

# Aero Modeller

INCORPORATING  
MODEL AIRCRAFT

October 1974

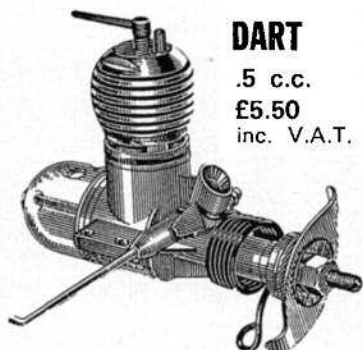
20p

U.S.A. & Canada \$1



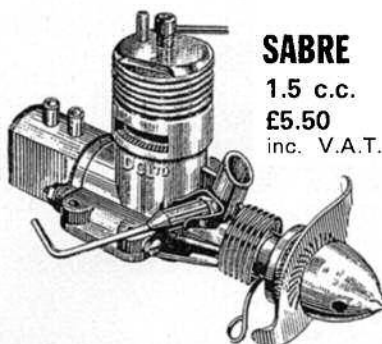
HOBBY MAGAZINE





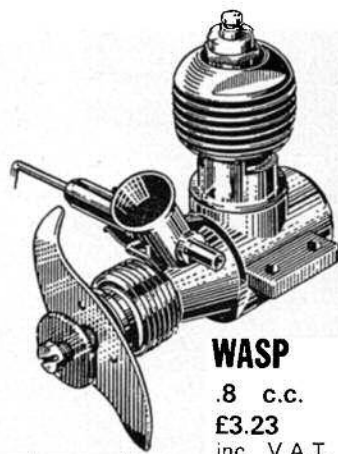
### **DART**

.5 c.c.  
£5.50  
inc. V.A.T.



### **SABRE**

1.5 c.c.  
£5.50  
inc. V.A.T.



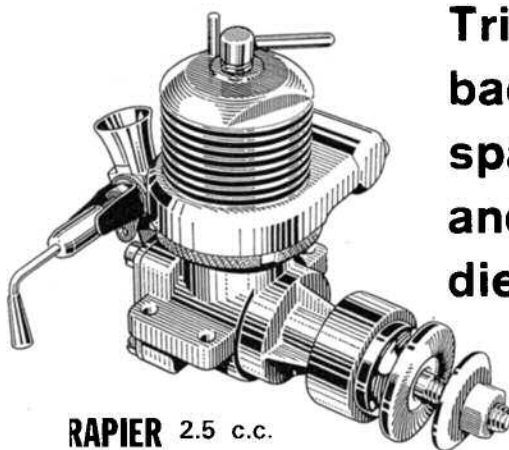
### **WASP**

.8 c.c.  
£3.23  
inc. V.A.T.

**See them at your model shop!**

## **QUICKSTART**

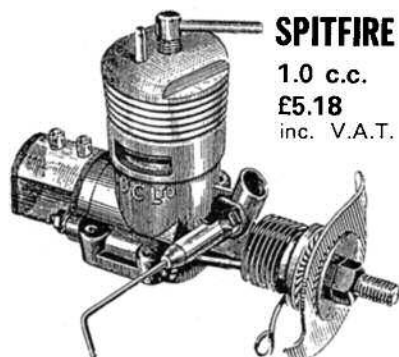
**The Motors  
for the Modern  
Modeller!  
Quality  
engineered  
for lasting  
performance**



### **RAPIER 2.5 c.c.**

From £9.99 inc. V.A.T.

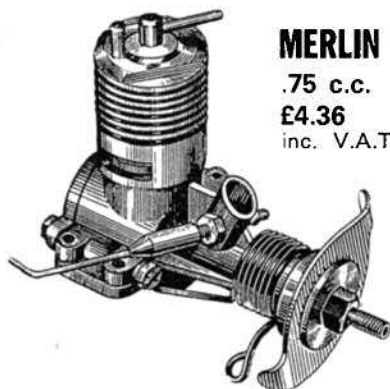
Four versions - Aero standard or R/C marine, water-cooled, standard or R/C.



### **SPITFIRE**

1.0 c.c.  
£5.18  
inc. V.A.T.

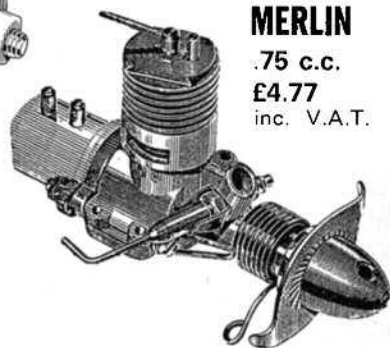
**No spares-backing  
worries - if you have  
a Quickstart you can be  
sure of full and continuous  
use of your engine**



### **MERLIN**

.75 c.c.  
£4.36  
inc. V.A.T.

