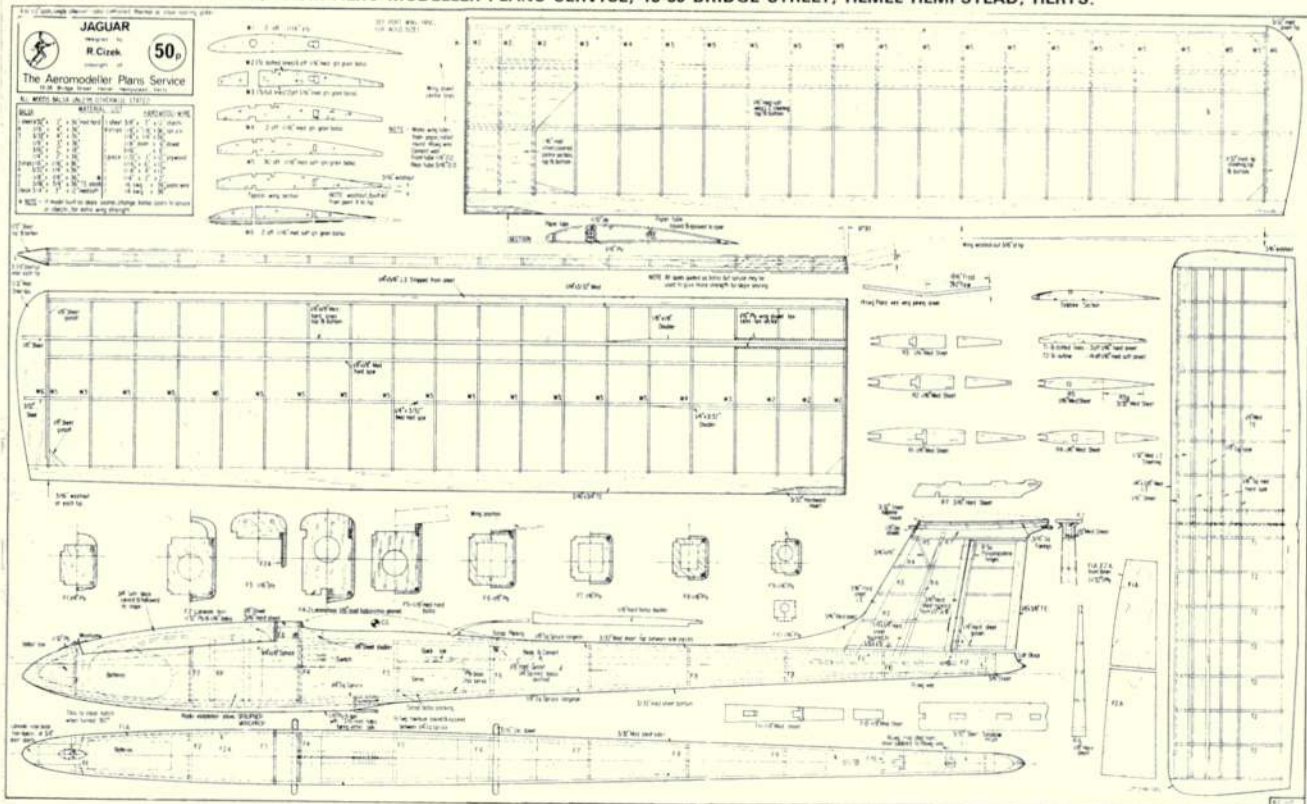
Tailplane construction is identical, except that it is built flat and is somewhat simplified.

Choice of wing covering again depends on the model's intended function - heavyweight tissue being more suited to a thermal soarer, whilst lightweight nylon would provide the extra strength necessary for a slope soarer. In either case, the fuselage should have two coats of sanding sealer before being covered with lightweight tissue. Two more coats of dope are then applied, followed by colour decoration. Colour trim on the wings is best restricted, although visibility is most important for thermal flying!

Finally, install the radio equipment, packed in foam rubber or similar for crash protection, then add weight to the nose box until the model balances where indicated on the plan. Check that the only warps are the washed-out tips, and that the wings are securely and accurately retained by elastic bands.

Jaguar may be launched by a 'bungee' launch if required - a great asset for 'lone wolf' flyers as no assistance is required. The designer finds that best results are obtained from a line consisting of 20-25 yards of $\frac{1}{8}$ in. square rubber and 160 yards of nylon fishing line. The nylon end has the tow-ring and pennant attached. Launch by stretching the rubber until it's 3-4 times its original length, point the model into wind (with the wings horizontal) and release. The model will then kite right up to the top of the line in anything above a light breeze.

FULL-SIZE COPIES OF THE 1/7th SCALE REPRODUCTION ARE AVAILABLE AS PLAN NO. RC/1117 PRICE 50p PLUS 5p POST-AGE, FROM AERO MODELLER PLANS SERVICE, 13-35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.



AIRCRAFT DESCRIBED

No. 206

BY

FELIX

PAWLOWICZ



S.4 KANIA 3

THE FIRST S-3 KANIA was intended, by its designer E. Stankiewicz to perform the duties of an aerial tug for gliders, so it was most appropriate that the prototype should have been built at the *Szybowcowy Zakład Doswiadczalny* (Experimental Glider Establishment) at Bielsko - Biala, Poland.

Construction began on this prototype late in 1950, and was quickly completed, enabling the first flight trial to be made on 17th May 1951. Despite proving to be an excellent aircraft for glider towing - possessing as it did better qualities than the widely used tug, the CSS-13 (Polikarpov Po2) certain deficiencies in the aircraft documentation prevented it from receiving its certification of airworthiness. This resulted in the *Kania* being suspended from flying, and despite the urgent requirement for such a craft, the project was abandoned after this brief testing.

Reorganisation of the Polish aircraft industry a few years later enabled Stankiewicz to rekindle his interest in the design, and the first of three new prototypes designated *S-4 Kania 2*, flew on 2nd September 1957 with the registration mark SP-PAA. All these aircraft were built at the W.S.K. factory at Mielec. In 1958 an example was demonstrated at the World Glider Championships, held at Leszno in Poland where there was naturally much interest in this class of machine. The third prototype aircraft incorporated detail refinements and was designated *S-4 Kania 3*, being registered as SP-PBB. All three aircraft were assigned to Aeroclubs, where they received a good reception but partly due to a change of decision of the Sport Aviation Authorities, and partly to the emergence of the new all-metal rival, the PZL-104 *Wilga*, the *S-4 Kania* was never put into series production.

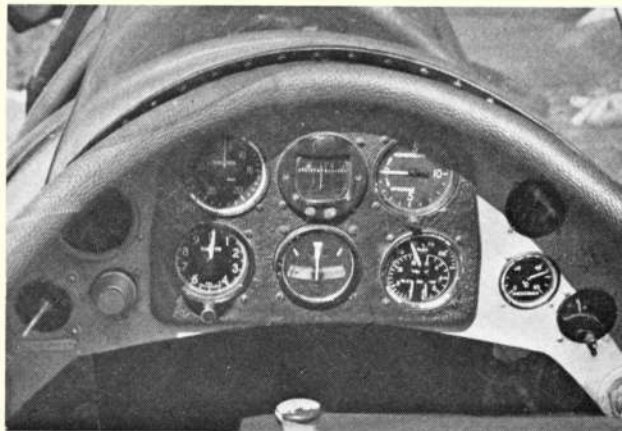
The entire construction of this two-seat glider tug/

general purpose aircraft was in wood - the fuselage being of plywood semi-monocoque construction with four spruce longerons. This unit was first plywood then fabric covered, while the front portion and engine mounting featured removable dural panel. Aft of the fire-proof bulkhead lay the fuel tank, sufficient to give a range of approximately 360 miles.

The two open cockpits, equipped with dual controls, had a large baggage area located behind them, and beneath this storage area lay a 24 volt battery, providing the power for flaps, navigation and landing lights.

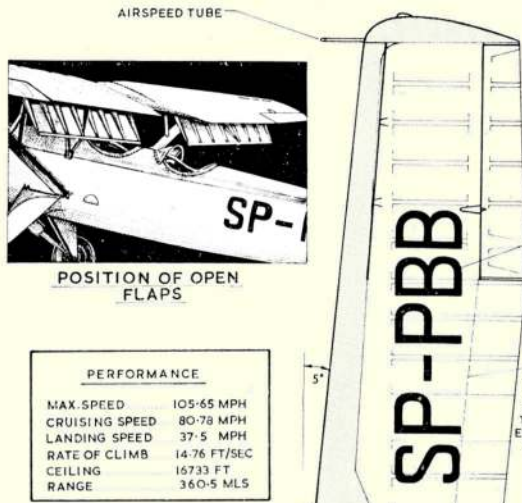
A very 'conventional' double 'V' braced undercarriage unit with two half axles was utilised, suspension being provided by bungees cord passing within the legs themselves. A half-spring, rotateable tail skid, with rubber shock absorber completed the aircraft landing equipment.

Equipped with a five cylinder M110 air-cooled radial engine, rated at 125 h.p., performance was



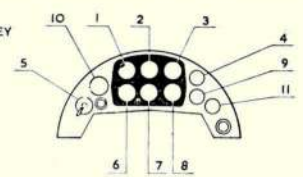
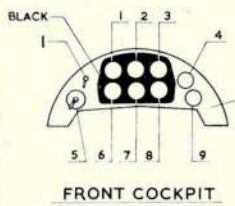
Top, two views of this attractive parasol winged two seater show its suitability for flying scale with large tail surfaces, wing slots, single strut bracing and a clean, uncluttered general appearance. Right: the instrumentation with basic flying panel in centre.

S.4 "KANIA-3"

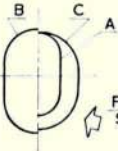
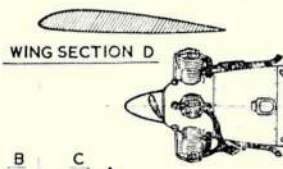


PERFORMANCE

MAX. SPEED	105-65 MPH
CRUISING SPEED	80-78 MPH
LANDING SPEED	37.5 MPH
RATE OF CLIMB	14.76 FT/SEC
CEILING	16733 FT
RANGE	360.5 MLS



- 1 - AIRSPEED INDICATOR
- 2 - COMPASS
- 3 - RATE OF CLIMB INDIC.
- 4 - TACHOMETER
- 5 - IGNITION SWITCH
- 6 - ALTIMETER
- 7 - BANK & TURN INDIC.
- 8 - ENGINE GAUGE
- 9 - CARBURETTOR AIR TEMP
- 10 - FUEL GAUGE
- 11 - ELECTRICAL GAUGE

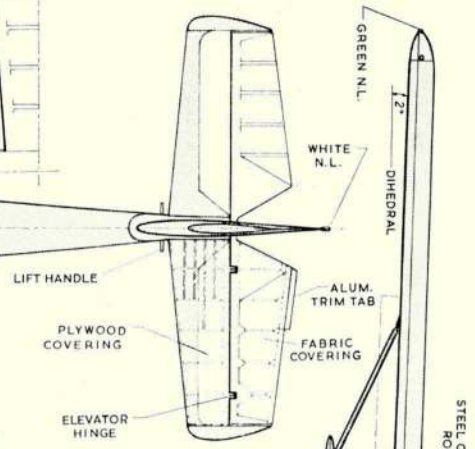
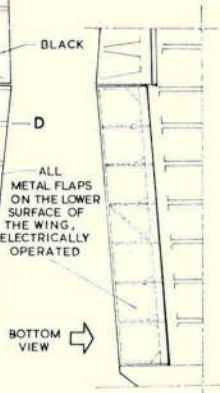


SINGLE SPAR STRUCTURE WITH A PLYWOOD COVERED TORSION BOX EXTENDING FROM THE LEADING EDGE TO THE SPAR.
SPRUCE BOX SPAR

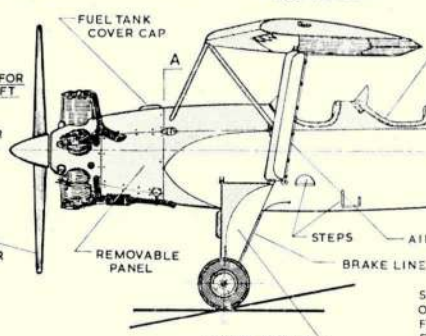
DIMENSIONS AND WEIGHT

SPAN	39 FT 1 IN
LENGTH	28 FT 6 3/4 IN
HEIGHT	7 FT 6 3/4 IN
WING AREA	212.04 SQ. FT
WEIGHT EMPTY	1455.05 LB
WEIGHT LOAD.	2149.5 LB
WING LOADING	10.13 LB SQ. FT

WING PROFILE NACA 23012
HORIZONTAL TAIL SURFACE NACA 0007
VERTICAL TAIL SURFACE NACA 0006

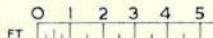


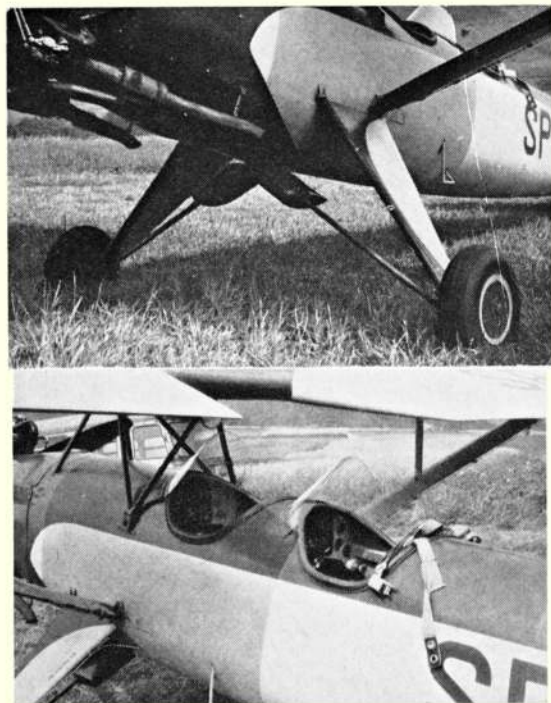
FUEL TANK 43.5 GAL. CAPACITY



SEMI-MONOCOQUE STRUCTURE OF THE FUSELAGE CONSISTS OF FOUR SPRUCE LONGERONS AND FORMERS.

THE BADGE OF POLISH NATIONAL AEROKLUB (BLACK)





The fairing over the undercarriage leg permits easy reproduction on a scale model of the Kania. Streamlined bodies over the top ends of the vee rods cover bungee shock cord. Bottom photo gives cockpit area detail. Note the safety harness and parachute straps out of rear seat.

adequate rather than scintillating, maximum speed (A.S.L.) being 150 m.p.h., cruising being confined to 80 m.p.h. A hand starter was also provided.

The braced parasol wing, using an N.A.C.A. 23012 airfoil featured a 5 degree sweep with a very modest 2 degree dihedral and was made in two pieces, joined at the centre portion which was supported on the fuselage by an inverted 'V'-braced pyramid of steel tubing.

Wing construction was again conventional, it being a single spruce box spar unit with a plywood covered 'D' leading edge section - aft of this spar being fabric covering. Flaps situated on the underside of the wings share the distinction with the steel struts to the wing and tail in being the only metallic items on the machine.

Differential slotted ailerons were built-up wooden structures, fabric covered. Leading edge fixed slots with the same span as the aileron were also used. A one-piece, braced tailplane of all wood construction was employed. The elevators being fabric covered as was the fin, the remainder utilising plywood skinning.

In many ways, its shape is distinctly Polish, due no doubt, to the fame of the R.W.D.-8, and at the same time its proportions make it an admirable subject for flying scale power - either free flight, radio controlled or control line, even as a lightweight rubber powered model.

REPRINTS OF THIS FEATURE PLUS FULL-SIZE DYE-LINE PRINTS OF THE 1/24th SCALE ORIGINAL ARE AVAILABLE AS PLAN PACK JH 2927, PRICE 20p (4/-) PLUS 5p POSTAGE FROM AERO MODELLER PLANS SERVICE, 13/35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.

CONTEST CALENDAR

August 21st/22nd	CENTRALISED F.A.I. F/F MEETING. RAF Syerston, Newark.	September 12th	S.M.A.E. AREA CENTRALISED MEETING. Team Power, F.A.I. Rubber, A/1 glider. Area Venues.
August 22nd	BUCKANEERS OPEN C/L STUNT. Finmere Airfield, Tingewick, Nr. Buckingham. Field entry 20p. Details J. Mannall, 3 Totnes Close, Bedford.	September 12th	BURNS BROWN 'A' COMBAT RALLY at Playing Fields, St. Thomas' Rd., Stopsley, Luton. Pre-entry 25p to N. P. Blackburn, 'Trebois', Newlands Drive, Maidenhead, Berks.
August 29th	TORBAY RALLY. Open R/G/P. All-in F.A.I. Chuck Glider, Woodbury Common, Nr. Exmouth.	September 19th	SOUTH MIDLAND AREA RALLY. F/F: Open R/G/P, Wakefield, Tail-less, Helicopter, Chuck glider, Junior Kit. C/L: Combat, Stunt, 1/2 A T/R, F.A.I. T/R, Goodyear Junior Stunt. Pre-entry (15p) essential, to G. Johnson, 37 Oxford Road, Kirtlington, Oxon. R/C Single Channel, Multi aerobatics (R.O.Y.G. frequencies only). Pre-entry (15p) essential, to D. Giles, 'Derron', 64a Station Rd., Bow Brickhill, Bletchley, Bucks. R/C 'Eyeball' Scale (Brown and Blue freq. only). 15p pre-entry (essential), to R. Edmonds, 16 Telford Way, Bellfield, High Wycombe, Bucks. F/F entries 15p on field. Venue Cranfield, Bedfordshire.
August 29th	MANX NATIONAL OPEN SOAR-IN CHAMPS. (Slope and Thermal). Bring the family. Details and holiday brochure from H. Bailey, 'Sunrise', Linden Avenue, Port St. Mary, I.O.M. Tel. P.S.M. 3184.	September 26th	LONDON AREA F.A.I. GALA. F.A.I. R/G/P in Rounds. Round 1 ends 12 noon. C.d'H, A/1, 1/2 A, HLG. No spectators. At R.A.F. Bassingbourn (on A.14, Nr. Royston, Herts.).
August 29th	WOODFORD RALLY. F/F: Open R/G, Tail-less, Chuck. C/L: Scale, Combat, F.A.I. T/R, Goodyear, H'cap Speed, Stunt, R/C: Aerobatics, Eyeball Scale.	September 26th	S.E. AREA THERMAL SOARING at Golden Cross, Lewes, Sussex.
August 29th	WEST OF ENGLAND R/C SCALE AIR DAY at Westland Airfield, Yeovil, Somerset.	September 26th	C/L TRIALS FOR '72 WORLD CHAMPS. Stunt, T/R, Speed. Venue to be announced.
August 29th	INDOOR AT CARDINGTON. Beginners Tissue & Microfilm. F.A.I. Microfilm, Open Microfilm. No spectators. Passes essential - Telephone Bruce Edwards, 01-969 7349.	September 26th	LEEDS D.M.F.C. RALLY. A/2, Open R/P, Chuck glider. (A/2-7 flts, no rounds, £5 prize.) 9.30 start. S.M.A.E. members only.
August 29th/30th	COTSWOLD R/C SOC. Two Day pylon race Meeting at R.A.F. Hullavington.	October 3rd	S.M.A.E. ALL SCALE MEETING at R.A.F. Little Rissington.
August 29th/30th	KENT R/C AIR SHOW. F.A.I. Aerobatics, Open aerobatics, Scale Class II, F.A.I. vlnnn racino. Open pylon, Biplane pylon. W.W.I dogfight display. Possibly R/C combat. Venue Rochester City Airport.		
September 5th	NORTHERN AREA RALLY. Thirty events for C/L, F/F, R/C, including Indoor, Peanut Scale, Jetex, etc., at R.A.F. Lindholme, Nr. Doncaster. Details (S.A.E.) R. Firth, 22 Slayleigh Avenue, Sheffield, Yorks.		
September 12th	FLYING DRUIDS MULTI RALLY. F.A.I. Schedule at Middle Wallop Airfield, Nr. Andover, Wilts. 10.30 a.m. start.		



Latest Engine News

by
Peter Chinn

Speed Motor Development in Italy

Although Italian C.L. speed modellers have not (with, of course, the notable exception of the recent Criterium of Europe) been very much to the fore in regard to world records or championship successes in recent years, we have to hand it to their engine manufacturers for having continued to produce some of the world's best model racing engines.

Italy's relatively small model engine industry is, in fact, unique in that most of its manufacturers are engaged wholly or partly in the production of high-performance motors. For example, the largest, Super-Tigre, although much of their production consists of R/C engines, have, for the past two decades, devoted most of their energies to the development of racing types. The Rossi brothers, ex-speed flyers themselves, have been exclusively concerned with racing engines even though one can now buy some of their motors with throttles fitted. Among the newcomers, both Komet (Kosmic) and OPS have jumped in at the deep end by going straight for the speed market.

The most recent engines to come from these Italian manufacturers are two entirely new 2.5c.c. piped racing engines, the Kosmic K-15 and Rossi R-15 and, having recently acquired examples of them, we have taken the opportunity of compiling some statistics on these two engines which, together with similar data for the piped version of the well-known Super-Tigre G.15RV, are presented here in tabular form for comparison. Pictorial illustrations of other differences and similarities can be seen in the accompanying selection of photographs.