**Tried and tested,  
backed by full  
spares service  
and years of  
diesel 'know-how'**



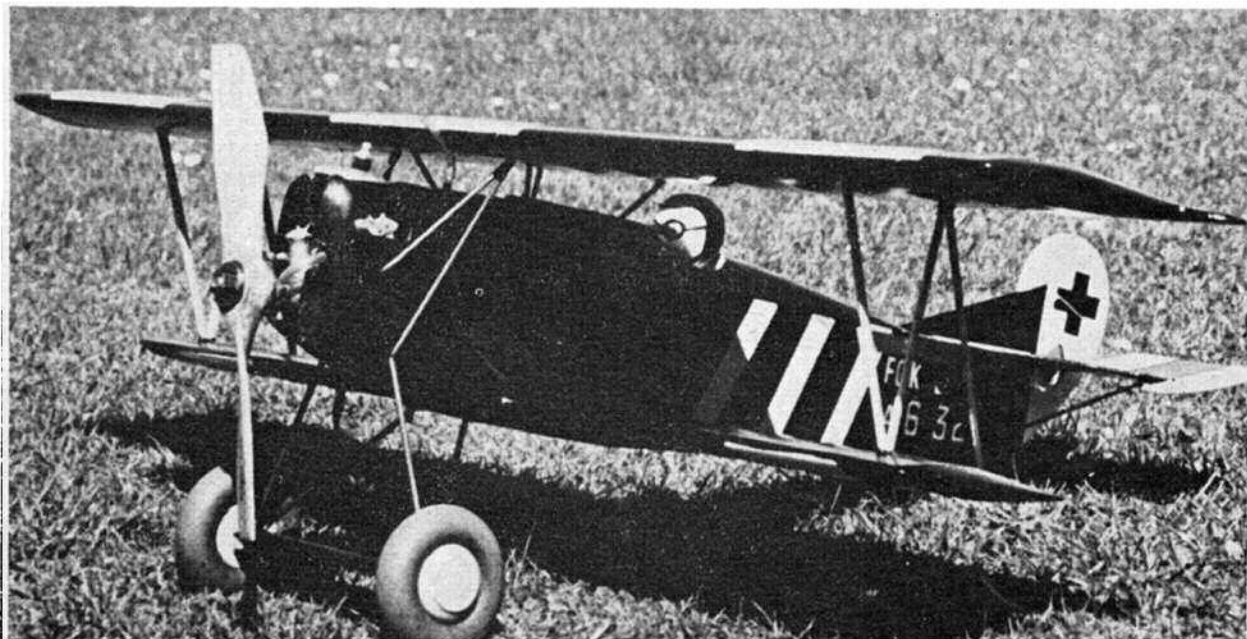
### **SUPER MERLIN**

.75 c.c.  
£4.77  
inc. V.A.T.

**Quality  
Reliability  
Economy**

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

# SOLARBO



Our intrepid (Balsa) pilot seems to have problems. At least, his expression does not look all that confident. The designer/builder also seems to have had doubts about the suitability of a scale undercarriage. But it is only a (near) stand-off scale job – a type of model that really is fun to design and build, without having to worry too much about 'accurate' dimensions and proportions.

Nor need our 'pilot' look so apprehensive. Starting problems he may have – but no problems with the airframe, because that's built from Solarbo Balsa. The stuff that adds 'flyability' to any model, because every piece of Solarbo strip, sheet and block is guaranteed true *aeromodelling quality*. And he might show a little more confidence in the modeller who is going to fly the model, anyway. He's shown he knows his job – by using Solarbo from the start!

THE HOME OF  
GOOD BALSA

## SOLARBO

LIMITED

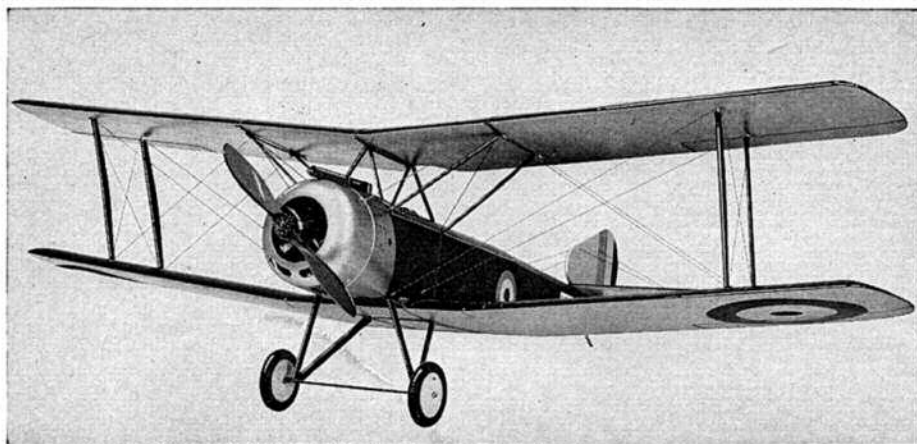
COMMERCE WAY  
LANCING SUSSEX

ALWAYS ASK FOR  
'SOLARBO' BY NAME

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

# "VERON" for VALUE!

## WHY NOT BUILD & FLY A REAL MODEL AIRCRAFT?



### TRY THE SOPWITH 1 1/2 STRUTTER

'VERY-NEAR-TO-SCALE'  
Circa 1916-18

48" Span (1220mm)

Photo of our Prototype Model fitted with 2 Channel Proportional on Rudder & Elevator only (optional 3 on Motor), powered with a 3.44 c.c. 'GLOW-STAR' with Silencer. For 2.5 to 3.5 c.c. (.15 to .19 cu. in.) A.B.S. Vacuum Formed Cowling, Semi-pneumatic Vintage Wheels, Vinyl Decals, Superlative Die-cutting, Preformed Wire Strutting and Super Kitting.