Super-Tigre G.15RV

The G.15RV has been produced in several variants since it first appeared in 1966. These have included both standard and tuned pipe models and a choice of 'ABC' or orthodox piston cylinder construction. The present model shows several changes since the revised 1969 version was described in this column 2½ years ago. These include a new cylinder head with shallow-cone combustion chamber to replace the previous hemi-

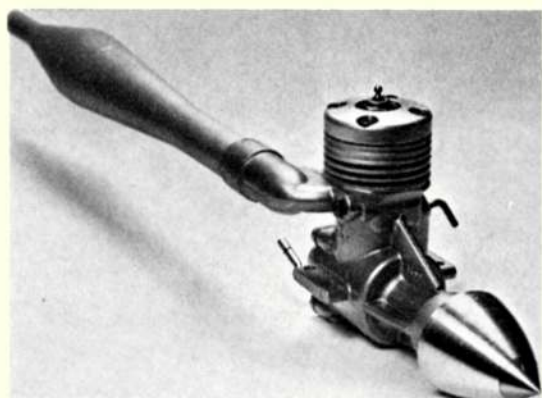
spherical shape with wide squish band. The crankshaft no longer has enclosed counterbalancing and porting has, of course, been retimed for pipe operation.

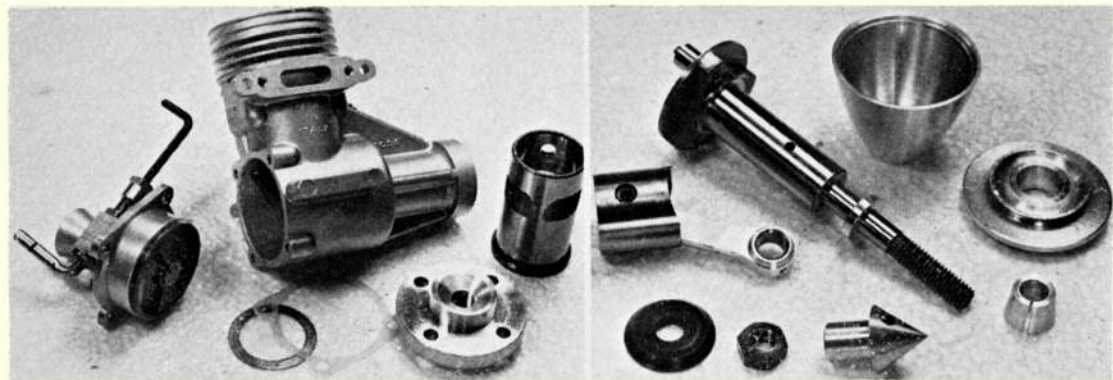
The G.15RV is one of the few modern C.L. speed engines to retain the open loop or crossflow scavenged cylinder port layout and the Super-Tigre tuned pipe, sold as an extra, therefore includes a pressure diecast exhaust elbow that fixes neatly to the engine's side exhaust flange. The 10mm. diameter shaft journal and

Heading picture shows the new 1971 Rossi R15 on the left, claimed to be a substantial improvement on the 1970 model. Opposite is the Kosmic K-15, made by the Komet Kart engine manufacturer.

Current version of the well-known Super-Tigre G.15RV complete with ST G.15 tuned pipe.

Three-quarter rear view of ST G.15RV with exhaust elbow fitted. This engine has long been regarded as the 'standard' speed engine, but is now being challenged by up and coming rivals.





At left the GT Super Tigre G.15RV main casting, liner, standard head and rear induction assembly with hardened steel valve disc. On the right, the same motor's crankshaft (now without counterbalance sealing rim) prop-driver/spinner assembly, piston and new conrod with bushed big end.

large rear ball bearing, somewhat oversized for a rear induction racing 2.5, are a result of the engine's development from the original shaft-valve G.15.

COMPARISON OF DATA

	Super-Tigre G.15 RV	Kosmic K-15	Rossi R-15
Nominal Bore x Stroke	15mm x 14mm	15mm x 14mm	15mm x 14mm
Nominal Swept Volume	2.474cc - 0.1510cu.in.	2.474cc - 0.1510cu.in.	2.474cc - 0.1510cu.in.
Stroke/Bore Ratio	0.933:1	0.933:1	0.933:1
Checked Weight, less pipe	188gr. - 6.63oz.	167gr. - 5.89oz.	163gr. - 5.75oz.
Checked Weight, with pipe	223gr. - 7.87oz.	196gr. - 6.91oz.	188gr. - 6.63oz.
External Dimensions			
Length - prop driver face to backplate or intake	85.5mm	88.5mm	66.2mm
Overall Height (less plug)	65.6mm	66.0mm	63.5mm
Crankcase Width	28.0mm	28.0mm	28.0mm
Width across mounting lugs	42.5mm	42.4mm	42.3mm
Bearings			
Main (ball journal)	10 x 23.5mm 8-ball 5 x 16 mm 6-ball	7 x 19mm 7-ball 5 x 16mm 6-ball	10 x 19mm 10-ball 5 x 16mm 6-ball
Big end	Bronze bushed 2 oil-holes	Plain, aluminium 2 oil-holes	Plain, aluminium 2 oil-holes
Small end	Plain, aluminium 1 oil-hole	Plain, aluminium without oil-hole	Plain, aluminium 1 oil-hole
Disc valve	Hardened steel 4mm i.d.	Bronze bushed 3.5mm i.d.	Not applicable
Crankshaft			
Main journal dia.	10mm	7mm	10mm
Crankpin dia.	5mm	5mm	4.5mm
Piston/Conrod Assembly			
Total Weight	8.0gr.	8.0gr.	8.0gr.
Piston only	5.0gr.	5.5gr.	5.2gr.
Gudgeon pin only	1.0gr.	0.8gr.	0.8gr.
Connecting-rod only	2.0gr.	1.7gr.	2.0gr.
Gudgeon-pin dia.	4mm	4mm	4mm
Porting			
Scavenging System	Open loop, side exhaust	Schnuerle, Rear exhaust	Schnuerle, Rear exhaust
Induction System	Rear rotary disc valve	Rear rotary disc valve	Crankshaft rotary valve
Exhaust opens	79 deg. BBDC	80 deg. BBDC	84 deg. BBDC
Exhaust closes	79 deg. ABDC	80 deg. ABDC	84 deg. ABDC
Transfer opens	67 deg. BBDC	64 deg. BBDC	65 deg. BBDC
Transfer closes	67 deg. ABDC	64 deg. ABDC	65 deg. ABDC
Third port opens	Not applicable	60 deg. BBDC	65 deg. BBDC
Third port closes	Not applicable	60 deg. ABDC	65 deg. ABDC
Rotary valve opens	42 deg. ABDC	37 deg. ABDC	38 deg. ABDC
Rotary valve closes	55 deg. ATDC	55 deg. ATDC	48 deg. ATDC
Carburettor choke dia.	7.5mm	6.5mm	5.5mm
Effective choke area	39.2sq.mm.	23sq.mm.	23.7sq.mm.
Manufacturer's suggested operating rpm, on pipe			
	26,000 rpm	Not stated	26,000 rpm

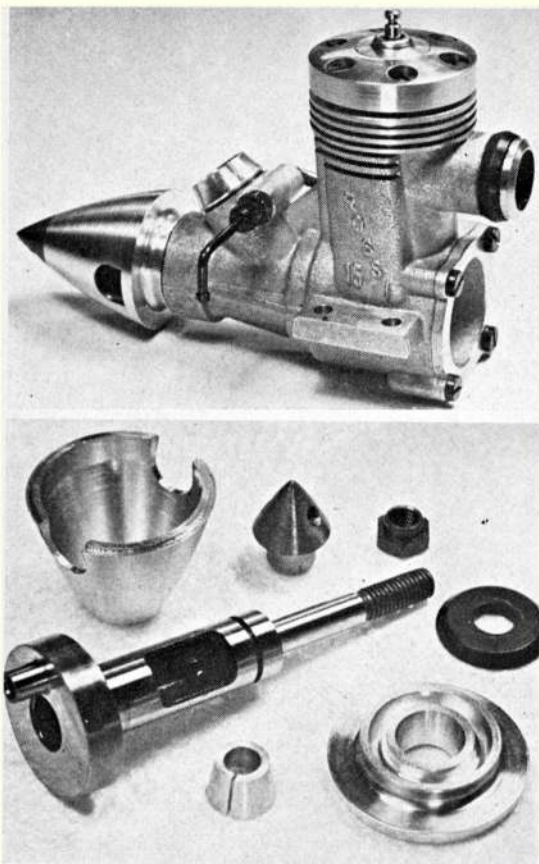
Kosmic K-15

This engine is produced by the makers of the Komet go-kart engines and, in fact, was known in preproduction form as the 'Komet-15'. It comes complete with pipe and a neat machined adaptor tube which, by means of silicone-rubber O-rings, makes, between engine and pipe, a firm gas-tight joint that can be adjusted to tune the engine's operating rpm.

The Kosmic has Schnuerle loop scavenging with two rectangular transfer ports flanking the rear exhaust port and an inclined third port, diametrically opposite the exhaust, which opens approximately 4 degrees after the main transfers. The cylinder-head uses a separate trumpet-shaped insert but a conventional glowplug is retained. The crankshaft is of the internally counterbalanced type and the main journal is reduced to 7 mm, with a correspondingly smaller rear bearing for reduced drag. The non-metallic rotary-valve is bronze bushed and runs on a 3.5 mm, hardened steel pin retained in the backplate by a grub screw.

Rossi R-15

The Rossi also comes complete with pipe and adaptor and has the same type of fitting. It, too, has Schnuerle porting with rear exhaust. Its transfer passages are quite a bit shallower than those of the Kosmic but the port areas are somewhat larger, the three transfer ports virtually joining up on the cylinder wall. They are



timed to open simultaneously but are shaped to promote an initial flow across the piston from the two main transfers and an upward flow from the third port.

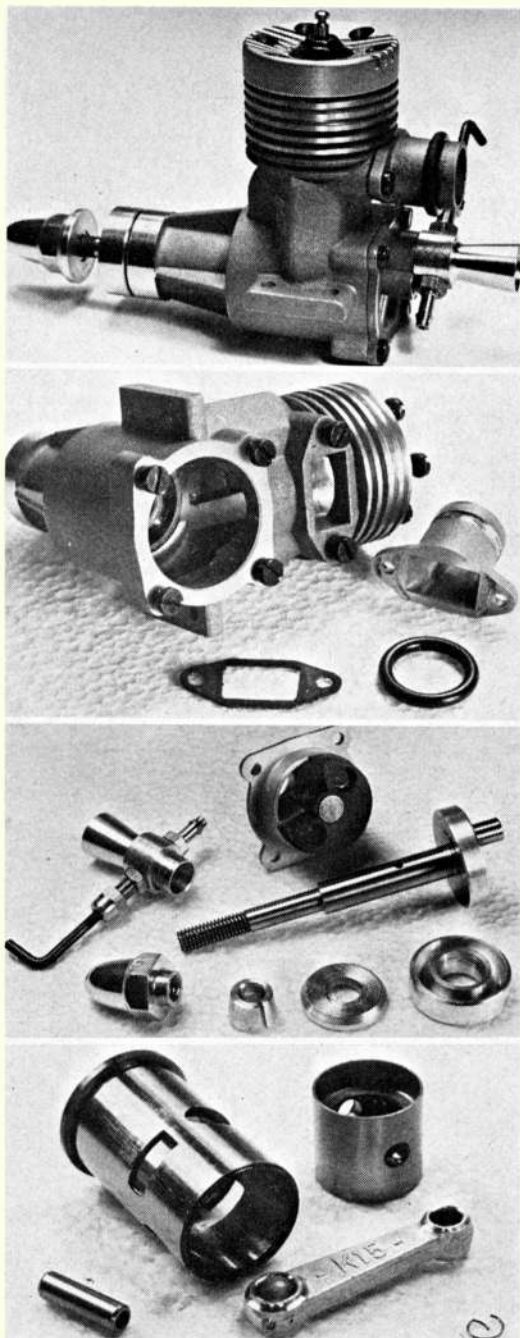
As first manufactured last year the R-15 had a conventional head and glowplug but the present 1971 version has a new assembly modelled on the Cox glowhead conversion that has been so successfully used on modified G.15s. It consists of an insert with integral glow filament and trumpet-shaped combustion chamber clamped in position by a machined ring as on the Kosmic.

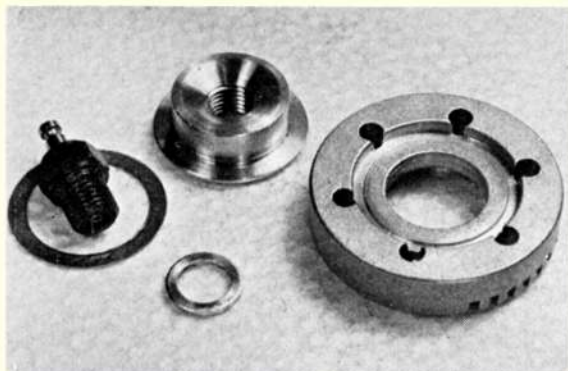
Unlike most of the more recent racing 2.5s (TWA, G.15RV, Kosmic, Moki, etc.) the Rossi returns to a shaft-valve induction system. The rectangular valve port, 12.7 mm. long, registers with a rectangular intake port that is offset in the direction of rotation - as on the G.15FI but rather less so. In order to accommodate an adequate gas passage (7.5 mm. bore) the internally counterbalanced shaft has a 10 mm. dia. main journal but this is supported in a

K-15 carburettor, rotary-valve assembly and crankshaft. Shaft has 7 mm. journal and enclosed counterbalance. Quality construction throughout.

K-15 cylinder-liner and piston assembly. Rod is forged. Gudgeon-pin is retained in lapped cast-iron piston by circlips as on ST and Rossi.

Left, 1971 Rossi R-15 showing new insert type glow head. Construction is first class. Below left, R-15 shaft has internal counterbalance and 7.5 mm. gas passage. Superb spinner assembly. Below, the Kosmic K-15 has distinctive 'concave' head and features Schnuerle scavenging with rear disc valve. Beneath this is seen the engine body, a well executed one-piece pressure diecasting.





lighter type of bearing of 19 mm. o.d. The intake venturi has six peripheral jets.

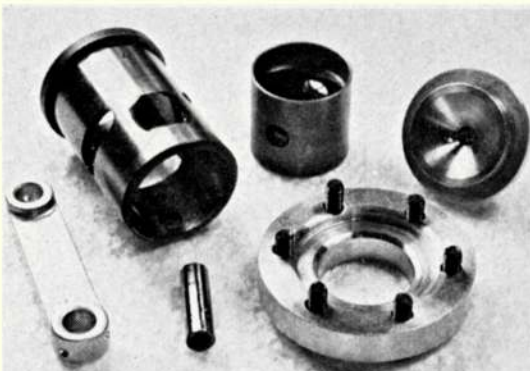
Performance

One can have no complaints about the standards of craftsmanship displayed by these engines. Designwise, the Rossi has, we feel, the edge at the present time and also the highest potential, possibly due to the fact that the Rossi brothers had it under development for something like five years before embarking on its production.

As with all engines of this type, ultimate performance depends very much on the user's ability to match props, plugs, fuel (where permitted) and compression ratios to atmospheric conditions and, not surprisingly perhaps, the manufacturers' performance claims, where given, are somewhat vague. Super-Tigre literature rates the unpiped G.15RV-ABC at 0.65 bhp at 24,000 rpm - presumably on nitro fuel - but states that maximum power with the piped ver-

Two different approaches, at left the Kosmic K-15 cylinder head assembly uses separate head insert but orthodox glowplug, while at right lies the Rossi R-15 Schnuerleport cylinder-liner, piston, rod and pin, plus new Cox type insert head.

R-15 main casting, backplate, peripheral jet ventur and needle-valve assembly.

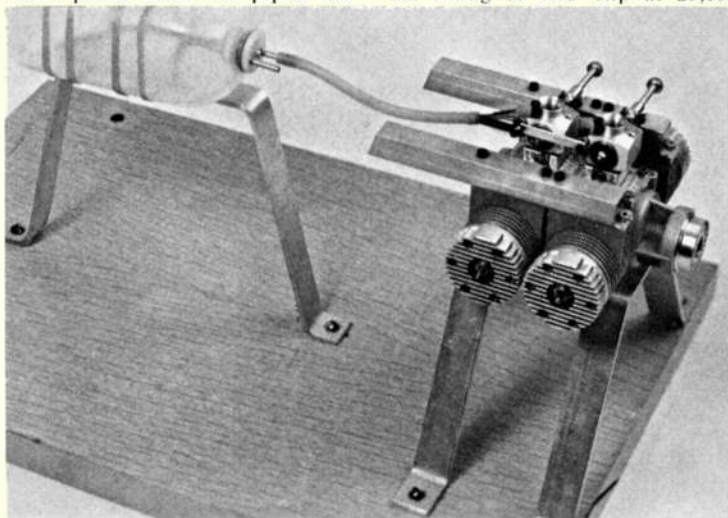


sion is reached at 26,000 rpm. Pipe length is matched to this speed when the pipe is fitted directly into the exhaust elbow. The Rossi instruction leaflet (written in Italian but containing some useful information) gives a nominal rating of 0.85 bhp at 28,000

rpm (fuel unspecified) for the R.15 with pipe but we are informed by *Fratelli Rossi* that the engine in fact now delivers its highest power at 26,000 rpm - presumably due to a change in the shape of the torque curve with recent modifications which, it is said, have added 2,000 revs to the operating rpm under a matched load compared with the 1971 model. (Incidentally, this suggests an increase in output to over 1.0 bhp.) Wisely, perhaps, Kosmic makes no claims at all. They simply state that the engine is set up for use on FAI fuel and that if a nitro fuel is used, compression-ratio and pipe length should be suitably modified.

As with all speed motors and particularly piped engines, there is no substitute for an intelligently conducted programme of trial and error experiments if peak performance is to be realised under all likely operating conditions.

Rather a contrast! Now in limited production is the 20 c.c. American Ross four-cylinder engine. This one was demonstrated at this year's Toledo R/C Conference. More about this impressive engine in August R.C.M.&E.



topical twists

by 'Pylonius'

illustrated by 'Sherry'

'He does this at week-ends to unwind.'



Site for Sore Eyes

For some people the ideal in model flying is to go off like some prophet of old for a stint in the open wilderness. Useful, no doubt not to have an enraged resident within a hundred yards, or a damage-me-please-car strategically sited on the landing approach, but much as I dote on model flying I do like a bit of jolly atmosphere surrounding my efforts at getting airborne in spite of the fact that, in these cramped times, we are told to make do with what we can get.

I think you've got to be a bit glum, and possibly too down to earth, if you opt for the turned-over turnip field, up to your gum booted knees in muck and mud and whacking out a fortune in rent to a subsidised farmer who perhaps, in your free flight days, had threatened you with two loaded barrels. Usually these private amenities are about thirty miles out of town, and the weather, barely tolerable when you start out, is absolutely impossible when you get there.

Then again, there is the family to consider. They have to be a pretty loyal lot to accept a turnip field as a picnic spot. Then what with all the flyers wearing tin helmets and the ploughing antics of the models, they might well believe they were on an open cast mining site.

I may be old fashioned, but I prefer the life and colour of the public open space for model sport to the private, screened off flying field. Perhaps I don't take my modelling seriously enough, but I feel it a pity that the model flyer should have to alienate himself from society because he has developed models too noisy and dangerous to cohabit with the kite and cricket bat. And, come to think of it, skulking in some grim, backwood banishment, must be anathema for the exhibitionist—and there is a bit of that in all of us. It is an ironic fate for those 'please ban me' flyers who fly not only to the gallery, but often into it. It is their frantic efforts to gain the plaudits of the multitude which has resulted in their turnip field isolation, with only the birds as audience—and they are hardly likely to be impressed.

Ultimate Deterrent

We are so proud to proclaim yet another ultimate in aeromodelling that we tend to forget that ultimates can become too ultimate. For instance, you can hardly fly the modern ultimate in free flight

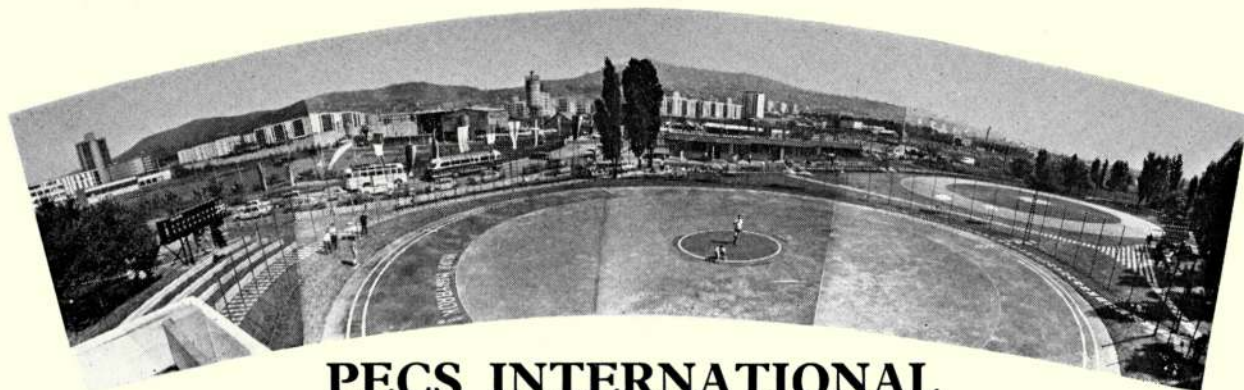
without an eyeball to red eyeball confrontation with an apoplectic farmer, and the latest radio equipment makes so much possible on the first outing it is hardly worth going again. The trouble with getting the ultimate in everything is that it gives you precious little to look forward to. You can, of course, try to go that little bit more ultimate than the next chap, but always with the nagging thought that somewhere, someone, if not a whole workshop, is building something that puts you right back in the kitchen table hobby league. I mean what can you do in the face of fully controlled, four engined Lancasters at £2,000 apiece? Which leaves me with the suspicion that the radio interference experienced by these too ultimate monsters had nothing to do with the B.B.C., but was perpetrated by the Angry Modellers Brigade.

Free Flight Radio

Whereas free flight radio control is not an unusual phenomenon—a case of out of sight, out of your mind, or very nearly—the prospect of radio controlled free flight may strike you as rather odd and perhaps purposeless. The idea of it is that you can dispense with the batteries of timer mechanisms you see on the more advanced models and install radio to do the donkey work instead.

By employing radio, not as a primary function, but in these somewhat menial capacities, the radio fraternity is given the well known dihedral sign, as if to say 'radio might be alright for some of the baser mechanics but should be kept well in its place as far as serious model flying is concerned'. Even so, it would be going too far to put radio equipment in a rubber model—rather like driving a computer by a steam engine.

If the free fliers do go on the air, as is threatened, it will mean the end of that already strained co-existence between free flight and radio at the Nationals, and other all-happy-together meetings. For a start there is going to be all sorts of ructions when the Spot Landing prize is given to a D/T-ing F/F model, and when someone else wins multi-aerobatic because of some free flier's desperate attempts to signal his model out of a thermal. Then, of course, there will always be the character who will storm into the control tent, claiming his model was sub-maxed by radio interference.



PECS INTERNATIONAL XVI CRITERIUM OF EUROPE, 1971

HELD ON A BRAND NEW site between the old and the new sectors of the town of Pecs, in Southern Hungary, the *Criterium of Europe* marked the inauguration of a new Hungarian modelling centre, catering for local boat, car and aircraft enthusiasts. Pecs is also the traditional site for the Mecsek Cup and this meeting made it a true European Championship, incorporating *Criterium of Aces* trophies with the Belgian *Victor Bojn* cup. The contest area consisted of one circle completely surrounded by a high wire mesh safety fence for team race and speed flying, plus a separate unfenced circle for aerobatics. In addition there was a separate enclosure for tethered car operation. A pit area lay behind these circles amongst a setting of trees (which provided welcome shade from the sun) whilst the whole was dominated by a magnificent club-house/workshops building. It was thought that the tall trees bordering one edge of the venue could have caused turbulence for the stunt fliers, but these fears were proved to be unfounded in the calm, hot (90°-95°F) conditions that prevailed over the entire contest period.

Unusually, this contest was held over three days, with team racing and speed alternating between mornings and afternoons, while the aerobatic event featured one round per day. This gave respite to the various officials and judges, whilst allowing competitors to spare the time watching the other events which did not directly concern them.

The absence of five Soviet Bloc countries (U.S.S.R., Rumania, Yugoslavia, Poland and East Germany) meant that entries were smaller than usual for an event of this importance, which was rather unfortunate – could the rapidly increasing Hungarian prosperity provide a clue to a political reason for this? Regrettably at the time of the commencement of the meeting, some six countries had not paid their entry fee, which must have caused some embarrassment to the organisers who had spent heavily to provide a good show.

It was good to see Greece officially represented in the speed and stunt categories, all looking very smart in their white uniforms, kindly supplied by Olympic Airways. A few

more such meetings as this and they could be quite a force to be reckoned with – they certainly have the enthusiasts! This form of sponsorship also applied to our own British team – neatly attired in blue track suits thoughtfully provided by Tony Ridyard of the **Model Shop Manchester**. This was a most generous contribution, and one sorely needed, judging by the way British teams have been rather 'conspicuous' in the past!

Although there were troubles in team race, and stunt events, the organisation was in general good, all events running to schedule in a holiday atmosphere emphasised by the glorious weather. One was to discover that the national 'wine' of Hungary is – Pepsi Cola! The banquet which concluded the event was a great success – if one remembers it clearly – it helped to recement many relations which had become strained over the 'difficulties' of the contest period, and once the celebrating victors discovered that the local champagne cost just 55p per bottle, no one was entirely safe from the flying corks!

TEAM RACE

For some undetectable reason, this event seemed rather lacking in its usual 'sparkle'. Perhaps it was the absence of the Russian and Italian teams, and such individuals as the Sundell Brothers who caused the missing ingredient. Even more so, the constant whipping in evidence and the many resulting protests each helped to tarnish what should have been an outstanding event.

There also seemed to be a certain stagnation of ideas, with no new 'gimmicks' to be seen. Pressurised refuelling systems are now practically universal, but fuel shut-offs are not so prevalent. With *nine* different makes of engines being used, including two prototypes of the new Bugli diesel, the 'power-houses' of the models perhaps provided the major interests.

The very handsome lap-counting score board, with its myriads of lights unfortunately failed to work except for the semi-finals and finals, which made it very difficult to follow the race progress.

Heat 1 saw Czechs Saffler/Kodytek set a respectable time of 4:57 with their M.V.V.S.-powered model, being helped on their way by Molnar/Kuti's failure to start their flooded motor and Rozev/Georgiev's undercompressed run on its last tankful. British fliers Langworth/Muncaster, competing in their first-ever International event, were lucky that the processors had found a leak in their tank. After repairing this fault, they were less lucky in **Heat 2** when an undercompressed run spoilt their chances of a good time, as did a shortage of laps. Past Criterium winners Gurtler/Baumgartner also had a poor run, but their HP.15 picked up eventually, giving them the winning time of 5:07.2, while Visser/Buys paid the penalty of flying against incompatible flying styles being forced to run around the pilot's circle, often unable to see their model, and obviously slowed by the other pilots. An even slower heat was **No. 3**, with the Swedes non-starters, while Geschwendtner/Olsen and Heggin/Stocker both suffered initial undercompressed runs and slow pit stops.

Heat 4 saw the Hasling/Geschwendtner (both members of well-known 'brothers' teams, since divided) get off to a 'burpy' start, which improved towards the end of the first tankful. At their first pit-stop they were quickly away, only to cut the motor after two laps when it was still undercompressed. They continued, the HP.15 now on form giving its customary 98-100 m.p.h. in traffic for some 25 laps. Their opponents, Hungarians Mohai/Markotai were meanwhile

Heading picture shows a 'bird's eye' view of the team race/speed circle, with the stunt circle beyond and the magnificent clubhouse between the two. At left, team race winners of International flying were Nore/Ekholm of Finland.



whipping busily, and blatantly, but received just a single warning, while Komurka/Votpyke were somewhat slower with their beautifully finished M.V.V.S. racer. The result was 4:50 for the Danes, fractionally faster than the Hungarians, but they then protested that the warm-up time was only 60 seconds, not the 90 seconds stated in the rules, and that their first poor tankful was attributed purely to a cold motor. The circle marshal insisted that the correct time was allowed, and even though several other teams claimed the same injustice the protest was rejected by the Jury. If the teams had doubted the warm-up period, why did they not protest before the race commenced?

Our second team, Campbell/Perkins, met Brendel/Glodeck and Molnar/Nyarady in Heat 5 – an event surrounded by misfortune. At the start, Glodeck had to change his propeller when he found that the loose spinner had chewed its way through the hub of his Bartel glass fibre prop. He lost some 30 laps in the process as the motor was cold. Mike Perkins lost a little time when his Oliver false-started, while Molnar/Nyarady had a reasonable get-away. Taking advantage of the two-up situation, David Campbell managed to make up for his slight initial time loss, flying at around 87 m.p.h., although the Hungarians were a little quicker, due to some hard, undetected whipping. Mike then followed with two good pit-stops, but disaster overtook on the third stop, when the tail broke off his deeply cowled model – a great shame, as they were set for a good time. Brendel/Glodeck, although fast, could not make up their deficit, leaving the Hungarians victors at 5:19. Old masters Trnka/Drazek put in a rather slow (for them) time of 4:56 in Heat 6. This was surprising as the opposition Borer/Giger team failed to start their home-built motor. A faster race altogether was Heat 7, in which Nore/Ekholm set the fastest time of the day at 4:33, closely followed by the Metkemeyer brothers, and lastly Stantchev/Jordanov, just 19 seconds behind.

Heat 8 promised to be interesting as Fischer/Straniak were using a prototype Bugli. The race proved disappointingly slow despite the Bugli flying at 92 m.p.h. and providing first-class pit stops – it only recorded 5:05. Their competitors, Van de Sande/Schippers, had a very neat combined tank filler/cut-off reset button on their Oliver-powered model, while Bilat/Borer's method of saving time on pit-stops was to bring the model in hard and fast. Another heat with interesting hardware was No. 9, Spaniards Bonnin/Montoy having a Rossi 15 diesel, not a production unit but a home-made conversion, while Schwarz/Ilg, used a second Bugli. However, it was Fagerstrom/Aarnipalo's S.T. G20/15D which put up the fastest time (4:40), due to the Rossi's shortage of laps (partially caused by broken propeller) and the Bugli's slightly slower stops, although with an airspeed of 88 m.p.h. The winner's time was also improved by whipping hard on overtaking – for which they received two warnings. Last race of this round was Heat 10, between just Dubowsky/Rumpel and Tinev/Rachov, and very fast. The Bulgarians were fastest at around 93 m.p.h., due, no doubt, to constant pulling of the model, which eventually brought them a pair of warnings. The Germans, meanwhile, circulated at 90 m.p.h. with their diesel-converted G15 F1 motor, landing the model very fast at pit stops. They lost a little range, in fact, cutting on the 98th lap, to whip round to the finish in 4:37 – 3 seconds behind their rivals.

Round 2 was held in the afternoon of the second day, Heat 1 being unfortunate for the luckless Hasling. After just 12 laps he cut the motor, as it was over-lean. Back in the fray again he was doing a genuine 98-100 m.p.h. despite being obstructed by Van de Sande 'flying Russian' but aided on overtaking by pulling – for which he was warned twice. The Danes came down again at 90 laps for a fifth stop, but unaccountably withdrew, presumably believing themselves far behind. (In fact, any time was good for them

Winning) T/R motor was an S.T. G.20/15 D, with small bore nylon venturi, here in the process of having its capacity checked – all passed satisfactorily.

Also fitted with a nylon venturi insert was Saffler/Kodytek's MVVS. This motor was not mounted on an alloy crutch, but was bolted to steel plates bonded to the fuselage.

Brendel/Glodeck used a Super Tigre G15 glow motor converted to diesel ignition and equipped with a Cox .049 carburettor assembly. Note chipped Bartels glass fibre prop.



Our hard-working team manager, Gordon Isles, receives the third place team-speed trophy from Dr. Rezzo Beck, mainstay of the Hungarian organisation.

to be eligible for the semi-finals as they were tied with Hungarians Molnar/Kuti and eventually lost to them in a fly-off to break the tie).

Heat 2 saw only Visser/Buys escape without two warnings, their opponents both whipping rather obviously! Dubowsky/Rumpel failed to improve their first time due to an under-compressed initial run, while Saffler/Kodytek produced a 4:49 time, with good teamwork. Again Heat 3 caused controversy! At the second pit stop, Molnar's and Nore's models cut at the same time whilst the models were only a few feet apart. Molnar's model was quickly snatched by Nyarady after a very fast landing, while Nore's model (a couple of feet higher) touched down a few yards in front, bounced hard and ran in with lines everywhere. Meanwhile, Delhez flew on, his feet getting entwined in the Finn's lines. Then came the arguments. The Finns first claimed that their model had caught in the Hungarians' lines, which were off the ground. This was countermanded by the Hungarians stating that the Finns' lines lay over their handle, thus obstructing them. Various other 'eye witness' claims by other nations resulted in so much confusion that a reflight for all three was announced – to be held at the end of the round.

Heat 4 was unexciting, Schwarz/Ilg improving to 4:57, but not good enough to qualify for the semis, while Borer/Giger's home-built motor gave only 20 laps per tank, albeit at 95 m.p.h. Our chance came again in Heat 5, when Muncaster/Langworth flew against Bulgarian and Hungarian teams, but the Oliver disliked hot conditions, and even when it picked up into a 'clean' run, clocked just 82 m.p.h. and was a little reluctant to restart. Molnar, despite a low airspeed also, recorded 4:50, some 34 seconds in front of our lads. Heat 6 was a whipping match between Brendel and Mohai, resulting in times of 4:49 and 4:36 respectively, with Bonnin/Montoy's Rossi 15 some way behind. Markotal's left-handed pitting was superb – hitting the lower prop blade for instant restarts – while Glodeck's 'dieselised' G.15 seemed rather loose, taking at least five or six flicks to restart. He also lost time on a missed catch when the model almost ran-in. A rather slow race, beset with engine cutting troubles and missed catches was found in Heat 7. In con-



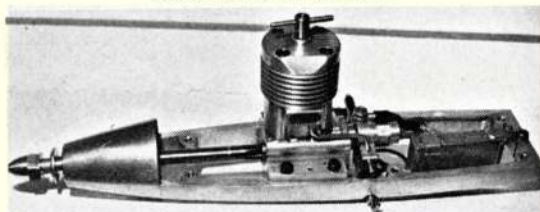


The Bulgarian team consisted of Rozev/Georgiev (foreground), Stanchev/Jordanov (left) and Tinev/Rachov, all of whom used Super Tigre rear induction engines in their conventional models.

trast, **Heat 8** saw the Dutch Metkemeyer brothers improve still further on their first time to receive 4.36 – third fastest of the meeting. Their pod and boom model (*Turtle*) had an airspeed of 93 m.p.h., aided by some hard pulling on overtaking, for which they were twice warned, but not deterred! In fairness, both opponents Straniak and Gurtler were equally guilty in this respect. Few pilots, if any, could be said to be 'fair', but with no disqualifications being evident, most found that such behaviour was essential to remain competitive.

Trnka/Drazek were unlucky in **Heat 9** when their M.V.V.S. cut on take-off. Trnka whipped the model round for 7/8th lap and was soon back in the race, four laps down. Second British team, Campbell/Perkins, had a slow run, the compression having to be increased at the first (rather slow) pit stop. At the next stop, Dave brought the model in fast, it bounced, and Mike was unable to catch it. Again the model, which had been repaired since the previous day, went off song (not helped by a broken prop), and we were out of the race. Meanwhile, the Czechs and Samuelson/Axtelius had a reasonable race (with two warnings each) but the times were not quick enough.

Heat 10 saw a couple of restarts, in one of which Straniak/Below, Fischer/Straniak's prototype Bugl used an extra ordinarily long shaft with an additional bearing mounted in the pan. Motor has fuel shut-off and exhaust prime 'built in'. At right, Drazek's neatly installed MVVS has a fuel shut-off operated by a pin on the circular bellcrank running in a slotted additional bellcrank.



Fischer took off on the warm-up whistle while on another, one model was wrongly positioned. When the confusion died down, the Austrians comfortably beat Hegglin/Stocker, although their Bugl prototype was unusually low on laps. However, its starting was instantaneous, and they recorded 4:52 – two seconds slower than the lowest semi-final qualifying time.

A re-run of **Heat 3** was then run, which gave a lucky Molnar/Kuti 4:50, equal ninth fastest with Hasling/Geschwendner, so these two were then forced to fly-off. With so much at stake, both teams whipped hard, but the jury played the 'advantage' rule and did not disqualify either team, although each possibly deserved it. This time the Hungarians won (after Hasling missed a catch), so the Danes were pushed out of the semis as the last moment.

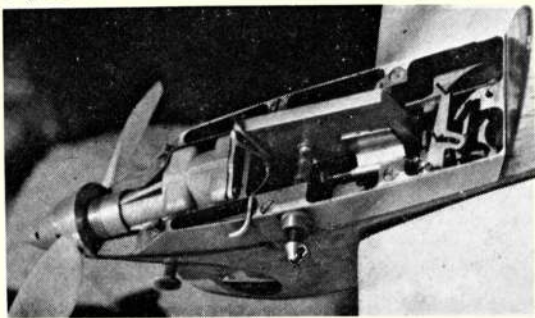
Before the semi-finals commenced, the Jury warned all competitors of the rules, and the penalties, which would be strictly enforced, and this did much to 'clean up' the flying styles. The first semi brought three very close times – just six seconds between first and last! Tinev was most unlucky, his lines snagged on the rough material between the pilot's circle and the pitting area, and although Rachov retrieved the model, it must have cost the Bulgarians a place in the final. Otherwise, the race was uneventful, but close, with the pit-work of Glodeck and Ekholm being really good, but an extra stop by Brendel prevented a really quick time.

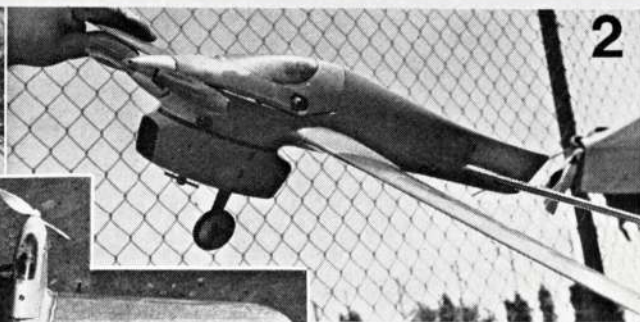
The second semi-final proved unlucky for Molnar/Kuti – first their motor hardened after 70 laps, causing it to quit two laps later. It then promptly cut after take-off, was re-started, and stopped again on the 78th lap – this time taking some 20 flicks to restart. Meanwhile, Dubowsky/Rumpel had an undercompressed run, while Saffler/Kodytek had a smooth race to record 4:42.8. The third semi brought its troubles, too – Mohai/Markotai's motor continually overheating, slowing the motor right down at the end of each tankful, until on the last one it crawled around, with Mohai desperately trying to cut it, without success. Fagerstrom/Aarnipalo were also unlucky, a piece falling off their model to disqualify their time of 4:52 – although this was not quick enough, anyway. The Metkemeyer brothers had a fairly straightforward race, but were disappointed with a 4:48.

The final thus lay between Ekholm/Nore, Brendel/Glodeck and Saffler/Kodytek – who qualified with just one second between them all! The Finns were worried by a worn front bearing on the G20/15 which was causing a loss of power, and perhaps this was why they refrained from making a practice flight during a five-minute period before the 'off'.

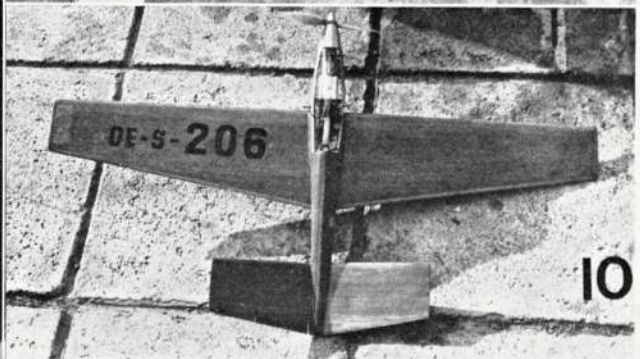
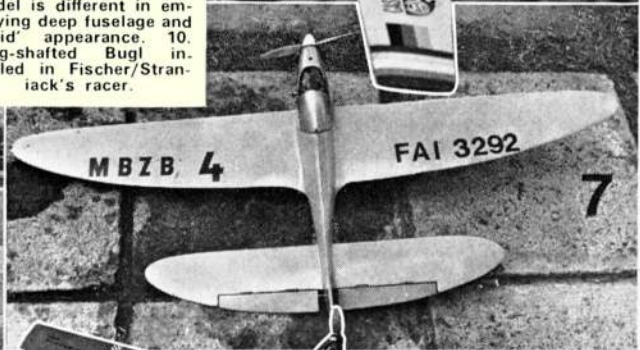
As the klaxon sounded, all were off together, instantaneously, and were equally matched on speed – at over 94 m.p.h. All were low on laps, although the Germans normally achieve 25-33 laps, while the Czechs are used to 28-29. However, the first pit stops were at 24 and 22 laps respectively, with the Finns at 25. All had excellent stops, and next down, at 42 laps, was Saffler, for a fairly quick restart by Kodytek. Next was Nore (50) for a one-flick stop, while Brendel's motor slowed at 49 laps, so he cut it next time round. He took off after four flicks, but the diesel-converted G15 F1 was still slow – later traced to a leak around the very small Cox-type venturi, which eventually came loose itself. The Czechs were very low on range with their M.V.V.S., needing stops every 20-22 laps, while Nore/Ekholm had an untroubled run with excellent (and well-applauded) pit stops, although they, too, had some tanks giving only 21 laps. At it was the Finns came in for a ninth pit stop at 192 laps, which was as flawless at the remainder, and they finished 10 laps and one pit stop in front of Saffler/Kodytek's most attractive model (unusual in not utilising a pan or crutch – the motor being mounted on steel blocks epoxied to the fuselage), while the troubled racer of Brendel/Glodeck was a further 30 laps behind.

All three teams used pressurised refuelling systems, but only the Germans had a fuel shut-off, while all used rearward wheels, but the Czechs did not have a skid/brake fitted to the nose. Another similarity was the extensive use of glass fibre reinforcement – as indeed used by many of the





1. Komurka's beautiful racer. 2. Hardly 'legal' cowl by Molnar/Nyarady. 3. Rumpel's diesel converted S.T.G15. Samuelson/Axtilius's racer (4). Third place model (5) by Brendel/Glodeck. 6. Rossi users were Bonnin/Montoy. 7. Bilat/Borer's very smoothly filleted model. 8. Saffler/Kodytek's second place model. 9. Winning model is different in employing deep fuselage and 'solid' appearance. 10. Long-shafted Bugli installed in Fischer/Stranjack's racer.





Judging by the direction of your eyes, and the angle of the handle, oi tink you're a-whipping Mr. Mohai!

Continental teams. Nore/Ekholm's model featured a glass fibre cloth covered fuselage, while the Czechs used this idea on the wings and tail of their model, with an all-G.F. fuselage. The Germans, too, favoured this approach with a glass fibre cowl and the remainder of the model covered in glass plus an epoxy resin. Even so, their model weighed just 21 oz. complete.