KIT PRICE  
£18.27

'POWERED WITH A MERE "19" - I THINK THIS IS THE MAIN POINT - DUE TO THE LOW WING LOADING - IT HAS AMAZINGLY STABLE SLOW FLYING CAPABILITIES GIVING A VERY REALISTIC APPEARANCE IN THE AIR - AND WITH ONLY TWO SERVOS!'

QUOTE FROM MR. M. COX OF MAIDSTONE IN A LETTER ABOUT THE 'STRUTTER' -  
HIS FIRST RADIO CONTROL MODEL EVER!

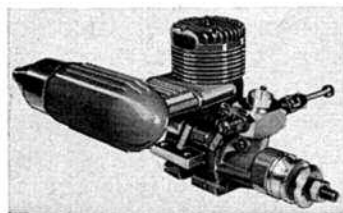


### THE FINEST ENGINES

#### FOR YOUR MODELS

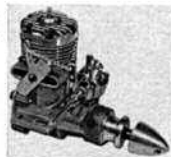
CRAFTSMANSHIP AT ITS BEST -  
BACKED BY THE FACT THAT WEBRA  
HAVE BEEN THE POWER BEHIND  
MANY WORLD CHAMPIONSHIP  
WINS!

#### BLACKHEAD 61 R.C.



SILENCERS		
BLACKHEAD 61	1100/6	3.90
WITH BLEED	1100/6D	4.30
SPEED 61	1100/6ER	5.00
40 R.C.	1100/40	3.90
WITH BLEED	1100/40D	4.30
GLO-STAR	1100/3	2.40
WINNER	1100/W	1.73
RECORD	1100/R	1.73
SPORT-GLO	1100/S	2.26

	E.p.
BLACKHEAD 61 R.C.	37.98
BLACKHEAD 61 MARINE	45.46
SPEED 61 R.C.	39.95
SPEED 61 R.C. MARINE	45.80
WEBRA 40 R.C.	28.94
40 R.C. MARINE	34.22
GLO-STAR 3.5 c.c.	12.95
GLO-STAR 3.5 c.c. R.C.	14.50
GLO-STAR R.C. MARINE	16.80
WINNER 2.5 c.c.	10.37
WINNER 2.5 c.c. R.C.	11.34
RECORD 1.5 c.c.	9.58
RECORD 1.5 c.c. R.C.	10.37
RECORD R.C. MARINE	14.90
SPORT-GLO 1.7 c.c.	10.56
R.C. CARB SPORT-GLO	3.21



THE MOST  
Versatile  
'19' Motors  
Ever Made!

#### R.C. GLO-STAR

FULLY BACKED BY SPARES,  
SERVICE & ACCESSORIES

ALL PRICES SHOWN ARE RECOMMENDED RETAIL

LOOKING FOR A COMPACT FIRST TRAINER  
FOR RADIO CONTROL? HOW ABOUT

### ROBOT UNIVERSAL RADIO TRAINER

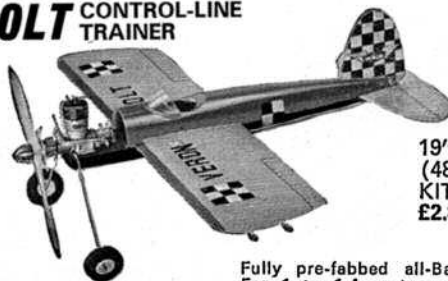


45" span  
(1143 mm.)

KIT PRICE  
£9.31

For 1.49 to 3.5 c.c. or Rudder  
or Rudder/Elevator and Engine.

### COLT CONTROL-LINE TRAINER



19" span  
(483 mm.)  
KIT PRICE  
£2.89

Fully pre-fabbed all-Balsa parts.  
For 1 to 1.4 motors on C/Line!

## DISTRIBUTED BY VERON - AVAILABLE FROM YOUR DEALER!

WE HAVE A NEW AGENT OVERSEAS!

ORKNEY HOBBY & MODEL (RADIO CONTROL) SUPPLIES  
CRAIGIEFIELD HOUSE, ST. OLA, ORKNEY.

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

# Aero Modeller

INCORPORATING  
MODEL AIRCRAFT

October 1974

Volume XXXIX No. 465

## CONTENTS

HANGAR DOORS	531
'SIMPLE SPRINT'	532
LATEST ENGINE NEWS	535
OPEN INDOOR	538
MAKE IT!	540
1974 CONTROL LINE WORLD CHAMPIONSHIPS	541
FLYING SCALE COLUMN	552
BETWEEN THE LINES	554
FREE FLIGHT COMMENT	557
S.A.M. CHAMPIONSHIPS	560
TOPICAL TWISTS	562
CLUB NEWS	563
CONTEST CALENDAR	564



HOBBY MAGAZINE



ALSO MODEL BOATS · RADIO CONTROL  
MODELS & ELECTRONICS · MODEL ENGINEER  
MODEL RAILWAYS · SCALE MODELS · WOOD-  
WORKER 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 price of 20p or 1 dollar 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 inquiries 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.

Advertisement Offices: Model & Allied Publications Ltd., P.O. Box 35, Bridge Street, Hemel Hempstead, Hertfordshire HP1 1EE. Tel: Hemel Hempstead 56117.

Subscription Department: Remittances to Model & Allied Publications Ltd., P.O. Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE (subscription queries Tel: Kings Langley 62692/3). Direct subscription rate £3.30 per annum, including December edition and index, \$8 (U.S.) for overseas subscribers.

CORRESPONDENCE anticipating a reply must be accompanied by a stamped and self-addressed envelope or International reply coupon. While every care is taken, no responsibility can be accepted for unsolicited manuscripts, photographs or artwork, etc. 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.**

P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE  
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 M. GRAY

## comment

Every aeromodeller has a natural instinct for browsing – looking through those cupboards at kits or engines placed in store, and more especially to flick through pages of worn and many-times-read modelling magazines. Sometimes it is an awakening process to discover in the pages of early *Aero-modellers* what was happening a decade or two ago.

Casual reference reminded us that it was in May '62 that the Kinnersley 10 c.c. Schnuerle engine appeared with the comment 'could well be the prototype for new thought in model engines should any manufacturer wish to take up Mr. Kinnersley's ideas'. Well, after Bill Wisniewski and K&B took the plunge, the floodgates were opened, almost all the contest engines now follow the Kinnersley lead. But who remembers Kinnersley?

In January '60 our F.A.I. meeting report noted that Italian proposals for free flight maxes be reduced to 2 minutes with models ballasted in fly-off rounds to Glider (24 oz.) Wakefield (10 oz.) and Power (35½ oz.). Now, 14 years later, similar ideas are still under discussion to cope with ever present flying field problem. But who remembers that the Italian proposals were thrown out?

History has a habit of repeating itself, albeit unwittingly in many instances. These two flashbacks are but a nibble at the fascinating history of aeromodelling – just pick up any old copy and browse to prove our point. You might even discover we carried adverts for Kung Fu training almost 10 years ago!