SPEED

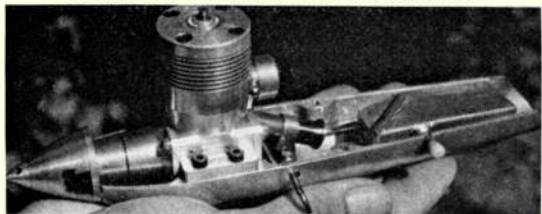
Summarised in a single word — **ROSSI!** Quite how a single manufacturer can dominate this event in such a short period of time is really little short of incredible — remember that at the '70 World Champs only five were to be seen, while at this event no fewer than 14 of the 23 entrants used them — the next most popular make was the T.W.A., with just the three British users!

Of course, without the appearance of the Russians or the Americans (whose T.W.A.'s seem rather quicker than those outside the States . . .) the competition was not so great as at a World Championship, but despite this there was much speculation as to whether the highly-tuned German Rossi's (some with ABC liners) and the rather more basic Italian engines would beat our best hope — Brian Jackson — who did so well at Namur.

Practice day showed that our hopes were a little tarnished, all the T.W.A.'s being at least 1,500 r.p.m. down on 'home' performances — largely attributed to the heat. None of these engines could pull even 6 in. pitch adequately, whereas the Rossi's seemed happy with 7-8 in.! Indeed Dusi had achieved 149 m.p.h. using a Topflite 6 in. x 8 in. trimmed to 5 1/2 in. diameter with nothing more scientific than a pair of pliers.

Drawn to fly first in **Round 1** was our own Bill Firbank with his T.W.A./Pink Lady (the same combination being used by all our team). His model was soon in the air, but the engine was off song, rapidly overheating and with fuel troubles — a common complaint throughout the meeting, and possibly caused by a non-to-pure methanol being used in the 'standard' fuel supplied. Many other competitors experienced trouble in this respect and had flown faster in practice

Ova Kjelberg's nicely machined, home-built speed engine has long induction tract to enable better 'pick up' when model leaves the dolly. Few modellers experiment with induction lengths, though common practice in motorcycle racing to balance this to the exhaust systems.



using their own mix. As it was, Bill came out of the pylon too soon, thus failing to record an official score, and was followed by the Swiss champion Louis Bilat. He used a Rossi 15 with a Uniflow-type tank, with the addition of a pressure tapping from the pipe! In common with many entrants his conventional model was fitted with a dolly operated switch (as drawn in the December 1970 *Aeromodeller* and advised in the Rossi instruction leaflet). This switch seems the best, most positive method of providing a rich enough needle setting for flight, yet still enabling the model to take-off successfully. His 224 km./hr. flight was very respectable and only slightly down on his best 'home' performance.

A welcome 'break' from the Rossi flights was provided by Kjelberg of Sweden using the only home-built engine of the meeting. This schueller ported (but without a boost port) motor uses a disc induction system 'borrowed' from the Kart racing world, and was designed by tether-car specialist Falk. He had too rich a setting at his first attempt, but managed a reflight within the three minutes allowed, and by whipping the model hard, leaned the engine out before recording 214 km./hr.

Team race specialist Juan Pacheco was the first Spaniard to fly in speed for several years, recording 211 km./hr. with his Rossi on suction feed, turning a reworked Topflite 6 in. x 7 in., in a model featuring the engine cowling extending over half the pipe. He used a Theobald type mono wheel dolly, as did many others, which certainly helped a rapid take-off due to its light weight and low wheel drag. Hungarian speed maestro Krizsma can normally be relied upon to establish a good speed with his Moki S-6T, but this high-revving engine (around 30,000 r.p.m. in the air) while sounding good recorded a disappointing 210 km./hr.

Following him was second British teamster, Ron Irvine, with a T.W.A. received only a few weeks earlier, but he had a very slow run and insufficient laps to record a time. Next was the second Greek flyer Constantine Nasiopoulos but like his compatriot his Uniflow tank gave trouble — pressure seems to work best with these engines — and he too did not record an 'official'.

Another team racer turned speed flyer was the Italian Pietro Fontana, and his flight attracted much attention due to his excellent practice times. He did not disappoint either! Swinging round the pylon on his left hand, and with his right hand extended right back, he brought his Rossi on song and swiftly entered the pylon to record 235 km./hr. — the highest speed of that round.

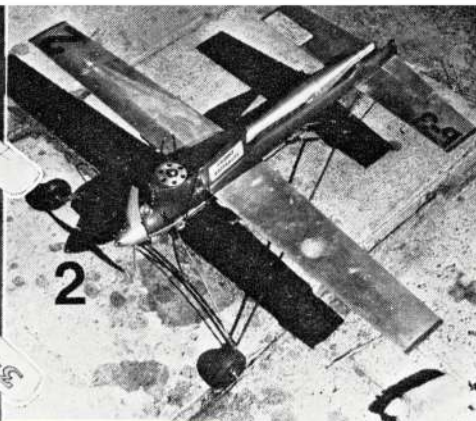
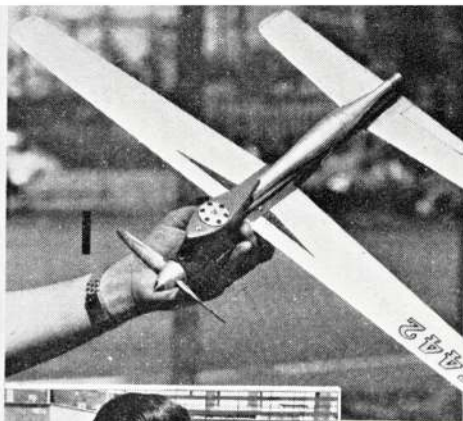
The German team were obviously in with a good chance, so attention was soon switched to Gorczicza to see if he could match this speed. Using similar equipment to Frohlich (modified Rossi 15 with a crankcase pressurised fuel system and M.Z. centrifugal fuel switch) he had a very poor run with the motor incessantly giving sudden surges of power then nearly quitting. This was blamed on the fuel, although the fuel switch would seem a more likely culprit.

Former World Champion, Imre Toth, just could not get his Moki S6T to produce the power with its low pitch, high revving prop, and had to settle for 223 km./hr. — good, but not enough. Our best hope, Brian Jackson, entered the circle with the engine which recorded 229.2 at Namur, and unused since, but could not better 223 km./hr. with a Punctilio 6 in. x 6 in. prop — not enough pitch to go fast, but the best that the engine would turn. Martinelle of Sweden had the misfortune to throw a blade in flight, followed by a shaft run from his Kosmic 15, and left the circle to make room for Dusi, who strengthened the Italian teams domination with 233 km./hr., model being similar to Fontana's.

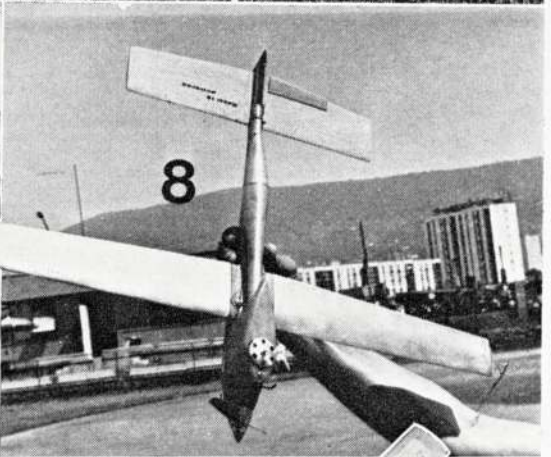
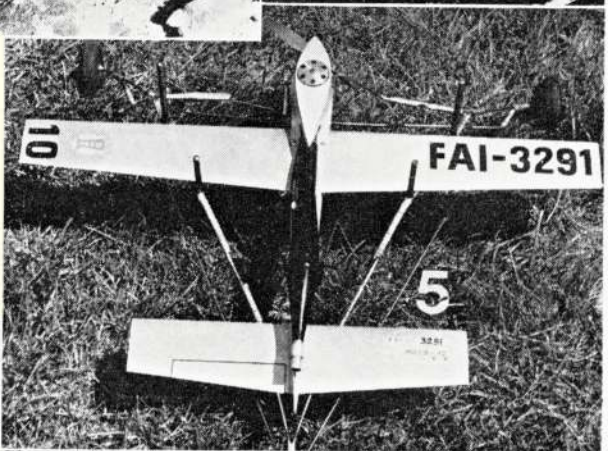
Penultimate flyer in this round was the old master from West Germany, Josef Frohlich, who like his team-mate had fuel surge, though to a lesser degree, accounting for his rather slow speed of 216 km./hr. His model features a Harter pan, and wings which although at first glance appear to be metal skinned, are, in fact, wood with a metal finish, shrunk-on mylar covering. His Rossi is fitted with the earlier head (i.e. a standard glow plug is used, not the Cox type insert) and in contrast to most Rossi flyers, uses a low pitch, 150 x 150 mm. prop with a deeply cuffed hub.

Round 2 starting at 8.00 a.m. benefited from slightly cooler conditions at first, enabling most fliers to record rather better times. Frohlich certainly fared better, gaining 7 km./hr., but still some way behind the Italians. Less lucky was Bulgarian Dontchev another Rossi operator, whose lines broke, sending the model straight into the safety fence. Brian Jackson, who set his T.W.A. just a little richer than before improved to 225 km./hr., but the motor was still a shade lean, while Gorczicza was far less lucky, his model appearing to fall apart in the air, underlining the value of the safety fence! Fontana then made a second, perfectly-tuned, flight and recorded 238 km./hr. which proved to be the best of the meeting. Cernold of Sweden had a much better run from his Kosmic — standard except for the K&B annular ring needle valve, achieving 222 km./hr., but needs more time to develop this new engine, which is showing signs of promise.

Ron Irvine again was quickly away with the expert 'pitting' of Brian and Bill, but the engine would not 'wind up', and



1. Dusi's model has shallow butterfly tail. 2. Metal wings and tail used by Dontchev. 3. Lone asymmetric model by Arno Wamper. 4. Juan Pacheco, another Rossi flyer. 5. Despite S.M.A.E. transfer, this model belongs to Bilat of Switzerland! 6. Fröhlich the 'old fox'! 7. Kjelberg's home-built motor was very consistent. 8. Fontana's model has detachable cowl to provide access to dolly switch and tank. 9. Italians used electric starter - Dusi's model. 10. Toth's Moki powered model - at its limit?





A contrast in styles! (left to right) Gorczicza lifts his model off the dolly while Bilat 'takes aim' down the lines! Imre Toth is a study of concentration as his Moki comes on song, in contrast to Dusi who appears quite relaxed. Just as well the pylon is adjustable for height judging by differences in pilot size - could be embarrassing otherwise!

was also a little rich, resulting in a disappointing 205 km/hr. - nowhere near as good as he hoped from the pick of his three (expensive!) motors.

German champion Arno Wamper flying an unconventional asymmetric model still could not match his best form, his Rossi proving difficult to set. His first attempt was too rich so he tried again but still without joy, despite a very stable, low flight. Gamely he tried for a third attempt but the time period was up and he had no recorded speed. Youngest competitor (just 16) Mauricio Crescentini then proceeded to cement Italian supremacy by recording a magnificent 230 km/hr. with equipment similar to his team mates, except for the use of a Theobald dolly, and a model that reminded us of earlier Hungarian C/L meetings.

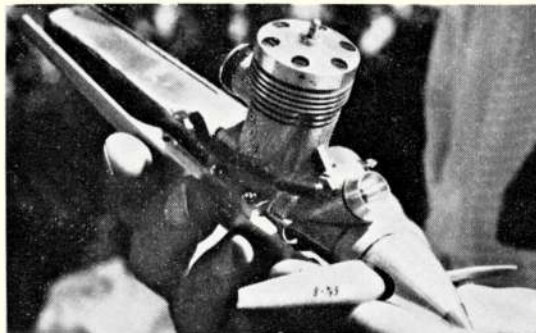
Bill Firbank fared better in this round and put in a flight of 218 km/hr., the best that that engine had achieved and it at last appeared to be coming up to peak performance.

Another early start was arranged for Round 3, and one of the first to fly was Ron Irvine. In practice just before the round began he reached 215 km/hr. with the motor just a little lean. Opening the needle just 1/4th of a turn he proceeded to fly, but now the motor was too rich and he recorded just 204. Next was Krizsma, who with some hard whipping soon brought his Moki on-song and he entered the pylon with a very stable, level, low flight which resulted in a 225 score. Crescentini repeated his previous time, as did Kjelberg - in fact, he was the most consistent of the meeting with three flights at 214 km/hr.

The Greek flyer's troubles extended into this round despite being taken under the protective wing of our team, who tried different tanks, flew the model and generally gave much advice. All to no avail. Nasiopoulos suffered a broken big end, while each discovered the snag of using the Cox type heads. These inserts are clamped under the cylinder head, thus are slow to change when the element blows - especially when you only have three minutes total to spare!

Bill Firbank was justly proud of his last flight of 223 km/hr. - his personal best, and the engine could yet improve. Frohlich having done some work on his propellers seemed to be going well, so he entered the pylon. After a lap the model began to pitch up and down and he withdrew from the pylon fork. Surprisingly he was allowed to fly again.

Nasiopoulos was one of the many Rossi flyers, but suffered feed troubles. A pressure system in lieu of the uniflow tank could well solve this. Home carved 5 1/2 in. x 8 in. prop. Has only been flying speed for eight months.



shortly afterwards, recording 230 km/hr., sufficient for fourth place - although this should not have been allowed, since once the pylon has been entered it is an official flight.

Dusi's first attempt was much too rich and he could not bring the motor onto the pipe, despite hard whipping in the Fontana style. He managed a second attempt, however, where he improved his speed sufficiently to give him second place. Much less fortunate was Brian Jackson who suffered from a faulty needle setting. With Firbank and Irvine more closely resembling team race mechanics, he put in three attempts (including a prop change) in three minutes, but the motor was still too rich. After Brian came Imre Toth. Visibly whipping his model when in the pylon, he recorded 229 km/hr. - but it would seem that this Moki has reached its peak of development having insufficient torque to turn much pitch or blade area.

Fontana failed to record a third score, but it did not matter, the prize was his and the team prize also the Italians. Our own team, although disappointed with their performances, at least had the satisfaction in taking third place in the team honours.

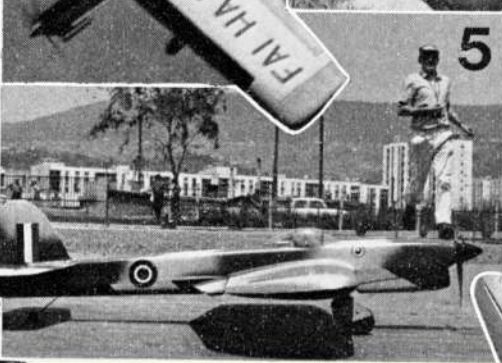
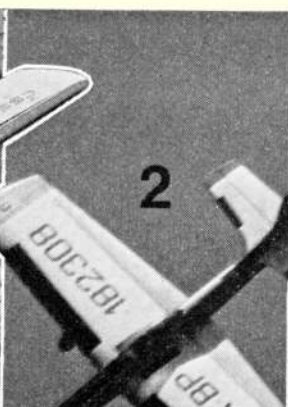
Upon reflection, although the Rossi's were vastly superior in both numbers and power, the winning speed was still 2 km/hr. below Nelson's 1970 World Champ. winning flight, although, no doubt, the 90-95 degree F. temperature was much to blame and practice had shown several 248-250 km/hr. flights. Perhaps the A.R.M. engines will regain their No. 1 position at the next World Champs - the Americans may yet have some tricks up their (nicely honed!) sleeves.

AEROBATICS

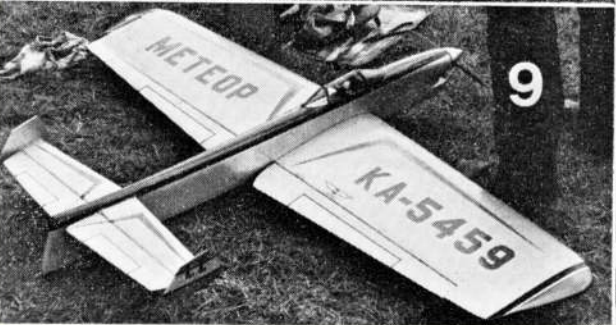
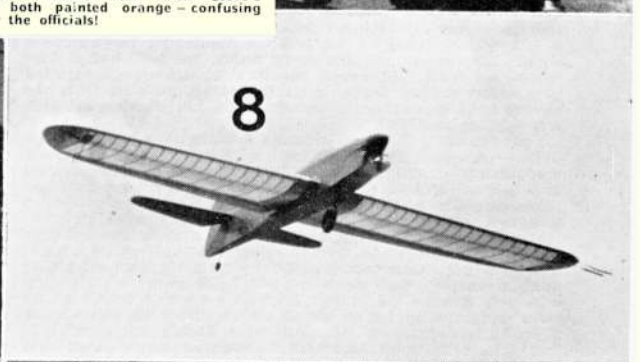
The aerobic event is one which traditionally provides the most arguments and controversy, being as it is an event decided by personal opinion rather than by the stop watch. This year was no exception - in fact it was rather worse than usual. The organisers had, as is normal, invited four international judges and provided one of their own. The Italian judge invited, however, did not reply to his invitation, nor respond to telegrams sent at a late hour, so the Hungarians had no alternative but to appoint another of their countrymen, as indeed permitted for an International event. The pity was that this last minute replacement showed a wide variation in his markings, including high national bias, whereas the other judges were remarkably even in their scoring. This naturally caused controversy, especially when the Hungarian team members flew, for even with the highest/lowest discard scheme, one biased judges' marks always remained. Though we do not doubt their integrity - they obviously judged according to their own National standards - use of two judges from one Nation became an obvious mistake to be avoided in future.

First to fly in Round 1 was our own Brian Turner making his first appearance in this class at International level (though a frequent team race mechanic) and flying his oft repaired *Nobler*. Using a measuring glass on the overflow vent, Brian was able to limit his engine run exactly, but he set the motor over rich for the conditions, which seriously affected his score as there was no wind to assist the model. In consequence, his horizontal eights and square loops were poor by his own admission, but the vertical eights were highly pointed. His score of 2,204 therefore became the standard by which all other flights in the round were judged.

Canj followed, proving himself to be an up and coming flyer with a very confident pattern, despite a little shaky beginning to the flight with a rather poor reverse wing over, scoring 2,623 in the process. Next to fly was John Constantatos, the lone Greek at Namur, but who was so enthused with that meeting that he brought a larger contingent to Pecs. He had been up half the previous night repairing his



1. Stunt winner was once again Josef Gabris with his Super Master. 2. Egervary's large model 'caught' in flight, placed 2nd. John Constantacotos (3) with Super Master showing scars of the hasty repair. 4. Compastella's attractive Macchi 202 with vivid paint scheme in brown and yellow. 5. Very slim fuselage on Cappi's semi scale Typhoon. 6. Vanderbete is still flying his big area stunter - now 8 years o.d! 7. Attractive semi scale sh.p by Reichle is S.T. 46 powered. 8. Masznyik, centre of controversy, flew his lightweight functional design. 9. Kaley's Dutch influenced stunter has high tail, detachable wings. Covered in Monokote. 10. British entries Brian Turner and Steve Blake both with Steve's Starmaker design, and both painted orange - confusing for the officials!





Left, President of the C.I.A.M., Albert Roussel, presents the Victor Boin cup to the Hungarian Team Manager. At right, all mod cons for the stunt jury – Pepsi and sun shades!

new *Super Master* after he discovered (the hard way) that the circle was rather too small. By walking around the edge of the pilots' circle he hit a fence, damaging the outboard wing. The repairs left the wing rather warped, but it flew somewhat better! However, his lack of experience resulted in a rather ragged flight, in particular his pullouts from the square manoeuvres were uneven, and his overhead eights were rather confused.

First Italian to fly was Salvatore Rossi with a good average flight – no particular errors and with especially nice round manoeuvres resulting in a 2,485 score from his large wing area *Super Tigre 46* powered model. Second of our two-man team was Steve Blake, who was determined to do well in this event after much practice and success at home contests. He was not disappointed. After a slow start with a wavy pullout from the reverse wing over he quickly settled down, to put in an excellent flight – certainly his best yet at such a meeting, well deserving his 2,639 points. His landing was very good – the orange *Starmaker* landing gently on its main undercarriage, then gently sinking on to its tail – drew a round of applause, not just from British supporters! In fact this score was unbeaten before the lunch break and left him sixth at the end of the round.

Gabor Masznyik then came to the circle with a very nicely built lightweight 39 oz. model *Admiral* powered by a Moki M4 with a home-made silencer. Perhaps the structure was too light, as it warped in the sun (the ribs were visibly buckled) and this affected its performance somewhat in an unsensational flight which nevertheless scored 2,726 points, surprising even the pilot. This indeed was the start of the complaints: as the score was far better than the flight.

Clemente Cappi produced a very attractive model based on a Typhoon and finished in appropriate colours – quite a contrast to his previous year's model. Essentially it was based around a *Super Master* wing, but powered by a *Super Tigre 46* housed in a very slim fuselage. It, and the pilot, flew well to receive 2,712, picking up most points in the high scoring manoeuvres, but losing on inverted flight of varying height, and a rather bumpy landing.

Second Hungarian teamster Dr. Egervary then put in a good flight well up to his usual standard, although somewhat overpointed – his 'normal' performance not placing him in the top bracket! The flight indeed terminated in a bumpy

landing, despite the absence of wind. His large model flew slowly, yet with the Veco 45 had ample power.

First prang of the day award went to the unfortunate Bulgarian Marinov when he picked up his handle, upside down . . .

Compostella also had a new attractive model, this time a semi scale version of the Macchi 202 with a yellow/brown camouflage scheme and an upright-mounted *Super Tigre 46*. His flight, however, was disappointing for him, as he received just 2,480 – losing heavily in the overhead eights and clover-leaf, while his flight in general lacked its usual polish.

This round thus left Gabris in the lead, followed by Egervary and Vanderbeke, with our lads being placed 6th and 16th.

Round 2 was flown in reverse order, and unusually showed scores very similar to the first round, and in some cases lower, despite the flyers being more 'settled in' by now.

A pilot who has consistently placed around the tenth mark is Bert Metkemeyer (Netherlands) with his six-years-old *Triatic*, which flies rather fast despite its large wing area and modest (*Super Tigre 35*) power. Considering that he practices little (too busy flying team racers?) he is very consistent (scoring 2,490 in both rounds) and his cloverleaf received very high marks indeed – contrasting with the varying sizes of his loops and bunts. Compostella was back in form with a near perfect take-off and landing with the tail high and the wheels running on the ground for at least $\frac{1}{2}$ lap in each instance. His whole schedule was much improved, resulting in 2,790. Egervary and Gabris both turned in flights which looked near perfect, with Egervary perhaps flying rather large manoeuvres, although both received marginally lower points than before.

Vanderbeke of Belgium, keen to improve on his World Champs. performance when over-confidence left him in twelfth place, put in a beautiful pattern which would be churlish to criticise, flying his model which has now seen four Criteriums! His familiarity (!) with the model certainly paid off, his 2,743 score being almost identical to his first round flight.

Reichle of West Germany was another to discover the meagre dimension of the circle, running into the grass border on take-off and damaging the wing, although he continued. After his highly scored first round all eyes were on poor Masznyik, and again he scored well for a flight consisting of overlarge manoeuvres, high pullouts and poor positioning. His model seemed overpowered as it would not turn tightly, giving radiused corners to all the 'squares'.

Cappi had engine starting problems, called an attempt, and flew at the end of the round and marginally improved his score. In common with his team mates he used a French-chalk puffer to check wind direction, which caused some consternation to other pilots as this dusting, combined with the smooth tarmac, made for a slippery surface. Bartos was most unfortunate, his engine cutting out after the outside loops to spoil an excellent flight.

Steve Blake then put in another good flight, which although overall was not as good as his previous one, scored even better as he 'boobed' more on the lower 'k' factor scores such as the loops, but improved on the more complex manoeuvres with far neater 'corners'. The engine coughed alarmingly on the cloverleaf but did not spoil it, and again he made a near perfect touch-down.

Out of luck was Rossi who crashed on the square loops following a control failure – just after promising to give the

model to his young son! Czetti put in another average, but highly pointed flight, while Brian Turner ended the round in spectacular fashion with a prang when he ran out of fuel during the cloverleaf - a great pity as he was flying much better than before - indeed despite this loss of potential points he bettered his earlier score with 2,229 points.

The positions now showed Gabris, Egervary and Vanderbeke in the top three positions, with our team in their same position and at the end of round 1.

Round 3 began with Bartos flying his reserve Fox 35 powered model and he showed much improved form, scoring 2,618 - a great shame that his second score was lost as he may otherwise have placed much higher than his final thirteenth.

Steve Blake then flew his final flight and again started slowly with a not-so-good reverse wing over and uneven inverted flight, but greatly improved loops. Once more the engine faltered (caused by lack of fuel due to a richer setting) in the cloverleaf - this time badly affecting its shape, losing valuable points in this high scoring manoeuvre, and he was a little disappointed with his 2,605 score, which left him in eventual 8th spot. A little more luck next year and . . . However, a great achievement, being the highest placed Briton at an International competition for many (too many!) years.

Rossi did well to score 2,539 with a rather fast flight, the engine being set for a lean four-stroke. The model was a little reluctant to turn tightly and rocked in the cloverleaf, but most of his points were lost on the poor presentation - this despite the fact that he first made the judges move to the opposite side of the circle. Czetti then flew his highest scored flight of the meeting, although once more this was open to much discussion and disbelief, but he was awarded 6th place.

Overnight Brian Turner had swapped his Merco from the damaged *Nobler* and bolted it into his *Starmaker*, but was

not too confident. Although this model is more responsive and flies better than the *Nobler*, Brian was more used to his 'old faithful' and could perform a smoother, more accurate schedule with it. However, the flight showed his fear ill-founded, and he put in a most respectable 2,444 score - without his earlier ill-luck he could have placed somewhat higher than his eventual 18th.

Another greatly improved flyer was G. Liber with his large model, but his placing was not consistent and uneven-height pullouts marred his score - even so he increased his previous scores by over 150 points to take 9th position.

Biggest jump in placings of all was achieved by the ever-smiling Luigi Compostella who put in a really good performance with little to fault, fully deserving his 2,827 score, which when combined with his second round points gave him overall 3rd. In contrast, Marinov was once more ill-fated - his motor dying during the overhead eight, but he landed safely, although down-pointed.

Egervary, as expected, returned a good flight, very highly scored, but even so it was not enough to eclipse Gabris who had another consistent schedule, although the way the engine coughed in the cloverleaf must have caused his heat to break somewhat faster! Vanderbeke, despite improving on his early performances, still could not catch the leaders and indeed slipped back one notch to fourth.

Thus Josef Gabris chalked up yet another win with his *Super Master* - all the more remarkable as he still uses a '35 sized model' whereas the majority of the competitors used large models with .40 cu. in. or bigger engines, which have thus become the 'norm' with the traditional 35 the outsider. Whether this usage of big engines is a 'panic' reaction to the use of silencers, or just that the judges prefer the large, slow flying model which is easier to see, thus judge, is hard to say. Personally, we feel the latter is the case - the models impress one more, whether or not the smaller and faster models are as accurate.

CRITERIUM OF EUROPE

RESULTS

PECS, HUNGARY
7th-12th JULY, 1971

NATIONAL TEAM RESULTS

SPEED

1 Italy	4	{	Bulgaria Sweden
2 Hungary			
3 G. Britain			

AEROBATICS

1 Hungary	4	Belgium
2 Czechoslovakia	5	Netherlands
3 Italy	6	Bulgaria

TEAM RACING

1 Bulgaria	4	Hungary
2 W. Germany	5	Netherlands
3 Czechoslovakia	6	Switzerland

Victor Boin-Coup

1 Hungary	6	points
2 W. Germany	7	..
3 Bulgaria	8	..
4 G. Britain	9	..

SPEED

		Rd. 1	Rd. 2	Rd. 3	
1	P. Fontana	Italy	235	238	+ Rossi 15
2	U. Dusi	Italy	233	232	236 Rossi 15
3	M. Crescentini	Italy	226	230	230 Rossi 15
4	J. Frochlich	W. Germany	216	223	230 Rossi 15
5	I. Toth	Hungary	223	226	229 Moki S-6T
6	L. Bilat	Switzerland	224	+ 227	Rossi 15
7	B. Jackson	G. Britain	223	225	+ T.W.A. 15
8	G. Krizsma	Hungary	210	220	225 Moki S-6T
9	W. Firbank	G. Britain	+ 218	223	T.W.A. 15
10	K. Bathge	Hungary	216	222	222 Moki S-6T
11	L. Cernold	Sweden	211	222	215 Cosmic 15
12	J. Parramon	Spain	222	193	+ Rossi 15
13	O. Kjelberg	Sweden	214	214	214 Own Design
14	A. Wamper	W. Germany	211	+ 214	Rossi 15
15	J. Pacheco	Spain	209	+ 202	Rossi 15
16	S. Dontchev	Bulgaria	+ 206	206	Rossi 15
17	G. Kamburov	Bulgaria	206	202	+ Rossi 15
18	R. Irvine	G. Britain	+ 205	204	T.W.A. 15
19	L. Bontchev	Bulgaria	204	+ 195	Rossi 15
20	B. Martinelle	Sweden	180	180	178 Cosmic 15
	C. Collias	Greece	+ +	+ +	Rossi 15
	C. Nasiopoulos	Greece	+ +	+ +	Rossi 15
	H. Gorczicza	W. Germany	+ +	+ +	Rossi 15

TEAM RACING

1	Nore/Ekholm	Finland	4:33.1
2	Saffler/Kodytek	Czech.	4:57
3	Brendel/Glodeck	W. Germany	6:09.9
4	Tinev/Rachkov	Bulgaria	4:34
5	Metkemeyer/Metkemeyer	Netherlands	4:40
6	Mohai/Markotai	Hungary	4:50.2
7	Dubowsky/Rumpel	W. Germany	4:37
8	Fagerstrom/Aarnipalo	Finland	4:40.6
9	Molnar/Kuti	Hungary	—
10	Hasling/Geschwendtner	Denmark	4:50
11	Stanchev/Jordanov	Bulgaria	4:52.2
12	Fischer/Straniak	Austria	5:05
13	Rozev/Georgiev	Bulgaria	4:55
14	Trnka/Drazek	Czech.	4:56
15	Visser/Buys	Netherlands	5:22.2
16	Schwartz/Ilg	W. Germany	5:03
17	Delhez/Dessaucy	Belgium	5:17.2
18	Komurka/Votypka	Czech.	5:16
19	Samuelson/Axtelius	Sweden	—
20	Gurtler/Baumgartner	Austria	5:07.2
21	Molnar/Nyarady	Hungary	5:19.7
22	Langworth/Muncaster	G. Britain	5:58
23	Van De Sande/Schippers	Netherlands	5:33.2
24	Bonnin/Montoy	Spain	5:36
25	Geschwendtner/Olsen	Denmark	5:52
26	Bilat/Borer	Switzerland	6:21
27	Campbell/Perkins	G. Britain	—
28	Heggin/Stockler	Switzerland	6:47.2
29	Borer/Giger	Switzerland	—
30	Pacheco/Parramon	Spain	—

Round 1

Round 2

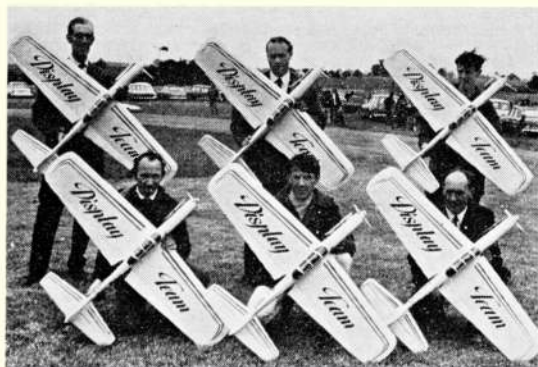
Final

Finland	4:33.1	4:59.4	9:21.5	S.T. G20/15D
Czech.	4:57	4:49	9:52	M.V.V.S.
W. Germany	6:09.9	4:49	11:26	S.T. G15 F.I.*
Bulgaria	4:34	5:19	—	S.T. G.15 D.R.V.
Netherlands	4:40	4:36	—	S.T. G. 20 15D
Hungary	4:50.2	4:36	—	Moki 7A TRS
W. Germany	4:37	5:14.6	—	S. Tigre G15 F.I.*
Finland	4:40.6	4:46	—	S. Tigre G20/15D
Hungary	—	4:50	—	Moki 7A TRS
Denmark	4:50	—	—	HP, 15D
Bulgaria	4:52.2	5:22	—	S. Tigre G15D RV
Austria	5:05	4:52.6	—	Bugl prototype
Bulgaria	4:55	5:35	—	S. Tigre G15D RV
Czech.	4:56	4:57.2	—	M.V.V.S.
Netherlands	5:22.2	4:56.2	—	S. Tigre G20/15D
W. Germany	5:03	4:57.2	—	Bugl Prototype
Belgium	5:17.2	5:00	—	Oliver Tiger IV
Czech.	5:16	5:00.5	—	M.V.V.S.
Sweden	—	5:01.4	—	S.T. G20/15D
Austria	5:07.2	5:28	—	H.P. 15D
Hungary	5:19.7	5:20	—	Moki 7A TRS
G. Britain	5:58	5:24.5	—	Oliver Tiger IV
Netherlands	5:33.2	5:34	—	ETA 15
Spain	5:36	6:01	—	Rossi 15*
Denmark	5:52	7:07	—	S. Tigre G15D RV
Switzerland	6:21	—	—	Oliver Tiger III
G. Britain	—	6:22	—	Oliver Tiger IV
Switzerland	6:47.2	6:35	—	Oliver Tiger IV
Switzerland	—	6:38	—	Own Design
Spain	—	—	—	Rossi 15*

* Diesel converted

AEROBATICS

		Rd. 1	Rd. 2	Rd. 3	Best 2	Total	
1	J. Gabris	Czech.	2,981	2,932	2,952	5,933	M.V.V.S. 35
2	Dr. Egervary	Hungary	2,900	2,826	2,930	5,830	Veco 45
3	L. Compostella	Italy	2,480	2,790	2,827	5,617	Super Tigre 46
4	M. Vanderbeke	Belgium	2,756	2,743	2,808	5,564	Merco 49
5	C. Cappi	Italy	2,712	2,757	2,744	5,501	Super Tigre 46
6	G. Masznyi	Hungary	2,726	2,665	2,682	5,408	Moki 40
7	I. Cani	Czech.	2,623	2,658	2,738	5,396	M.V.V.S. 35
8	S. Blake	G. Britain	2,639	2,661	2,605	5,300	Fox 35
9	G. Liber	Belgium	2,506	2,567	2,712	5,279	Merco 49
10	B. Czetti	Hungary	2,390	2,522	2,661	5,183	Moki 40
11	S. Rossi	Italy	2,485	2,775	2,539	5,024	Super Tigre 46
12	A. Metkemeyer	Netherlands	2,490	2,490	2,517	5,007	Super Tigre 35
13	J. Bartos	Czech.	2,335	2,600	2,618	4,953	M.V.V.S. 35
14	R. Liber	Belgium	2,197	2,507	2,404	4,911	Merco 49
15	P. Tupker	Netherlands	2,323	2,223	2,527	4,850	Fox 35
16	W. Cator	Netherlands	2,457	2,392	2,148	4,849	Merco 49
17	A. Jankov	Bulgaria	2,119	2,450	2,354	4,804	Super Tigre 46
18	B. Turner	G. Britain	2,204	2,229	2,444	4,673	Merco 35
19	J. Kalev	Bulgaria	2,138	2,216	2,289	4,505	Super Tigre 46
20	J. Constantacatos	Greece	1,849	2,051	2,203	4,254	O.S. 35
21	A. Reichle	W. Germany	1,895	1,711	70	3,606	Super Tigre 46
22	G. Marinov	Bulgaria	34	1,511	2,026	3,577	Super Tigre 46



CLUB NEWS

Members of the Waveney Display Team with their six identical Chipmunk stunt models. These are each equipped with throttle control and all six have flown together. Certainly a crowd pulling display, especially when they fly in formation, as was demonstrated at Old Warden.

WE HAVE RECEIVED a letter from Brian Baker, the Hon. Sec. of the Northampton M.A.C., advising us that his club is launching a fund for an annual Wakefield Competition in memory of the late **Ted Evans** to be run annually at the South Midlands Gala but in common with other contests at this rally, S.M.A.E. South Midland Area members are not permitted to enter. In order to provide a trophy befitting Ted's notable achievements as a Wakefield flyer and acknowledging his work in the movement in general, contributions are asked from all who recognised in Ted Evans the epitome of model flying excellence. The cause is a most worthy one, particularly since the movement is in need of a new prestige event. Contributions should be sent to The 'Ted' Evans Memorial Trophy Fund, c/o T. Payne, 92 Coppice Drive, Parklands, Northampton.

You can be too pessimistic about the weather as well as too optimistic. The appalling weather preceding the North London Club's fly-in put a dampener on attendance on the day, but obviously the abstainers were not aware of North London's special met. arrangements. Contrary to gloomy expectations the sun shone brilliantly all day, and a splendid time was had by all, particularly as the catering had been based on previous attendances, offering double rations to all. The fly-in event is a strictly for fun affair, although prizes are awarded for outstanding models. Super model of the occasion was Spencer Flack's enormous *Catalina*, earning him the MPZ trophy. Open Scale winner was Sid Holloway with his incredible *Beagle Pup*, while Jack Sheldon, with a doggie from another litter, a *Sopwith Pup*, came second. Altogether a free and easy day with lots of intriguing models to beguile the eye; so don't be put off by the forecasts next year.

Mr. S. W. Moss, P.R.O. of the Leatherhead M.F.C., writes to tell us that the club recently had a change of Chairman; Ian McConnel reluctantly relinquishing the post to Mike Keevil, who adds it to his function as Comp. Sec. He goes on to inform us that the club is to hold a 'one design' contest. This type of event, in which a fairly simple, popular model is built *en masse*, as it were, has been a winner in any number of clubs over the last few years, and Leatherhead hopes that the model chosen, the A.P.S. *Phoebus*, will make a highly quantitative appearance in club circles. And good luck to Mr. Moss and Stewart Tucker in the BAC (Weybridge) Model Engineer Exhibition Plastic Event.

Lamented in the June issue of St. Alban's M.A.C.'s *The Thermal*, are the two lost places in Nationals events due to those oversights to which we humans are all too prone. First, Bob Bailey failed to check his glider line length before flying in A/1. Nylon might stretch a point but not the powers that be. Second, Colin Morris, in Open Glider, had the misfortune to mislay his best model on the edge of the airfield - lost to a tearaway rather than a flyaway - landed his second string on a hangar roof, got it back but put his foot in it by literally putting his foot in it. Produced yet another glider from his bottomless model box, put it up in the fly-off for a beautiful third place 12:24, only to be gently reminded of the two model only rule. In spite of the off-putting weather, the May Thermal Soaring Rally attracted a record entry of 25, of which all but one returned a score. Organisation coped valiantly by compressing the flying sessions into the dryer patches. But relief was to come in the late afternoon when the clouds suddenly vanished and the wind dropped to light. Winner was soaring expert, Geoff Dallmer (currently writing on this subject in *Radio Control Models and Electronics*). Colin Morris subscribes a word or two of lighthearted advice to those hapless free fliers who return empty handed from the chase. Don't just chuck it and hope: check that your D/T system will operate bang on the max mark and not 20 or 30 drift away seconds over. Choose your landing spot to miss the obvious hazards, not forgetting that wind veers with altitude.

Club with no junior problems is the Syke M.A.C., of Rochdale, Lancs. Reason: it is an all junior club which is content to leave silly things like problems to us older worriers. The low aggregate of years is no handicap in other ways either; the club seems to have as much going on as many a bewhiskered enterprise, even to the possibility of acquiring its very own clubroom. To this end a Hut Fund has been launched; contributions to same so far coming from an auction and - new to me - a sponsored flight session. For 2½ new pence you can purchase the sparsely printed club newsletter, *Aero Flying*. In it I noticed an item concerning bad balsa being used by the 'greener' members. True you must match the grade of wood to the job in hand, but, generally, the soft, cheesy type of wood, which often is all that is left on the model shop shelf, is useless for anything, and the newcomer to the hobby is well advised to take along an experienced friend when buying the high priced balsa of today. Still, we presume the potato pie dispensed at the club prizegiving was of good, medium stock, and met with the approval of NWA Chairman, Mike Reeves, who went along to present the prizes (the older generation has its uses!). These, incidentally, were in connection with the contests held throughout the year. Lots more going on for which, alas, we have not the space to cover, but thanks are due to Keith Lord (aged 15) for sending us the report and newsletter.

'But do they all fly?' That is the question that springs to mind when we hear of a club with a hefty membership. And we ask it as we learn from the report from P. Nicholls, P.R.O. of the Market Harborough M.A.C., that there are approximately 90 members on the books. The point I have in mind is that a large, paper membership can make a lot of hard work for the administrative nucleus without enriching the club in any other way but through cash subscriptions - when they remember to pay them. I do not intend to infer that the Market Harborough club suffers in this way, but merely underlining in a general way the difficulty of achieving a sense of unity and common purpose in a very large club. One reward of magnitude is the sort of healthy bank balance which Mr. Nicholls mentions, and this allows for a very full and varied agenda. Up to now the amount of flying space available has been somewhat on the sparse side for all that membership, but things have now improved, with one airfield obtained, and two rural patches available - crops and cows permitting. Expansion, too, in the R/C sphere. Nothing so primitive as the single button, though - the popular trend is towards sport/aerobatics from the fully fashioned magic box. Equally nimble in the sky is the club Combat section, raring to get at those contest streamers. In tamer mood they give displays at fetes and carnivals. A newsletter is issued by the club.

The final stage of the Leicester M.A.C.'s Winter Building contest was held at Wymeswold in May where, in blustery conditions, the palpable results of all those winter evening man hours came to grips with the unsympathetic elements. Highest scorer was B. Perks. Six flew altogether out of the seventeen displayed in the uncovered section of the event. Other club contest results: Kendal Cup Vintage: four entries, won by J. Taylor; Club Cup for Precision Power, winner J. Archbold; and the Farmer Cup for Radio Spot, won by L. Noble, five flew. Three members, C. Peters, B. Perks and C. Fereer, took a batch of models along to the Nationals in a minibus, and acquitted themselves quite honourably. C. Peters came fourth in the A/2 event and G. Fereer fifth in Coupe D'Hiver.

'Cut and Fly' contest staged by Whitfield M.A.C. requires 5p entry fee, covering cost of 9 in. x 3 in. x 1/16 in. balsa. Glue, razor blade, pins, ruler and ballast only used to produce flyable model glider. One hour allowed for building. No truth in the rumour that J. O'Donnell incorporated a D/T, though he certainly must have done when winning the

Pannett Open Power event at the N.A. Vintage meeting. Both he and Dave Yates featured in the Open Glider fly-off at the Nationals.

A copy of *Sin 71*, the *South Island News* (New Zealand) newsletter, just to hand, includes drawings of the latest thing in power duration models, the ultimate in self automation: the variable wing incidence machine. The basic idea is simple enough, to give one flat wing section suitable for climb and an undercambered one for glide, but the mechanics, though not described, could be tricky.