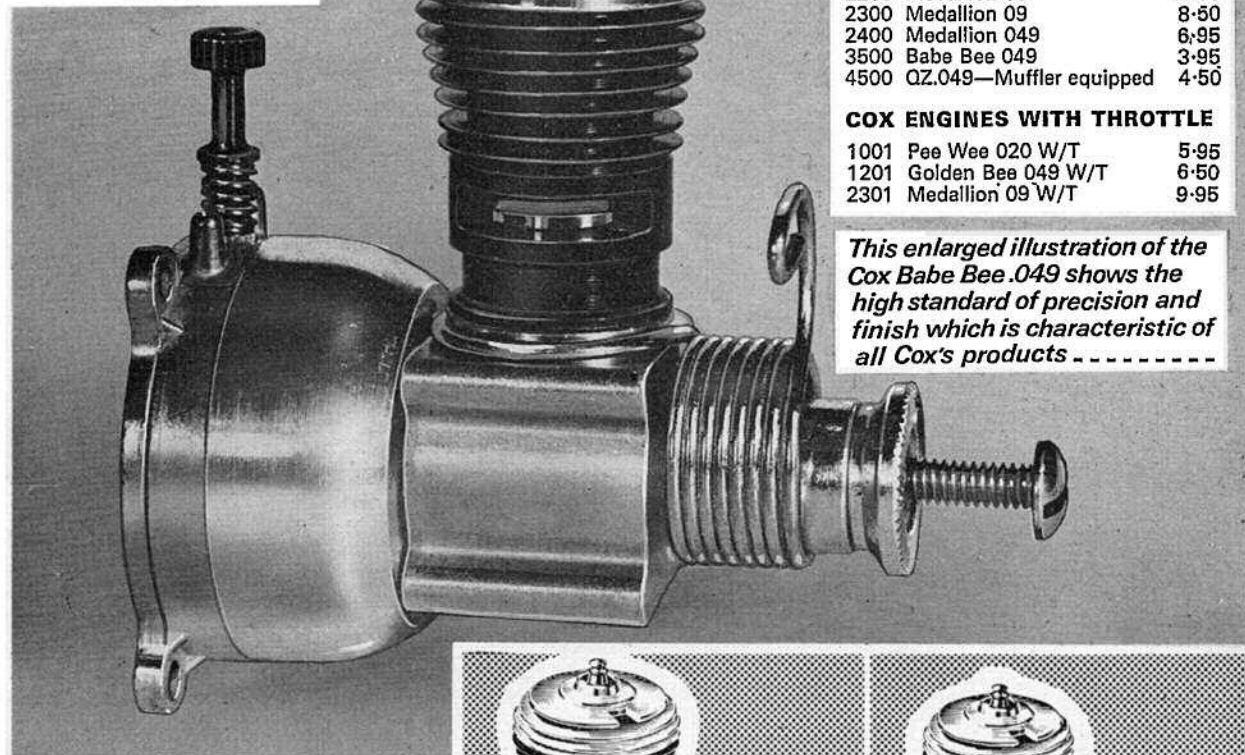
## on the cover

1974 *World Control Line Aerobatics Champion* is Bob Gieske's new, hard earned, title. At the completion of the contest, he broke his famous pipe in half and buried it in the soil of the stunt circle – he had promised his wife that he would stop smoking if he won!

## next month

Plans for Laurie Barr's Nationals winning Open Rubber design. Full-size drawings for simple helicopter/convertiplane, more on handling rubber motors (held over from this issue), report from the World Space Models Champs (1), plus all the regular, and not so regular features in the November issue, on sale October 18th.

# The WORLD'S FINEST CONTEST



## COX ENGINES

1000	Pee Wee 020	4-65
1200	Golden Bee 049	4-95
1300	Tee Dee 010	8-50
2100	Tee Dee 09	9-75
2200	Medallion 15	11-00
2300	Medallion 09	8-50
2400	Medallion 049	6-95
3500	Babe Bee 049	3-95
4500	QZ.049—Muffler equipped	4-50

## COX ENGINES WITH THROTTLE

1001	Pee Wee 020 W/T	5-95
1201	Golden Bee 049 W/T	6-50
2301	Medallion 09 W/T	9-95

*This enlarged illustration of the Cox Babe Bee .049 shows the high standard of precision and finish which is characteristic of all Cox's products -----*

## MEDALLION

### FRONT ROTARY VALVE

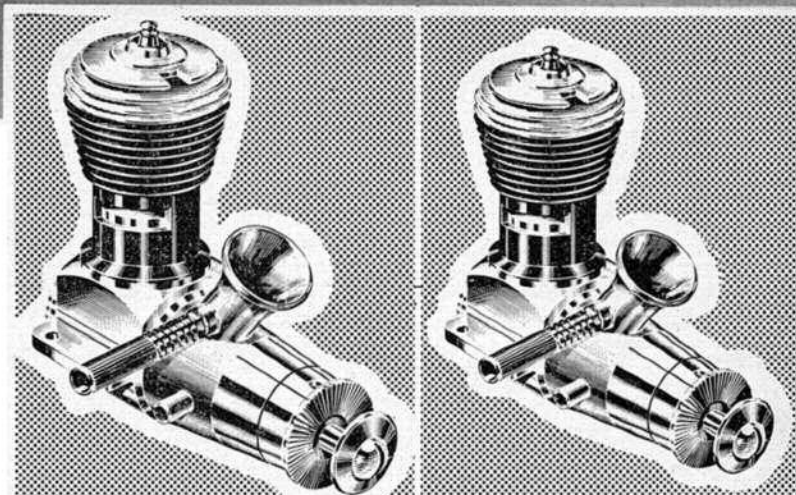
Ideal for general sport and R/C flying. The Medallion always turns in a perfect flight. Fast starting. Suited to both beginners and experts.

.15	(2.499cc)
.09	(1.497cc)
.049	(.819cc)

### THROTTLED ENGINES

The ideal combination for R/C flying — the popular Medallion sport engine with the new Cox throttle. Throttle designed with minimum number of working parts — offers instantaneous response.

Medallion .15	(2.499cc)
Medallion .09	(1.497cc)
Medallion .049	(.819cc)



*Any of these super COX Engines can be obtained from Hamley's or your local Toy or Model shop -----*



**P.O. Box 33**

**Hinckley**

**Leics.**

-----

**HALES**

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

# ENGINES manufactured by **COX**

## REED VALVE

**.049**

The world's most popular engine for 1/2-A free flight and control line flying. Powerful, instant starting, smooth and dependable.

Babe Bee .049 ( .819cc)  
Golden Bee .049 ( .819cc)

**.020**

Less than half the size of .049 engines, yet with so much power it will fly most 1/2-A planes. It's ideal for free flight — only 21 grams light.

Pee Wee .020 ( .327cc)

### MUFFLER EQUIPPED .049

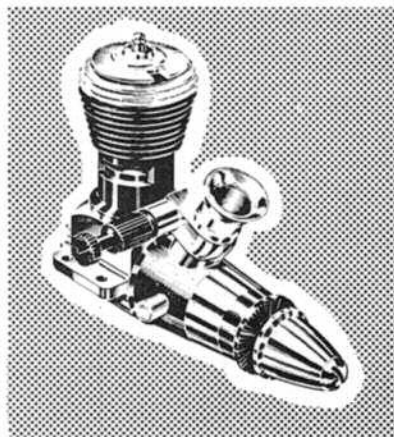
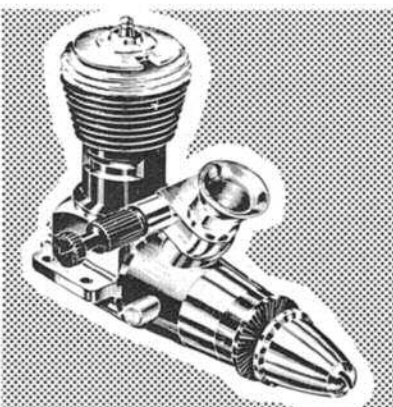
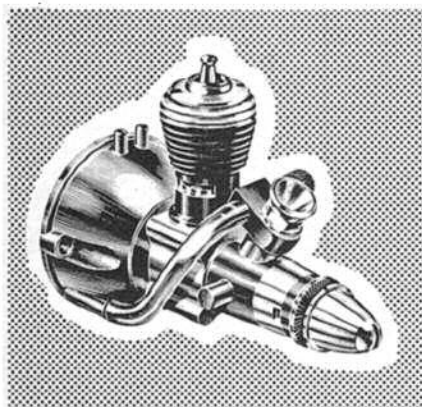
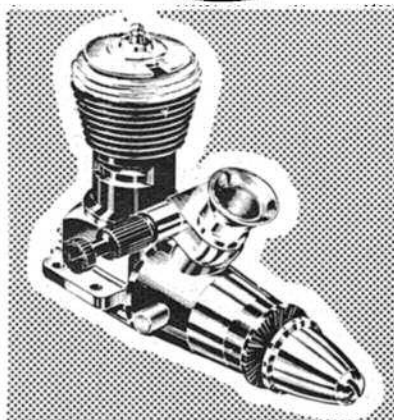
Makes every neighborhood a QUIET ZONE. Muffler eliminates engine noise to a mere whisper with little or no loss of power. Easy to operate.

Muffler Equip. .049 ( .819cc)

### THROTTLED ENGINES

New Cox throttle-controlled reed valve engines for radio control; carrier event and fun flying. Throttle is operated by a third line for U-Control flying.

Pee Wee .020 ( .327cc)  
Golden Bee .049 ( .819cc)



## TEE DEE

### FRONT ROTARY VALVE

An impressive list of design changes in the Cox Tee Dee's .049 and .051 for 1973. Enlarged cylinder porting for more efficient breathing — Improved crankshaft port timing — Modified venturi incorporates a screen for protection against dirt. These and other design changes made to keep the Cox T.D.'s the best performing engines in their class.

.09 (1.497cc)  
.051 ( .835cc)  
.049 ( .819cc)

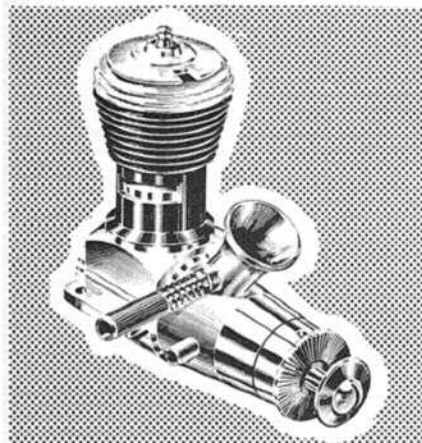
### .010 & .020

The smallest production engine made, yet it's perfect for lightweight free flight and radio control planes. Turns 27,000 RPM.

Cat. No. 130

.010 ( .183cc)  
Small, light, powerful. May be used for lightweight free flight, control line and radio control.

.020 ( .327cc)



**The Supremacy of COX Engines is well-known by all Model Flying enthusiasts throughout the World** -----

**HALES**

**P.O. Box 33**

**Hinckley**

**Leics.**

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

## NEW!

Semi-Scale Profile Control Line Models from **AMBASSADOR PRODUCTS**.

Designed for .5cc — .8cc diesel engines or .049ci glow motors —

**SIMPLE TO BUILD - EASY TO FLY.**

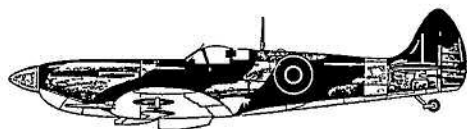
The kits contain a full-size Dyeline drawing with a colour guide — Easy to follow instructions — Pre-cut parts from top quality balsa sheet — Fuselage and Doublers, Wing, Tailplane and Elevator, Fin and Rudder — Hardwood engine bearers etc., — Bellcrank, Elevator Horn, Fixing Hardware — Wire for linkage — Waterslide Decal sheet.

The first two models in this series are ready now — both the F.W.190 and the Spitfire have wing spans of 17¾ inches.