It always amazes me when I hear of model flyers in the lands of the great open spaces having flying field trouble. Makes you wonder if Chris C's trip was worth the while, not to mention the struggle the poor old Mayflower had. So, when I read in the newsletter of the *Toronto F.A.I. Group* that the plough and bulldozer on the old Indian territory leave the model models not so much as a reservation, I see no point in emigrating. However, the group is hanging on grimly to their much threatened piece of not so virgin flying land and putting in some useful free flight work.

I see from *Torque*, the *New Zealand Christchurch M.A.C.'s* newsletter, that I am not the only character in this propo world still flying 'piston engined' S/C Radio. Here it suggests that, although single channelled, you do not need to be bogged down with Clark Y section cabin jobs, you could try something with a bit more headwind penetration. Although a S/C model is little more than guided free flight, those exaggerated stabilising features, such as high dihedral, necessary to free flight function, can be more of a hindrance than a help to a judiciously applied rudder control. 'Well we know it's not all that sporting' admit the Christchurch boys about the black and white identifying stripes they put on their contest models to ensure downwind retrievers bring back club models rather than those of the opposition, but

quite practical when you come to think about it. Deservedly, Allen Stace has been made a life member of the club. He started modelling way back in the 1920s when Lindberg was flying the Atlantic, the Graf Zeppelin circling the globe, and the model plane was barely off the ground.

Many, devious and often over-inventive are the attempts to clip the wings of the long hopping free flight open model. Most recent examples appear in the *San Valeers* (California) *Satellite*. They are not presented for universal adoption but to suit the flying conditions of the San Valeers club. It is stipulated that the unlimited rubber model be limited to Wakefield in size and carry a nose assembly plus rubber weight of not more than 100 grammes. Fair enough, but given an ultra light model with a featherweight noseblock will performance be all that reduced? The other rule is that turns be reduced by 20% for the fly off. Interesting to know how this can be gauged, for what would stop anyone flying on twelve strands to re-strand his motor to fourteen for the fly off. Turns would be less but overall power output not much proscribed. But good luck to the club in their endeavours towards a viable solution.

Reading in the June *Model Aeroplane Gazette* (Editor: Ron Firth) the recital of disasters at the York F/F Rally, makes you wonder if current model design (particularly glider) has become too rarified to cope with the boisterous weather we all too often experience in this country. Very few of those who flew managed to return a consistent score or avoid disaster, and too many models remained, perhaps unsportingly, in their boxes. However, it was a day upon which chuck glider came into its own - 15 entries and no lack of flights. Perhaps our future salvation lies in Radio control as Geoff Dallimer suggests in a letter to Ron. He considers R/C to be past the 'new toy' stage, and could now be harnessed to give an element of control which would solve

INDOOR at CARDINGTON

Bruce Edwards reports on the
June 6th meeting

A HOWLING GALE and promise of worse no doubt deterred the majority of exponents. Those that did attend found the conditions inside the hangar were the best so far this year. While little help was available from the air, drift was low, enabling good times to be recorded so that most fliers exceeded their previous personal bests by a fair margin.

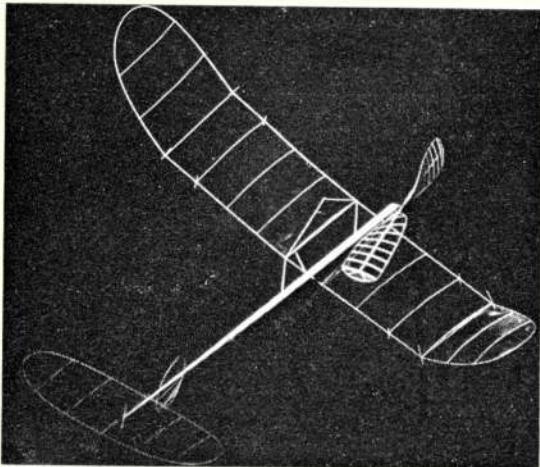
John Blount has been making a name for himself this season by living dangerously. He regularly 'ceiling scrubs' his models on the centre catwalk 153 ft. up! When he flies his 35 cm. 'Baby' binoculars become standard equipment! He has done 17½ min., every second a nail-biter. John's large 90 cm. model has done over 30 min. but has yet to realise its full potential.

The new one gram 65 cm. F.A.I. rule has everyone feeling their way gingerly. While most are content to fly 'standard' designs built up to the weight - without any apparent decrease in performance - several low aspect ratio models have appeared. Reg Parham has been increasing his chords in half inch steps and is now up to 6½ in. Laurie Barr has tried a 7 in. chord design and John Blount is flying an 8 in. fully elliptical model which shows great promise. The best time to date has been put up by a year-old 6½ in. chord 'bitsa', weighing .037 oz., which has done 31:38. This time is being claimed as a new record.

The next meeting is scheduled for the 29th August. There will be contests for beginners and open events. Anyone wishing to fly - no spectators please at these meetings - is asked to write or phone one of the following and have their names added to the Security List:

Laurie Barr, 4 Hastings Close, Bray Berks OMAS-25595	Stan Wade, 39 Beacon Drive, Loughborough, Leics.	Bruce Edwards, 170 Ladbroke Grove, London W10 5LZ 01-969 7349
---------------------------------------------------------------	-----------------------------------------------------------	------------------------------------------------------------------------

Laurie Barr prepares to wind his 65 cm. model while John Blount carefully holds. Going for maximum turns is as much a matter of feel as counting, as when fully wound the stick and tailboom bow downwards under the tension. Below, a 90 cm. model 'dead sticks' after a thirty minute flight with the motor hanging slack on the stick. Rigidity braced structures are a must on these extra-light weight models.



the space and mortality problems of F/F flying whilst retaining all its enjoyable aspects. He could well be right. The only flying space I have within reasonable distance of my home is suitable for free flight only in absolutely still conditions, but I now get in a lot of free flight style gliding with my A/2 sized radio glider. It is absolutely safe on a 'bungee' launch, even in windy weather, and requires only a few hundred yards of operating space. From Sven Olov Linden of Sweden comes a reference to pre-war copies of *Model Aeroplane Constructor*. They are an interesting source of vintage plans and ideas. Come to think of it I have a few such copies knocking about, from one of which I got a full sized plan of Franc Zaic's *Tractor*. Flew quite well. Nice to see the *Gazette* is getting the support the venture deserves.

A change in the format of *Seadog*, the **South East Area** newsletter, separates the breeds, i.e., F/F, R/C and C/L, into distinct categories, but printed therein is a letter from the **Leatherhead** club of interest to all three groups. It concerns a suggestion that model insurance premiums be related to the risk involved, with F/F, a low risk activity, requiring a much smaller fee than high risk proportional radio. This, in all fairness, would seem a rational thing to do but the insurance companies are not interested, due to the extra paper-work that would be involved. It should be remembered that insurance is not compulsory, and if we can get people insured without it hurting them too much, all the better. Personally, I would like to see all authorities who allow model flying on public spaces to insist on insurance as a condition of usage. I would also like to see that all flyers are aware of the implications of flying without insurance. Without insurance a substantial claim could mean financial disaster. Much of the radio section of the newsletter is taken up with the news of slope and thermal soaring. These forms of flying are quiet and relatively safe. Their increasing popularity could in part be due to the fact that they can be flown without objection on most public open spaces.

From Washington comes a bright little magazine issued by the **District of Columbia R/C Club**. Bad publicity for radio flying in an article called, 'Do you still get the same fun out of R/C?' by Stew Vance. He was flying his latest proportional model when it occurred to him in a rather boring way, that his model would do almost anything he asked of it, and faultlessly, too - what had he to strive for? He remembered the fun he had coaxing a barrel roll out of his old single, but what fun is there in perfection? A few hints on warps

here. Remedy of warming over a stove or before a fire mentioned. Not mentioned, though, is a thorough soaking and pinning down for a few weeks when all else fails. Latest in Vintage, Contest for models designed prior to 1941. Free flight models, but radio assisted. A word here, too, on radio take off safety. The climbing turn should be away from the parking area and not over it.

News in the **Mashonaland Model Club's Prop Shaft** is of a closely fought postal contest battle with the **Bristol & West Club**, Bristol & West 1964 seconds, Mashonaland 1958 seconds. The newsletter includes a photo section. Particularly eye catching is Lex Goldman's C/L *Cessna Skynight*, overall scale winner at the Rhodesian Nationals.

A model aircraft exhibition is certain to have a magnetic appeal for modellers living in the locality, so you who live around Cheshire way will wish to know that the **Heswall M.A.C.** is holding such a display in the Civic Hall, Ellesmere Port, from 10 a.m. to 6 p.m. on Saturday, 25th September, 1971. An added interest will be a number of Trade exhibitors.

'Come Home, Pylonius - All is forgiven', is the headline splashed across the June copy of *Marsh Gas*, the bulletin of the **South Essex M.A.S.** Seems that Mr. C. J. Prime, the Editor, is now ready to concede a point or two to Pylonius's 'one man band' thesis on club mag editorship. Truth is the contributions just have not been forthcoming from members, which is a shame considering how much work goes into such a publication. Anyway, what about it members everywhere? Spare a thought for the loneliness of the long distance printer and drop him a few printable words - and I mean printable. Just to get his own back the editor has been indulging in a bit of off duty C/L work. Conclusion: handle waving can be fun even in these multi propo days. Paradoxically enough, the club hopes to make progress by going up the creek. It is a case of nipping in between tides for the forthcoming *Ajax* competition. Models soon to be on the move are Chris Clarke's *Cessna Twin Comanche*, with twin O.S.30's, a *Scale Spitfire* and a *Dick Dastardly Biplane*.

Stuart Thomson, a C/L enthusiast from Down Under would like to contact someone with similar interests in this country with a view to swapping club newsletters. His address is 355, Bridge Road, Richmond, Victoria, Australia, post-code 3121.

I have a few newsletters which I will have to hold over to next month, also a long report from J. E. Glen of the Scottish A.A., which I hope to deal with.

Clubman.

★ SPECIAL OFFERS ★

In Single-Channel R/C

STAVELEY TONE-LOCK

The most advanced single-channel superhet unit available today

Offered by others at £27

FROM R.S. AT £19 (post free)

● PART EXCHANGE ●

Part exchange is our speciality and we are renowned for our 'better' offers on all R/C units, model engines, ready-made models, fishing tackle, guns, cameras and all photographic equipment.

MAINSTREAM SINGLE

A complete single-channel Regen unit with new slimline Tx and matching Rx.

FROM R.S. AT £9 (post free)

Making a saving of almost £5

Servos, escapements and kits to suit the above R/C units are in stock.

If you cannot call personally, order by mail with every confidence.

Newsletter and Lists sent for 3p stamp

ROLAND SCOTT LTD.

'The R/C Showroom of the North'

85 BOLTON ROAD
WALKDEN, Nr. MANCHESTER

PHONE:
061-790
6707

PHONE:
061-790
3030

Radio Models



September R.C.M.&E. should please the sport R/C scale enthusiasts, with plans for Don Stothers' 'Aeronca Champion', Spanning 71 in., this delightful replica of the American high wing light aircraft suits multi proportional R/C systems and is quite aerobatic with a 40 cu. in. size motor. Full-size plans will be available through R.C.M.&E. Plans Service.

Kit Review returns this month, with a look at something really unusual, in the form of the South Herts Models production of their 72 in. span near scale model of the Avro Vulcan. Demonstrated to an appreciative audience at the National Championships this year, our review will be of interest to all who took a liking to this model during those Nats demo flights.

For R/C glider fans, Geoff Dallimer continues his 'Thermal Soaring' Soaring fans will find interest in our 'California to Hawaii' story of a World R/C record glider attempt.

Test report this issue covers something new on the R/C scene in the form of the Waltron Mini 1-2, one of the 'new generation' of digital proportional systems offering proportional rudder and selective, independent throttle controls for the 'single channel' R/C enthusiast.

Regular features this issue include Sports & Single, Straight & Level, Scale News, Throttle Benders Union and Radio Motor Commentary.

**SEPTEMBER ISSUE
ON SALE
AUGUST 13th**

From newsagents and model shops or direct, price 15p+3p. Model & Allied Publications Ltd., 13-35 Bridge Street, Hemel Hempstead, Herts.



THE MIDLANDS LEADING MODEL SHOP - WORLD-WIDE MAIL ORDER SERVICE
S. H. GRAINGER & CO. CALDMORE MODELS

108 CALDMORE ROAD, WALSALL WS1 3RB, STAFFS.
 (1 MILE FROM M6 MOTORWAY JUNCTION 9) TEL. WALSALL 23382

RADIO CONTROL

Simprop Propo	from	£82.00
Gem Propo	from	£34.00
Skyleader Propo	from	£75.00
Sprengbrook Propo	from	£75.00
Futaba Propo	from	£109.00
Remcon Kit Propo	from	£98.00
McGregor S/Channel	from	£11.95
Mainstream S/Channel	from	£12.00

All types servos, actuators, deacs, etc.

ENGINES

Merco
Super Tigre
O.S. P.A.W.
Enya
K&B E.D.
Rossi
H.P. Veco
Davis Charlton
Webra

KITS

KeilKraft
Graupner
Topflite
Sterling
M.F.A.
Goldberg
Aviette
RipMax
Heigi

BOAT KITS

Aerokits
Billings
Veron
Mondav
Graupner
E.D.
Norstar
Mainstream
Simplas

ACCESSORIES

Micro Mold
X-Acto
M.F.A.
DEACS
Electric Motors
Chargers
Boat Fittings
Tanks
Wheels

MATERIALS

Solder
Balsa
Humbrol
Fibreglass
Solarfilm
Nylon
Fuel
Paints
Buoyancy Foam

Fibre-glass Marine Models including the popular 1/12th scale Surfury and Cigarette. Mail order catalogue 10p. Discount details from £25. Paybonds accepted. Part exchanges.

Tel: Earlston 334



ACHTUNG!



- We test fly ALL C.A.P. Models!
- Experts, T.V. & Radio manufacturers use them!
- American Firm orders 6 doz. prints without seeing a proof plan!
- Australian Firm phones £500 order!
- Ft. Lt. Curzon - 200-plus flights with 'Tiger Moth' - only wheels replaced!
- P47 flown over 300 hours - still flying!
- Flight Link Ltd. regularly fly C.A.P. 'Gladiator' over 18 months - no repairs!
- New plans due mid July. 60 1/2" 'Swordfish' 60" 'Hurricane'

PLEASE SEND S.A.E. FOR ILLUSTRATED DECIMAL PRICE LIST TO:

COMPLETE-A-PAC REGD., West High Street, Earlston, Berwickshire, SCOTLAND.

USE H.M.G. AND MAKE THE JOB

The finish to any model is as important as the making. H.M.G. products are specially produced to give you a superb finish on a solid construction.

- * HEAT & WATERPROOF ADHESIVE
- * ALL PURPOSE CLEAR ADHESIVE
- * MARINE FINISH
- * S.P. HOT FUEL PROOF DOPE
- * Balsa CEMENT

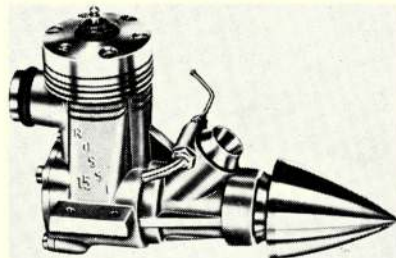


* Look for the new, eye-catching H.M.G. packs at your local model shops today!



H. MARCEL GUEST LTD.
 Riverside Works, Collyhurst Road,
 Manchester, M10 7RU.
 Tel: 061-205 5551/3

ROSSI 15-ENGINE of the YEAR



1st and 2nd 1971 World Free Flight Championships - 1st, 2nd, 3rd, 4th European C/L Championships

European Car Record Holder - European 2.5 c.c. Water Speed Record Holder

NEED WE SAY ANY MORE!

R15 Normal	...	...	£19.55	R60 Speed ABC with pipe	...	£36.65
R15 Piped	...	...	£24.20	R60 R/C	...	£33.15
R15 Marine	...	...	£28.05	R60 R/C with pipe	...	£39.10
R60 Speed	...	...	£28.90	R60 R/C marine with pipe	...	£47.60
R60 Speed with pipe	...	...	£36.65			

Distributed by IRVINE ENGINES, 31 The Fairway, New Barnet, Herts

CLASSIFIED ADVERTISEMENTS

PRESS DATE for October issue, 1971, 20th August 1971
 Private rate 2p per word (minimum 20 words)
 Trade rate 3p per word (minimum 20 words). Display box rate £2.50 per single column inch.
 Box Numbers 15p extra.
 Box replies to be sent care of Advertising Department, 13-35 Bridge Street, Hemel Hempstead, Herts., England. Copy received after first post on 20th August will be held over until the next issue, unless cancelled in writing before 15th of the following month. There are no reimbursements for cancellations.

WINGS APPEAL SEPT 15th-20th

GIVE FOR
 THOSE WHO
 GAVE



PILOTS' NOTES WORLD WAR II AIRCRAFT

Facsimile Copies of these Official Documents, prepared for each of the undermentioned aircraft. Copyright of Her Majesty's Government, from whom permission is granted to copy.

SPITFIRE II BEAUFIGHTER II
 HALIFAX III & VII BLENHEIM V
 SUNDERLAND III TYPHOON IA-IB

Describes the aircraft, its flying characteristics, performance, systems. Pilot techniques, procedures. Plus cockpit photographs and diagrams. Price 75p per copy, including (UK only) postage and packing, or 2 dollars plus 25p/60c airmail.

Also 10" x 8", 3D silhouettes, suitable for framing of all the above aircraft at 25p the set of six, including (UK) packing and postage. Other documents and silhouettes to follow.

Remittance to -

BOOK SHELF,
 Dept. J, Back West Crescent,
 St. Annes-on-Sea, Lancashire.

DIESELS WANTED

We need new or used diesel engines as well as older petrol engines. We will pay top cash allowance or trade for engines, R/C equipment and kits from the 'Colonies'. Post your list off to us along with 10p (2/-) in stamps for instant 'Air Mail' reply.
STANTON HOBBY SHOP INC.
 4734 N. Milwaukee Avenue
 Chicago, Ill. 60630, U.S.A.

Morton M.5 Radial engine. Sale by tender. Believed good condition. Clean, very minor parts missing, set 4 photos 40p, 4" x 5" S.A.E. TENDERS with S.A.E. View by appointment only. Taylor, South Farm, Thurlby, Lincoln. Basingham 238. I.

O.S. Pet R/C £2.00. D.C. Dart £3.00. Mini-Mac regen receiver £2.00. A.P.S. Tyro airframe, nylon covered, £4.00. Plus other single channel gear, Deacs, etc. 48 Greenhill Road, Alveston, Bristol. I.

Sealing up. Stunt model with Taifun Bison 3.5 glo battery and charger; two A.M. 35 diesels; sundries, £15 o.n.o. Bale, 10 Chaucer, Aylesbury. Tel: 3255. I.

Horsa Glider 5 ft. span slope soarer, fitted McGregor 5/2 superhet, full details, nylon covered, weight 3 lb. Perfect, flying condition. Radio guaranteed. £20. W. D. Binns, Waters-edge, Hill Top Road, Newmillerdam, Wakefield. I.

For Sale. Fox 36X, £5.50. Two Oliver Tigers 2.5 c.c. Mark 4, £5.00 each. Oliver Tiger Cub 1.5 c.c. £3.50. Two McCoy 19's, £2.00 each. Brown, 83 Godstone Road, Caterham, Surrey. I.



COULD YOU AFFORD TO REPLACE THIS DAMAGE?

Don't be in the position where you might have to!

Members of the S.M.A.E. enjoy £100,000 Third Party insurance. There is no better safeguard if you fly model aircraft.

REMEMBER - FLY SAFELY - FLY S.M.A.E. - NOW!

For further information, write - enclosing S.A.E. to: Ian Peacock, Public Relations Officer, 41 Carrs Way, Harpole, Northants NN7 4BZ.

KOSMIC 15 RACING ENGINES

K15 DIESEL
 Standard £15.20
 With pipe or Megaphone £16.75

K15 GLOW (SERIES 71)
 Standard (with pipe) £16.75
 F.A.I. F/F Special £15.50
 Marine version (with pipe) £17.00
 Marine version R/C (with pipe) £20.42

ACCESSORIES
 K/C Carburettor £3.42
 Geared marine motor mount £8.40
 Tuned length pipe £1.55
 Megaphone exhaust £1.55

Full spares service
 Add 20p for registered postage
 TRADE ENQUIRIES INVITED

D. J. GILES,
 150 Redland Road,
 Redland, Bristol BS6 6YD

FOR SALE

For Sale: Model Shop, large south coast town, 20 years lease, living accommodation. Box No. 885, Aeromodeller, 13/35 Bridge St., Hemel Hempstead, Herts.

Two Cox Medallion .049s. Good condition with C/L Models, Lines, etc. £8.00 pair or £4.50 each. Ring 01-845 7394. I.

Kraft K.P.6. Transmitter, receiver, four servos, Deacs, Charger, two models and Merco 61 thrown in £120 the lot. Old Vicarage, Newborough, Burton on Trent, Staffs. H.I.

McCoy 49 Petrol, £10. Super Tigre G20 15D, £4. Frog 2.49 MOD. v.g., £3.50 or trade. K. Taylor, 2 Engales, Copthorne Bank, Nr. Crawley, Sussex. I.