PRICE **£2.41** inc. VAT.



Focke Wulf 190



Spitfire IX

*MICRO-MOLD manufactures and distributes hundreds of different flying model aircraft accessories and kits. Many of the M.M. accessories are ideal for use with control line models — Cranks, Horns, Hinges, Engine Mounts etc.. These items are all shown in our new fully illustrated catalogue which is available from your local stockist for 30p or direct from MICRO-MOLD for 35p including P & P.*

**MICRO-MOLD**

1-2 UNIFAX WOODS WAY GORING-BY-SEA SUSSEX Tel: WORTHING 46999

# RipMax KAVAN



**HI-POWER STARTER** — starts any engine off 12 volts (small motors on 6V). NEW brush-lift switching, also interchangeable spinner-drivers. Integral V-belt pulley. It's **EASY STARTING** with KAVANI Every time! **£16.95** Spare spinners belts, etc., available.

## SILVERED NYLON SPINNERS



1½" dia. 1" UNF	£1.20	1½" dia. 7mm thread	£1.20
2" dia. 1" UNF	£1.30	2" dia. 7mm thread	£1.30
2½" dia. 1" UNF	£1.40	2½" dia. 7mm thread	£1.40
2½" dia. 1" UNF	£1.50	2½" dia. 7mm thread	£1.50

## RIPMAX-KAVAN NYLON PROPS

6 x 4	40p	8 x 6	45p	10 x 4	55p
7 x 4	40p	9 x 4	50p	10 x 6	55p
8 x 4	45p	9 x 6	50p	11 x 6 or 7½	60p

Plus a WHOLE RANGE OF CONTROL ACCESSORIES, etc.

**NEW!** FLASHING NAVIGATION LIGHT SET ... £4.95  
SILENCER ADAPTORS HP40 & OS40 ... 45p

**AT YOUR LOCAL MODEL SHOP**

**Aero Modeller**

## 1974-5 ANNUAL

AT YOUR LOCAL  
MODEL SHOP

**£1.25**

27th edition of this regular favourite contains 30 of the world's leading designs, each scaled and dimensioned for construction, covering World Champions, unorthodox, sport, and contest types in many model categories. Topical features deal with Practical Ducted Fans, Aerodynamics for Aeromodellers, Thermal detecting Bubble Machine, useful hints and gadgets for free flight models, and the 'Peanut' indoor flying Scale class. As ever, an invaluable reference textbook with foresighted features to digest and treasure as a constant aid for better modelling.

8½ x 5½ in. 144 pages. Full Colour Jacket drawn on hard covers. Liberally illustrated. Available Sept. 30th.

In case of difficulty add 20p for post & packing and order direct from the publishers

Model & Allied Publications Ltd., P.O. Box 35,  
Hemel Hempstead, Herts HP1 1EE



## FROM BOMB BURSTS OVER GLOUCESTERSHIRE TO FIGHTING REBELS IN THE PERSIAN GULF. THE B.A.C. STRIKEMASTER.

The Strikemaster. The aircraft that leads an amazing double-life.

Because it is this plane, with its powerful close support ability, that is used by the Sultan of Oman's Air Force over the Persian Gulf.

Fast. Manoeuvrable. And incredibly adaptable to any fighting situation. But without its armament the Strikemaster becomes the Jet Provost M.K.5, the plane used by the Gloucestershire-based

R.A.F. 'Red Pelicans' aerobatic team.

Its versatility continually being put to the test by spectacular stunts like spins, rolls and bomb bursts!

Now Airfix have produced a fully detailed 1/72nd scale model of the Strikemaster.

This terrific kit includes optional parts and markings for either a Red Pelican Jet Provost or B.A.C. Strikemaster.

A really superb new model, built

with all the care and experience of Airfix.



**B.A.C. Strikemaster.**  
**New to the world's biggest  
range of construction kits.**

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

**NOVICE OR EXPERT LET**

**POWER YOU TO THE**

**WINNERS CIRCLE**



**NOVICE OR EXPERT LET**

**POWER YOU TO THE**

**WINNERS CIRCLE**

**THE MODEL DOCKYARD PTY. LTD.**

**216-218 SWANSTON STREET**

**MELBOURNE, Ph. 663-3505**

**AUSTRALIA**

**NOVICE OR EXPERT LET**

**POWER YOU TO THE**

**WINNERS CIRCLE**

**NO MATTER WHICH WAY YOU LOOK AT IT**

**THE CHOICE OF CHAMPIONS**

**ETA**



TRADE MARK

You can now only buy the famous ETA Range of engines direct from the factory. Used throughout the world, so we guarantee results!