Retired enthusiast selling up! Ideal start to radio. Ready to fly: expert built, brand new, never flown, Ripmax Sky Queen. Fitted with O.S. 40P, Pecon 4 Function Radio. Cost £150. Best offer over £100. O.S. DP 4 proportional outfit. Brand new. Complete with 4 Servos, Charger, etc. Cost £120. Best offer over £70. Mills 0.75, £6.50. E.D. Comp. Special £5. O.S. 60 HGP. Brand new, £18. Cox Olympic 15 Rear induction £4.50. E.D. Cadet Water Cooled (only 400 made, rare), £4.50. Mills 1.3 Mk. II £6.50; plus 100 other engines, good and rough. Send stamped addressed envelope for lists. No callers, please. Mac, 2 Thorpe Road, Cropredy, Nr. Banbury, Oxfordshire. I.

P.A.W. 249, little used, £4.50; 2 Mk. II E.D. Bees, both very good, £3 each; Cox Space Bug 0.049, unused, in box, £4 o.n.o.; Cox Pee Wee, as new, £2; Peter Scott, 26 Barrwood Road, New Milton, Hampshire. Telephone: New Milton 611966. I.

RACING, SPORT & VINTAGE ENGINES

(incorporating Nitro Engineering of Banbury)

Will buy all types of engines for cash. Send your used or unwanted engine to us for best quotation by return. Spark ignition and all early British engines urgently required. Complete collections purchased. Send S.A.E. for our list of secondhand engines. Write to:

Racing, Sport & Vintage Engines,
 646-648 High Rd., N. Finchley N12 0NL
 Tel: 01-445 6531
 Closed all day Monday Easy Parking

Engine collection (20 engines), mainly U.S. Petrol's. Offers. List on request: A. Callert, Skogsmilsgat.3 S-421 37 Vastra Frolunda, Sweden. I.

0.3 mm. music wire, 1 lb. reel, £1.60. J. Gray, 136 London Road, Kingston, Surrey. I.

Ready to fly control line models. Dictator 52 in. span with Merco 35 £10. Coy Lady 55 in. span with new McCoy 40, £10. Voco 35 stunt engine (new) with old 50 in. span Attacker. Engine cost £12, add £8. Oliver Tiger Mk. 3, rebored on rod, ball races, etc., £5.50. Four combat models for Oliver, £2.50. X-acto knife chest cost £7. As new, plus more blades, clamps and plane, £5. Call: 21a Brooks Avenue, East Ham, London, E.6. I.

Final Year at University forces sale: Works tuned P.A.W. 1.49 just run-in, £5.50. P.A.W. 2.49, no needle valve, bit battered, but good running order, £2. New Tatone engine timer, £1.50. New drawing/building board 32 in. x 24 in., £5. KSB Engine Timer, £1. Old drawing/building board plus T-square 42 in. x 26 in., £5. Metro straight edge, £2.2. A1 G/F Tubes, Dope, Balsa, Tools, Aeromodellers', Plans, Spray Gun, etc., etc. S.A.E. for replies please. A. G. Wood, 20 Clifford Street, Birkenhead, Cheshire L41 0BM. I.

For Sale. Delong 30, Stentor, Whirlwind, 1066 Hawk (less propeller driver stack) O.K. Super 60 (less needle assembly, stack) Ohlsson 60. Cyclone. Sensible offers to Box No. 891 (Aeromodeller) Office, 13/35 Bridge Street, Hemel Hempstead, Herts. I.

Selling my remaining engines, Amco, Nordec, Owat, Move and other diesels, plus some spark and glow units. S.A.E. to: Wylyde, 2222 Stratford Road, Hockley Heath, Solihull, Warwickshire. I.

PLACES OF INTEREST

Flying displays by genuine veteran aeroplanes of the Shuttleworth Collection at Old Warden Aerodrome, two miles from the A1, near Biggleswade, Beds, on Sunday, 29th August, at 2.30 p.m. Admission Adult 50p, Child 15p. Parking Free. I.

Flying displays by aircraft used in the film 'Those Magnificent Men in their Flying Machines' and others at Old Warden Aerodrome, 2 miles from the A1 near Biggleswade, Beds on Sunday, 26th September at 2.30 p.m. Admission: Adult 50p, child 15p. Parking free. J.

TOP ALLOWANCE ON FISHING TACKLE
AND PHOTOGRAPHIC EQUIPMENT
TOWARDS ANY MODELLING GOODS
MODEL ENGINES BOUGHT FOR CASH

ROLAND SCOTT LTD.

85 BOLTON ROAD, WALKDEN
NEAR MANCHESTER

GIG

EIFFLAENDER REBORING SERVICE CHESTER ROAD, MACCLESFIELD

FOR IMMEDIATE P.A.W. SERVICE
ALL SPARES ALWAYS AVAILABLE
REBORES: £1.40 including post.
C.O.D. (Pay Postman) 70p extra (U.K. only)
* Service on other makes is discontinued *
* Enquiries, spares list, stamped SAE please *

HOLIDAY GLIDING
COURSES from May to October at

YORKSHIRE GLIDING CLUB

HILL SOARING ON SUPERB
CLEVELAND SLOPES
THERMALS GALORE
WAVES TO 20,000'
FULL FLEET
ADDITION - THE
FALKE
MOTOR GLIDER

FULL BOARD IN
MODERN CLUBHOUSE
WITH LICENSED BAR
Write for brochure & full details to:
The Course Secretary,
Yorkshire Gliding Club, Sutton Bank,
Thirsk, Yorkshire. (Sutton-Thirsk 237)

BOOKS

American Magazines by annual subscription
'Flying' Models, £4.30. 'Model Airplane News',
£2.90. 'American Modeller', £4.00. Send stamp
for complete list. Willen (Dept. 1), 61a Broad-
way, London E15 4BQ. ALT/TC.

TRADE

Agents wanted for new range of kits. South
Midlands and Greater London. Box No. 889.
Aeromodeller (Cheshire) Offices, 13-35 Bridge
Street, Hemel Hempstead, Herts. I.

Penfriends available now; all ages. S.A.E. to:
Pen Society, (T.77), Chorley PR7 4BS. I.

Top prices paid for good condition vintage
engines. Must be before 1950. Wolverhampton
Models & Hobbies, 3 Bell Street, Manders
Centre, Wolverhampton. T/C.

Advertising Pencils. Superb Ball-Pens, Combs,
Brushes, etc. Raise funds quickly, easily. Details:
Northern Novelties, Bradford 2. G-5.

NOW YOU'VE BUILT A MODEL

Why not build a full size aeroplane ?

Join the British Amateur Aircraft Industry:
THE POPULAR FLYING ASSOCIATION
and learn how to build your own flying
machine.

Read POPULAR FLYING, bi-monthly,
specimen copy 20p

POPULAR FLYING ASSOCIATION,
2 Waldens Park Road,
Horsell, Woking, Surrey, England.
Woking 62621.

WANTED

Wanted: miniature engine under 5 c.c. Write
stating make, condition and price to: Young,
15 Surrey Avenue, Burnley, Lancs. I.

Compressed Air, Carbon Dioxide and hot air
engines. Details to Bedingham, 46 Monks Haven,
Stanford-le-Hope, Essex. I.

Micromodel Cards, Kits, Wrappers. Wanted,
24 Wood Road, Shepperton, Middlesex. I.

Forster 99 wanted, cash or many vintage
Motors for swapping, 4in. to 6 in. Airwheels
wanted. Shelley, 358 Birmingham Road, Walsall,
Ring 28553. I.

Wanted: 'Aeromodellers' February-April 1950.
25p each for clean copies. Robinson, 22 Athole
Gardens, Glasgow, W.2. I.

Wanted to complete private collection of all
issues of 'Aeromodeller'. Issue No. 2 Vol. 1,
Dec. 1935; Issue No. 10 Vol. 1, Sept. 1936;
Issue No. 13 Vol. 2, Dec. 1936. Price to R.
Fielding, 11 Edmund Street, Rochdale, Lancs. I.

Wanted: Plans, pre-war. A.M. Air Cadet rub-
ber duration and pre-war Frog Lysander. Box
No. 890, 'Aeromodeller' (Cheshire) Offices, 13-35
Bridge Street, Hemel Hempstead, Herts. I.

Wanted - by American Distributor - Model
Products, especially Diesel Engines and related
items. Need D-C Tornado Twins. Box No. 888,
'Aeromodeller Magazine', Bridge Street, Hemel
Hempstead, Herts. H.1.

Wanted in South of England, Model Railway
Shop or Model Shop, to buy or partnership. Box
No. 883 ('Aeromodeller' Offices, 13/35 Bridge
Street, Hemel Hempstead, Herts. I.

WEST WALES GLIDING CLUB HOLIDAY GLIDING COURSES

Withybus Airfield is centrally situated for
over 70 miles of National Park coastline and
unspoilt beaches for your family holidays.
Residential and non-residential courses for
beginners and advanced pupils from May to
October.
Auto-towing and Aero-towing.
Camping and caravan facilities available.
Brochure & fuller information from Gliding
Secretary:

136 HAVEN RD., HAVERFORDWEST
Tel. Haverfordwest 3156

WANT TO FLY?

Come to the KENT GLIDING CLUB.
Come on a Gliding Holiday.
Holiday courses, professional instruction,
April-November. Winch and aero
tow launches.

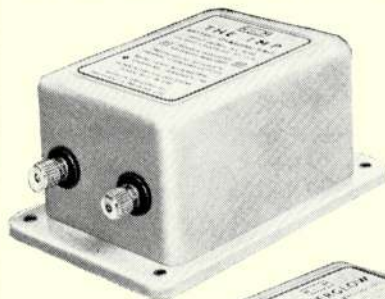
Apply to: KENT GLIDING CLUB,
Challock, Nr. Ashford, Kent.
Tel. Challock 274 or 307.

LEARN TO GLIDE

on a two-week fully residential course
at the London Gliding Club. Instruction
in high performance two seaters with
qualified professional instructors.

Write to: Manager, (A.M.), London
Gliding Club, Dunstable Downs, Beds,
for 1971 Course Brochure.

TWO NEW BATTERY CHARGERS!



THE
IMP
6 VOLTS D.C.
AT 1½ AMPS

£2.10

THE
SUPERGLOW
2 VOLTS D.C.
AT 1½ AMPS

£2.10

Send for free price list
36-page catalogue 6p

Trade enquiries welcomed

HAMMANT AND MORGAN LTD.,
HANDEM WORKS, APEM ESTATE,
ST. ALBANS ROAD, WATFORD, HERTFORDSHIRE

BINDERS

in handsome leather cloth with
gold blocked name plate on spine
to take 12 copies of your
AEROMODELLER
Copies open flat and can be
removed unmarked as required.

Price including postage 90p

AEROMODELLER
13-35 BRIDGE STREET,
HEMEL HEMPSTEAD, HERTS.

NJM FOR RADIO CONTROL AIRCRAFT KITS & ACCESSORIES

Mercury Galahad	54"	£3.70	JUST IN: FUTABA DIGIMAX 4, 4
Tiger Moth	33"	£3.50	SERVOES, RX & TX DEACS, BUILT
Matador	47"	£2.70	IN CHARGER: 6 PR. XTALS &
Aerona Sedan	65"	£7.30	FLAGS, CARRYING STRAP, WIRING
KK Mini Super	48"	£8.95	HARNES, COMPLETE, ONLY £109.50
Super 60,	63"	£10.95	ENGINES
Fleetwing	54"	£10.95	Enya 19 R/C £8.49
Elmira glider	116"	£9.98	Enya 15 R/C £7.64
Outlaw	45"	£5.95	OS 10 R/C £5.99
Veron Piper Cherokee	56"	£17.95	OS 15 R/C £8.60
Mini Concord	40"	£6.80	OS 19 R/C £8.95
C.G. Falcon de luxe	56"	£12.80	OS 19 R/C £8.95
Junior Falcon	37"	£4.98	Cox .049 R/C £7.50
KK Economy Glow ½	Gal	£1.05	Coxb1.09R/C £9.75
ED economic N. Diesel ½g.	1.25	HP 61F-R/C £21.00	2v. 6AH acc. £2.95
Cox Nitro 30 ½ pt.	38p	HP Silencer £2.99	Kav. plug comb. 75p
Devcon epoxy	44p		Hegi " " £1.23
Devcon 1lb. industrial	£2.75		D.C., OS, Merco,

EASY CREDIT TERMS THROUGH PAYBONDS

Second hand equipment bought and part exchanged
STAMPED ADDRESSED ENVELOPE WITH ALL ENQUIRIES PLEASE
NORWOOD JUNCTION MODELS LTD. Hours 9.30-6;
W'd 1pm Fri 9.30-7.30
3 Orton Bldgs., Portland Rd., London, S.E.25 Tel: 01-653 4943

Model Shop Directory

ALDERSHOT

Tel: 26825

CONCORDE MODELS 134 VICTORIA ROAD

R/C Models - All Accessories - Mainstream and Merco Area Agents

AMERSHAM

Tel: 4030

R. E. HADDOCK

(R.E.H. Photography)

61 SYCAMORE ROAD, AMERSHAM, BUCKS.

R/C equipment, aircraft and boat kits and all modelling accessories. Cameras taken in part exchange.

AUSTRALIA

Tel: 637424

RIVERSIDE HOBBY CENTRE

3 PRINCE WALK, MELBOURNE 3000
Radio Control Equipment Kits, Engines, Accessories, M.A.P. Plans, Books.

FAST MAIL ORDER SERVICE

AUSTRALIA

SEMAPHORE HOBBY CENTRE

12 HART STREET

SEMAPHORE SOUTH, S.A. 5019

M.A.P. Plans, Books, Kits, Engines, Accessories, etc.

Radio Control Equipment
Free Price Lists

AYLESBURY

Tel: 85752

TAYLOR & McKENNA

46 FRIARS SQUARE

BARKINGSIDE

Tel: 01-500 2007

PAGE'S OF BARKINGSIDE LTD.

M.E.T.A.

19 BROADWAY MARKET, BARKINGSIDE ILFORD, ESSEX

Why go to town?

We can supply all your needs at Ilford's largest Model Shop

BARNESLEY

Tel: 6222

DON VALLEY SPORTS

28 DONCASTER ROAD, BARNESLEY

Model Aircraft, Boats, Cars, Railways
All makes of Engines
R/C Equipment
Postal Service

BATH

Tel: 60444

CYRIL HOWE'S

CHEAP STREET, BATH, SOMERSET

The Model Shop of the West for all your modelling requirements. Aircraft, boats, engines, radio control. Expert advice available
M.A.P.

BIRMINGHAM

Tel: B'ham
Highbury 3237

KINGS HEATH MODELS

5 YORK ROAD

KINGS HEATH, BIRMINGHAM 14

KeilKraft, Veron, Airfix, Monogram, Frogflite, Cox, Aurora, Diesel and Glow engine, Accessories, etc. Also Boats, Railways, Slot Racing cars, etc.

BIRMINGHAM

Tel: 021-772 4917

BOB'S MODELS

520-522 COVENTRY ROAD
SMALL HEATH, BIRMINGHAM 10

MODEL CENTRE OF THE MIDLANDS
RADIO CONTROL SPECIALISTS

Friendly help and Advice backed by over 20 years' experience

BIRMINGHAM

Tel: 554 5569

THE MODEL MECCA

204 WITTON ROAD
BIRMINGHAM 6

Model Aircraft, Boats, Trains, Cars and R/C outfits

BIRMINGHAM

Tel: 021-554 8760

ARTHUR BENN'S MODEL SHOP

18 COLLEGE ROAD, HANDSWORTH, BIRMINGHAM 20

KeilKraft, Veron, Ripmax, Aircraft and Boat Kits, Engines and R/C outfits, Balsa wood, etc.

BIRMINGHAM

Tel: EAST 0872

POWELL'S MODEL CENTRE

769 ALUM ROCK ROAD, WARD END BIRMINGHAM 8

Personal attention of G. & F. Powell

BIRMINGHAM

Tel: 021.373 5945

TOYLAND DAVIS & DAVIS

332 MARSH LANE, ERDINGTON, BIRMINGHAM 23

We stock everything a modeller needs to build and fly a Radio Control Aeroplane and advice

BIRMINGHAM

Tel: 021-458 4239

TURNERS MODEL DROME

NEWSAGENTS
24 TEVIOT GROVE, KINGS NORTON

Radio Control equipment, KeilKraft, Veron, Airfix, Frog, Ripmax, Engines, etc.

BRADFORD

Tel: 26186

MODEL DROME

182 MANNINGHAM LANE
BRADFORD 8

Radio Control Equipment, Aircraft and Boat Kits and all Modelling Accessories
Mail Order by return

BRIGHTON

Tel: Brighton 48225

HARRY BROOKS

15A VICTORIA ROAD
PORTSLADE, SUSSEX

The best stocked model shop in the South - You want it, we have it

BRISTOL

Tel: 47505

MODEL HIGHWAYS

85 GLOUCESTER ROAD, BRISTOL 7

Keil, Veron, Top Flight
Fuel by the gal. Balsa, etc.

CLOSED WEDNESDAY

CAMBERLEY

MODEL WORLD (CAMBERLEY) LTD.

Mike Young & Nev Coombs, proprietors
75 HIGH STREET, CAMBERLEY, SURREY

Comprehensive stock of Kits, Engines, Radio Control Equipment, Spares, etc.

CARDIFF

Tel: 29065

BUD MORGAN

The Model Aircraft Specialist

For KeilKraft, Mercury, Veron, Ripmax, Simprop R/C and Mainstream products.
PAY BONDS ACCEPTED

S.A.E. stamped please for assorted lists
22 & 22A CASTLE ARCADE, CARDIFF
CF1 2BW

CHICHESTER

Tel: 83592

PLANET MODELS AND HANDICRAFTS

108 THE HORNET, CHICHESTER, SUSSEX

Aircraft and Boat Kits. All Accessories. Balsa Wood, Engines, Fuels, Finishes, etc. Model Railways & Racing Cars.
Personal Service Mail Orders

DERBY

Tel. ODE 2 62771

SUPER MODELS

3 CHAPEL SIDE, SPONDON, DERBY (7 mins. off M1. Exit 25)

The leading shop for Ready-built Airframes. Quality RC gear. Delta Sky-leader. Main Service Agent for Sky-leader in Midlands and North.

Fantastic selection of Solarbo Balsa Wood 2", 3", 4" & 6" wide 4' & 3' long

DEVON

Tel. 2685

THE MODEL SHOP

56 FORE STREET, BRIXHAM

We think we are
THE BEST IN THE WEST

DONCASTER Tel: 62524
B. CUTTRISS & SONS
 MODELS AND HANDICRAFTS
 40 DUKE STREET
 Call and see our Shop

DUDLEY Tel: 57045
ACE MODELS
 20 FOUNTAIN ARCADE, DUDLEY
 For KeilKraft, Veron, Mercury
 Revell, Riko, Frog, etc.
 CLOSED WEDNESDAY

FAREHAM Tel: 4136
G. M. H. BUNCE & CO. LTD.
 206 WEST STREET, FAREHAM
 Aircraft, boats, engines, radio control
 Engineers/woodworkers
 tools and machinery

FARNWORTH Tel: Farnworth 74688
JOYCRAFT
 29 HALL LANE, MOSES GATE
 FARNWORTH, BOLTON
 The shop for all your modelling needs.
 Balsa Wood specialists, materials,
 engines, aircraft and boat kits, R/C
 equipment. S.A.E. for reply. Postal ser-
 vice. We are here to serve "YOU".

GLASGOW 041-632 8326
RIDDELL BROS.
 61 MOUNT ANNAN DRIVE
 (Facing Mount Florida School)
 GLASGOW, S.4
 VERON KEIL BILLINGS AIRFIX
 Accessories, Balsa, etc.

HAVERFORDWEST Tel.: 3175
MODEL CRAFT
 15 CARTLETT, HAVERFORDWEST
 PEMBS
 At last a specialist model shop in West
 Wales. All popular makes always in stock.
 Mail Order? Certainly. S.A.E. for lists
 please. R/C accessories, Aircraft and Boat
 Kits, etc.

HEMEL HEMPSTEAD Tel: 0442 58963
HEMEL MODEL CENTRE
 61 WATERHOUSE STREET
 Specialists in Radio Control. We supply equip-
 ment by most leading manufacturers, including
 Staveley, Flight Link, Slimprop, Futaba, etc.
 PART EXCHANGES WELCOMED
 MAIL ORDER A SPECIALITY
 EARLY CLOSING WEDNESDAY

HEMEL HEMPSTEAD Tel: 53691
TAYLOR & McKENNA
 203 MARLOWES

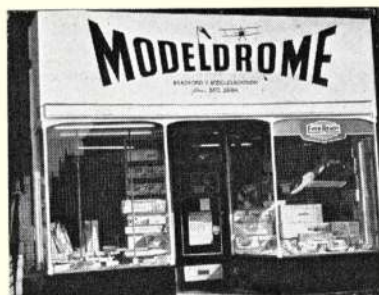
HONG KONG Manager: J. H. Symons
FAR EAST MODELS LTD.,
 C-1 HAPPYVIEW HOUSE,
 SHATIN HEIGHTS ROAD,
 NEW TERRITORIES, HONG KONG
 Japanese model equipment. Aircraft, boats
 and radio control equipment. Mailed to any
 part of the world. Mail order only.
 All currencies accepted.

HONG KONG Tel: K-680507
RADAR CO. LTD.
 2 OBSERVATORY ROAD,
 TSIMSHATSUI, KOWLOON
 The most complete stock in the Far
 East. Agents for Veron, Solarbo, Keil
 Kraft, M.K., Pilot. Sole Agents for
 Graupner, O.S. Prompt mail order
 service.

HORSHAM Tel. 65133
MODEL CORNER
 30 NORTH STREET, HORSHAM, SUSSEX
 Comprehensive range of Kits. Veron
 Keil, etc. P. & P. extra.
 Overseas enquiries invited.

HULL Tel: 43701
REG. BEAUMONT
 150 CHANTERLANDS AVENUE,
 HULL, E. YORKS.
 Mainstream, Veron, etc.
 MAIL ORDER SERVICE

HUNTINGDON Tel: 0480 3328
**HUNTS ANGLING &
 SPORTS (MODELS)**
 18/19 HIGH STREET, HUNTINGDON
 Everything for the Modeller, Kits, En-
 gines, Parts, Materials, R/C equipment,
 Specialist Engineers. Postal services.
 Open 9-6 Mons/Sats. 5 minutes A1.



ILFORD Tel: 01-554 9142
AVIACOLOUR
 MODEL SUPPLY SPECIALISTS
 Specialists in Radio Control
 466 EASTERN AVENUE, ILFORD, ESSEX
 (1 min. from Gants Hill Central Line
 tube station)

KENT Tel: RAV 0818
AVICRAFT LTD.
 6 CHATTERTON ROAD, BROMLEY
 I sell as much modelling gear as I can
 afford to stock. Radio Control, Boats,
 Planes. Good selection of wood and
 accessories.
 Whatever you want in the way of gear
 for Avicraft's sake, send your orders here

KENT
MODERN MODELS LTD.
 49/51 LOWFIELD STREET
 DARTFORD, KENT
 For all that's best in Model Aircraft and
 Boats, including Radio Control
 American Kits and Accessories a
 speciality

LEEDS Tel: 27891
THE MODEL SHOP
 38 MERRION STREET
 (Nr. Tower Cinema)
 Model aircraft—boats—cars—railways.
 all makes engines. Every accessory,
 R/C equipment. Same day postal service

LEICESTER Tel: Leicester 21935
**RADIO CONTROL
 SUPPLIES**
 52 LONDON ROAD
 Mail Order Specialists
 Closed Monday
 Open until 8.30 p.m. Friday
 The Showroom of the Midlands with full
 R/C service facilities

LEYLAND Think of MODELS
 TERRA, AQUA & AIR also everything associated with them
 and you think of
 "TERRAQUAIR"
 64 CANBERRA ROAD, LEYLAND
 Coming by M.67 from North or South. 2
 min. to run Off/On. Turn left at "Damps
 Canberra Service Station" and you're here.
 With 'Off the Road' parking areas provided.

LINCOLN Tel: 25907
MODEL CENTRE
 24 NEWLAND
 THE ENTHUSIAST'S SHOP
 Big Stocks of Kits, Engines, Balsa,
 Accessories, R/C Gear, etc.
 MAIL ORDER

LONDON Tel: 01-520 4565
BRIDGE MODELS
 1/2 STATION PARADE,
 HOE STREET BRIDGE,
 WALTHAMSTOW, LONDON, E.17
 LARGEST SELECTION OF KITS IN
 LONDON

LONDON 01-808 5668
**TOTTENHAM MODELS
 AND RACEWAY LTD.**
 367 High Road, Tottenham, London, N.17
 Come to THE Centre and try our track.
 KING 155 feet per lap - and all the latest
 merchandise in slot cars, model boats, static
 kits, radio cars, aircraft, military vehicles.
 We are the "DREMEL" moto-tool agents.
 Open 6 days per week - Closed Mondays
 Open Sunday afternoon

LONDON Tel: 01-228 6319

E. F. RUSS

101 BATTERSEA RISE, LONDON, S.W.11
Plastic Kits, Model Boats, Aircraft and accessories. All leading makes in stock.
Friday open until 7 p.m.
Early closing Wednesday

LONDON Tel: 01-560 0473

RADIO CONTROL SUPPLIES

581 LONDON RD., ISLEWORTH, MIDDX.
Mail Order Specialists
Open each weekday and until 8.30 p.m. Fridays
Largest R/C stockists in the country
Own R/C service centre

LONDON Tel: 01-788-6497

J & D's HOBBIES

118A Upper Richmond Road
Nr. East Putney Tube Station
Closed Thursday
Open until 7 p.m. Friday

LONDON Tel: MIL 2877

H. A. BLUNT & SONS LTD.

MILL HILL CIRCUS, LONDON, N.W.
Complete range of model aircraft, engines and accessories, boats, cars and railways

LONDON Tel: 01-692 629

D. BRYANT

MODEL SUPPLIES
328 BROCKLEY ROAD, S.E.4

For Futaba R/C equipment and all other leading makes, Keil, Veron, Frog, Airfix, etc. Expert advice on scale problems.

LONDON GRA 2471

A. G. HERMITE
(MODEL SUPPLIES)

633 BARKING ROAD, WEST HAM, E.1
Aircraft—Boat—Car—Plastic Kits & R/C
Saturdays 9 a.m. to 6 p.m.
Postal Service

LONDON Tel: 01-485 1818

AERO NAUTICAL MODELS

39 PARKWAY, CAMDEN TOWN, N.W.1
Main Agents for RIPMAX, GRAUPNER
Full range of Timbers stocked and cut
ALL KITS AND ACCESSORIES FOR
AIRCRAFT AND BOATS
MAIL ORDER SERVICE
1 min. from Camden Town Tube Station,
Northern Line
LONDON'S LEADING MODEL SHOP

LONDON Tel: 01-852 2637

LEWISHAM MODEL CENTRE
45 LEE HIGH ROAD, LEWISHAM, S.E.13

A good selection of KeilKraft, Veron, Graupner, Top Flite Gillons, etc. always in stock. All types of Engines, Accessories and Spares; also single and multi R/C equipment. Late night Friday. Mail Order a pleasure
Paybonds and Barclay Cards accepted

LONDON Tel: WELbeck 8835

W. & H. (MODELS) LTD.

14 NEW CAVENDISH STREET, W.1
(Five minutes from Oxford Circus)
LEADING WEST-END STOCKISTS OF
ALL QUALITY MODEL AIRCRAFT KITS,
BOATS, RAILWAYS, MAIL ORDER

LONDON Tel: 01-607 4272

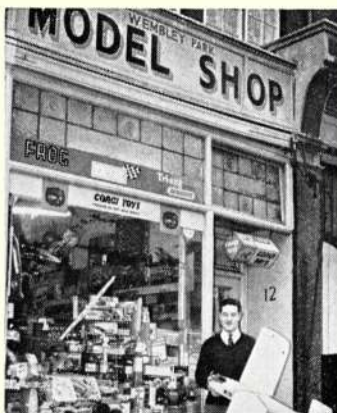
HENRY J. NICHOLLS & SON LTD.

308 HOLLOWAY ROAD, N.7
We stock only the best for
AEROMODELLERS
Specialists in Radio Control

LONDON Tel: 01-703 4562

MODEL AIRCRAFT SUPPLIES LTD.

207 CAMBERWELL ROAD, S.E.5
Business Hours:
Monday to Wednesday, 10 a.m. to 6 p.m.
Saturday 9 a.m. to 6 p.m.
Late night Fri. 7.30 p.m. Closed all day Thur.
Postal Service. Parking Facilities.



LONDON Tel: 01-445 6531

MICHAEL'S MODELS

646-8 HIGH ROAD, N. FINCHLEY, N.12
Comprehensive stock of KeilKraft, Mercury & Veron kits. Good selection of engines and a full range of accessories and woods. Specialists in secondhand engines.
MAIL ORDER A PLEASURE
Closed all day Monday Easy parking

LONDON Tel: 850-4324

ELTHAM MODELS

Ian and Ray Stilling
54 Well Hall Road, Eltham, London S.E.9
The Model Shop with the friendly atmosphere.
Full range of Aircraft & Boat Kits, Engines, Balsa, Dope, etc.

LUTON Tel: 23182

AEROMODELS (LUTON)

20 GORDON STREET
LUTON, BEDS.

Model Aircraft, Cars, Railways and Boats for the beginner and expert.

MAIDENHEAD Tel: 21769

E. WALTON

61 KING STREET
Wide range of Modelling Kits and Accessories
Engines and R/C Equipment
Railways, etc.
Established 1932

MAIDSTONE Tel: 51719

J. F. CARTER & SONS LTD.

(THE MODEL SHOP)
19-23 UPPER STONE STREET
MAIDSTONE, KENT
Complete range of modelling equipment and accessories, including R/C.
MAIL ORDER

MANCHESTER Tel: BLA 3972

THE MODEL SHOP

13 BOOTLE STREET
MANCHESTER 2
THE UP-TO-DATE SHOP WITH THE
COMPREHENSIVE STOCK
Mail Orders by return

MIDDLESBROUGH

MODELDROME

265 LINTHORPE ROAD
MIDDLESBROUGH, TEESSIDE
Tel: Saltwells 3212
Radio Control Equipment, Aircraft and Boat Kits and all Modelling Accessories.
Mail Order by Return

NEWCASTLE Established 1924

THE MODEL SHOP

(NEWCASTLE UPON TYNE) LTD.
18 BLENHEIM STREET Tel: 22016
NEWCASTLE UPON TYNE, ENGLAND
Pioneers of modelling
Our Expert Staff are at your service
MAIL ORDER

NORTHAMPTON Tel: 31223

THE MODEL SHOP

(Super Model Aircraft Supplies)
230 WELLINGBOROUGH ROAD,
NORTHAMPTON
Established 1937
Full range of model supplies in new enlarged shop, Ripmax, MacGregor and Futaba Digital.

NOTTINGHAM Tel: 50273

GEE DEE LIMITED

40 GOOSE GATE
NOTTINGHAM
Everything for the aeromodeller at
Nottingham's leading shop.

OLDHAM

THE HOBBY LOBBY

86 MARKET STREET, SHAW, LANCS.
(between Oldham and Rochdale)
Model Aircraft Kits, Accessories, Cars, Boats, Railway, Plastic Kits.
Postal service. Send for 'Bargain Bulletin'. Lots of interesting items.

PORTSMOUTH Tel: 23681

THE HOBBY SHOP

(Robin Thwaites)

28 ARUNDEL STREET

Aero - Car - Boat Kits. R/C Equipment.
Used Engines bought and exchanged.
Paybonds, Provident, Barclaycard
accepted.

POTTERS BAR Tel: 59355

HERTS.

HENRY J. NICHOLLS & SON LTD.

8 SOUTHGATE ROAD,
POTTERS BAR, HERTS.

Try the Hertfordshire Department of
the well-known hobby shop for all
your modelling needs.

READING Heading 51558

**READING
MODEL SUPPLIES**

5 CHATHAM STREET, CAR PARK
OXFORD ROAD, READING, BERKS.
BERKSHIRE'S SPECIALIST MODEL
SHOP FOR KITS, ACCESSORIES,
ENGINES, RADIO EQUIPMENT.
H.P. Terms available.
You can drive right to us.

READING Tel: 50074

G. SLEEP, LTD.

22/24 KINGS ROAD, READING

For over 30 years we have had one of
the largest Model Stocks in the
South of England

ROMFORD Tel: ROM 44508

HOME & HOBBY STORES

144 NORTH STREET, ROMFORD, ESSEX

We stock all that's best in modelling.
Kits, engines, radio. Part exchange.
Mail order by return. Paybonds agents.
Open 7 p.m. Fridays.
No parking problems.

SHEFFIELD Tel: 581197

MODELS & HOBBIES

117 LONDON ROAD, SHEFFIELD

Main Agents for R/C equipment.
Staveley, Sprengbrook, Skyleader, Kraft,
etc. Main Agents for True-Line styro
wings. Aircraft and Marine accessories.
We do any repairs to any make of
radio. Mail order. H.P. available.
Easy parking.

SINGAPORE

SHING FATT RADIO

1340 UPPER CHANGI ROAD,
SINGAPORE

Latest in Japanese R/C equipment and
kits. Fresh stocks of M.K. Custom kits,
Servos, Accessories, Digital R/C,
Hinode, Enya, O.S. Send for lists.
Prompt service our speciality.

SOLIHULL Tel: SHI 3374

SHIRLEY MODEL SUPPLIES

62 STRATFORD ROAD
SHIRLEY

Triang, Scalextric, Airfix, Balsa Kits etc.
Personal attention and advice to young
modellers.

SOUTHAMPTON Tel: 0703-25565

R.G.L. MODEL SHOP

R. G. LEWIS (SOTON) LTD.,

17 HANOVER BLDGS., SOUTHAMPTON

Specialist in
BOATS - CARS - AIRCRAFT
RADIO CONTROL EQUIPMENT

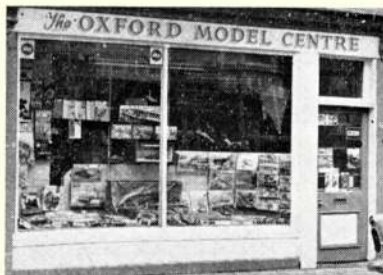
SOUTHAMPTON Tel: 25919

HOBBY LOBBY LTD.

52 COMMERCIAL ROAD

CALL - WRITE - OR PHONE

Paybonds accepted.
Open 6 days a week.
9.30 a.m. - 6 p.m.



STOCKPORT Tel: STO 5478

THE MODEL SHOP

280 WELLINGTON ROAD SOUTH
(BRAMHALL LANE CORNER)

Aircraft, Boats, R/C Equipment, Engines
Railways, Car/Racing, Plastic Kits
Postal Service.

SUTTON Tel: 01-642 8291

E. L. S. MODEL SUPPLIES

9 EAGLE STAR HOUSE,
HIGH STREET, SUTTON, SURREY
SURREY'S HOBBY CENTRE
BY RETURN POSTAL SERVICE

Complete stock of all Aeromodelling
requirements.

WALKDEN Tel: 061-790 6707

ROLAND SCOTT LTD.

85 BOLTON ROAD, WALKDEN

MOST ITEMS IN THIS MAGAZINE
IN STOCK NOW.

SEND FOR SECONDHAND LISTS

WALSALL Tel: 23382

S. H. GRAINGER & CO.

CALDMORE MODELS

108 CALDMORE ROAD

Everything for the Modeller

Aircraft - Railways - Boats - Electric Cars
Repairs - Overhauls - Spares - Radio
Control - Part Exchanges - Paybonds
accepted

WATFORD Tel: Watford 43026

MODEL EXCHANGE

71 ST. ALBANS ROAD
WATFORD, HERTFORDSHIRE

The shop with stock and expert advice.
Free radio and engine testing service
S/H engines and radio bought and sold
any time. 'Performance spoken here'.

WELWYN

**H. A. BLUNT
& SONS LTD.**

38 FRETHERNE ROAD
WELWYN GARDEN CITY, HERTS.

Complete range of model aircraft,
engines and accessories, boats, cars
and railways.

WESTON-SUPER-MARE Tel.: 21031

BILL EVANS

WESTON MODEL AERO &
ANGLING SUPPLIES
1 OXFORD STREET

The best in Radio Control for 25 years! All
the main agencies. Open till 8 o'clock, 7
days per week for your convenience. 'By the
Enthusiast for the Enthusiast'

WIGAN Tel: 83208

TONY'S MODEL CENTRE

10 CHAPEL STREET,
PEMBERTON, WIGAN

Radio Control equipment, Aircraft, Rail and
Boat Kits and all your modelling require-
ments. Personal attention assured.
IT WILL PAY YOU TO VISIT US
Easy parking
MAIL ORDER SPECIALISTS

WOLVERHAMPTON Tel: 26709

MODELS & HOBBIES

BELL STREET, MANDERS CENTRE
WOLVERHAMPTON
EXPERTS COME TO US
VISIT US AS WELL

WE HAVE ALL THE BEST IN MODELLING

WORCESTER Tel: 0905-26697

R.G.L. MODEL SHOP

(R. G. Lewis Ltd.)

6 FOREGATE STREET

Specialist in
BOATS - CARS - AIRCRAFT
RADIO CONTROL EQUIPMENT

WORCESTER PARK Tel: 01-337 0983

THE TOY HAVEN & WORCESTER
PARK MODEL CENTRE

16/18 CENTRAL ROAD,
WORCESTER PARK, SURREY

Mon. to Sat. 9 a.m. to 6 p.m. For the
enthusiastic Modeller. Plastic Kits.
The best toys. Mail Order Nearby Parking

WORKSOP Tel: 2855

MODEL CENTRE

RYTON STREET

Main agencies for all Kits, Engines and
Radio Control equipment.
Mail Order Service

AVAILABLE EX-STOCK

O.S.DP2B Digital Set: Comprising: Transmitter, Receiver. Two Servos, Ni-Cad Batteries (for Receiver and servos). 240v. Charger.

O.S.DP3 Digital Set: Comprising: Transmitter, Receiver, Three Servos, Ni-Cad Batteries (for Transmitter, Receiver and Servos). 240v. Charger.

O.S.DP4P Digital Set: Comprising: Transmitter, Receiver, Four Servos, Ni-Cad Batteries (for Receiver and Servos). 240v. Charger.

PRICED AT: DP2B A\$199.00 DP3 A\$230.00 DP4P A\$275.00

AUSTRALIA'S LOWEST PRICED COMPLETE SETS

THE MODEL DOCKYARD Pty. Ltd.

216-218 SWANSTON STREET, MELBOURNE, AUSTRALIA.

EVERYTHING FOR THE AEROMODELLER

MACGREGOR RADIO CONTROL

Single Channel Handbook 8p post paid
Digital Handbook 13p post paid

NEW 1971 KEILKRAFT HANDBOOK 23p post paid

K.K. Gyron R/C	£5.95	K.K. Conquest Glider	85p
K.K. Mini Super R/C	£8.95	K.K. Competitor Rubber	99p
K.K. Radian C/L	£1.90	K.K. Talon C/L	£2.75

Veron BIG EAGLE Slope Soarer Kit £12.80

Kits by Veron - K.K. - Mercury

Motors by E.D. - O.S. - FROG - D.C. - COX - PAW

All accessories, fuels, paints, transfers, Balsa, Obeche, ply
Please add postage for prompt return

JONES BROS. OF CHISWICK

56-62 TURNHAM GREEN TERRACE, CHISWICK, W.4

(Phone 01-994 0858)

(1 min. from Turnham Green Station) Established 1911
Hours: Mon., Tues., Wed. and Sat., 9 a.m.-6 p.m.
Fri. 9 a.m.-7 p.m. Closed all day Thursday



The art of making small flying scale models from sheet balsa is described by Ken McDonough in a well illustrated *Scale Models* feature. Terence Wise visits the Railway Museum at Swindon and Joseph T. Thompson offers incomparable data on markings for U.S. Navy and Marines Phantom F-4B in Fleet service. For nautically-minded readers the Levi Delta off-shore racing boats are accurately drawn ready for modelling and auto fans have the Indianapolis McLaren racer to feast upon. New kits and books plus a really accurate and well detailed presentation of the Heinkel HE III bomber go to complete another great collector's issue.

Scale Models

ON SALE
AUGUST 13th
PRICE 15p

look!
low prices

DIESEL and GLOPLUG AERO ENGINES

DC Bantam .8cc ...	£2.40
DC Merlin .76cc ...	£3.18
DC Spitfire 1cc ...	£3.78
DC Sabre 1.5cc ...	£4.00
PAW 1.49cc ...	£4.51
PAW 2.49cc ...	£5.51
PAW 19D 32cc ...	£5.30
Taipan 2.5 R/C Glo ...	£7.39
Taipan 2.5cc ...	£5.81
Taipan 1.5cc Glo ...	£3.48
Merco 61 Mk IV R/C ...	£17.70
ED Fury R/C ...	£4.80
Cox Medallion 049 ...	£4.74
Webra Winner 2.46cc ...	£5.64
Webra 61 R/C 10cc ...	£27.50

Many more Aero and Marine
New Zealand orders welcome
Send 1/6 P.O. for Lists.
Duty Free - Export only.

THE MODEL SHOP (Guernsey)
No. 1, Commercial Arcade, Guernsey, C.I.

The three things you need for successful modelling—

**Skill
patience
and
Humbrol**



You've got to work at the first two but you can buy the third at any good modelling shop. Your models deserve the best and you'll certainly get the best from Humbrol. Ask for these products by name—enamels (matt or gloss) for brushing or spraying; modelling adhesives of every kind; craft knives, dopes, thinners, brush cleaners, fuel proofer, authentic colours, metallics and poster colours. Remember—Humbrol helps you make better models.

HUMBROL

HUMBROL · HULL · YORKSHIRE

KEILKRAFT

THE GREATEST NAME
IN MODEL KITS

FREE FLIGHT POWER



SNIPE £1.95

Ease of both building and flying make this model very suitable for beginners. Takes .5-8 c.c. motors. Wingspan 40"



HALO £1.95

PAA-LOAD and general sports flier with a superb performance. A very clean design for 1-1.5 c.c. motors. Wingspan 42"



LADYBIRD £2.70

Attractive semi-scale cabin model for general sport flying with motors of about 1 c.c. Very tough. Wingspan 42"

HOME OF THE WORLD'S GREATEST MODEL KITS & ACCESSORIES

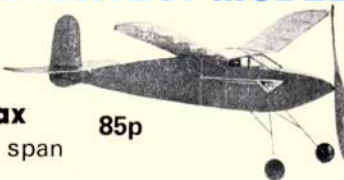
JETEX



Hi-jet £1.25
21" span

(Jetex 50 motor included)

RUBBER POWER



Ajax 85p
30" span

RADIO CONTROL



Outlaw
45" span

£5.95

GLIDERS



Space-jet
18" span

70p

Dolphin 70p
30½" span



CONTROL LINE



Champ
£1.50 20" span

See details of these and over 200 other fabulous kits in the latest KEILKRAFT Handbook.

KEILKRAFT Handbook

From all model shops 17½p or direct E. Keil & Co. Ltd., Wickford, Essex. 17½p, plus 5p postage.



The latest edition. As full as ever with 90 pages of news, how-to-do-it articles, hints and tips on all aspects of modelling.

Written by experts for beginners and experienced modellers alike. Literally hundreds of illustrations! Complete section of all KEILKRAFT kits, accessories and associated items. A *must* for all modellers.

OBTAINABLE AT KEILKRAFT AGENTS.