**SEND FOR LEAFLETS TODAY!**



ETA Instruments Ltd.  
289 High Street, Watford, Herts.  
Tel: Watford 21725 or 23440

**HENRY J. NICHOLLS**

308 HOLLOWAY ROAD  
LONDON N7 6NP  
Tel.: 01-607 4272

**AND SON LTD.**

8 SOUTHGATE ROAD  
POTTERS BAR, HERTS  
Tel.: Potters Bar 59355

**ESTABLISHED 1946**

**THE BEST VALUE IN ELECTRIC STARTERS AVAILABLE TODAY**


The SONIC TRONICS CHALLENGER has been acknowledged as one of the best purpose-built units for starting all types of engines since its introduction two years ago. The latest model incorporates detail improvements but is basically unchanged. 12V operation. Model 100 for spinner and prop nut starting. Model 101 with belt pulley for Helicopters and Boats.

**PRICE ONLY £14.95**

We accept Access, Barclaycard and Paybonds and can arrange attractive deferred terms with up to 36 months to pay. OVERSEAS VISITORS ESPECIALLY WELCOME.

**M.E.**

**DISTRIBUTED BY RIPMAX**



Quite the easiest-starting, sweetest running diesels available in the world today! Plus, the UNIQUE ADVANTAGES of TWIN SILENCERS (extra) - quiet running with virtually no power loss. YOUR CHOICE of the 1 cc HERON, or the 1.5 cc SNIPE (the latter available with or without R/C throttle).

<p><b>ME HERON AIRCOOLED</b></p> <p>Bore .424"    Stroke .420"</p> <p>Displacement 1.0 cc</p> <p>STANDARD ..... £4.90</p> <p>Twin SILENCERS ... £1.55</p>	<p><b>ME SNIPE AIRCOOLED</b></p> <p>Displ. 1.5 cc Weight 3 3/4 ozs</p> <p>STANDARD ..... £5.75</p> <p>R/C with throttle ... £6.65</p> <p>Twin SILENCERS ... £1.55</p>
---	---

**AT YOUR MODEL SHOP**

# Graupner

## for top quality!



### TAXI £17.95

Extensive prefabricated kit with all hardware, etc. Super 59" span model. For .09-.19 engines. Superb flight stability for F/F or R/C training.

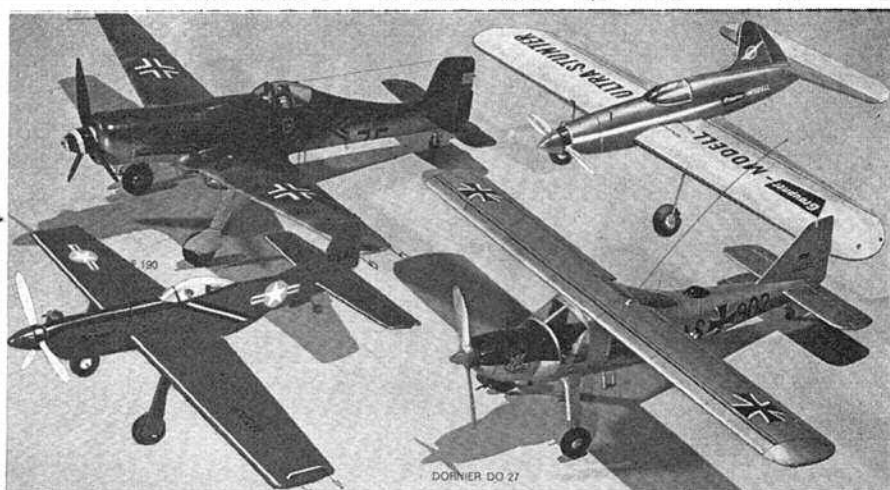
### OTHER POWER KITS

43 1/4" AMATEUR £11.30  
59 1/2" KWIKFLY £28.85  
55" MIDDLESTICK £21.80



### TOPSY 32" span £5.05

Handy size... easy to build from this 'Quickie' kit. Suitable for powering by small glo or diesel engines up to 0.5cc. For radio try rudder only or 2-channel propo.



## CONTROL LINE

39" FW 190 ... £11.70  
30" MUSTANG ... £7.80  
35 1/4" ULTRA STUNTER £7.10  
31 1/2" DORNIER DO 27 £9.70

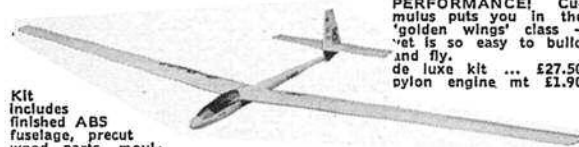


### ASK 14 POWER/GLIDER

£52.50

A 90 1/4" span powered sailplane with nose-mounted engine, S-M-O-O-T-H flying - under power or soaring. And fully aerobatic. The de luxe kit includes seamless fibreglass fuselage moulding, balsa planked foam-plastic wings and tail panels - plus hardware, etc. A very comprehensive kit!

### CIRRUS 118" span



Kit includes finished ABS fuselage, pre-cut wood parts, moulded canopy, etc.

The giant model with the FULL-SIZE SAILPLANE PERFORMANCE! Cumulus puts you in the 'golden wings' class - yet is so easy to build and fly.  
de luxe kit ... £27.50  
pylon engine mt £1.90



### MONSUN BO-209 £4.35

All sheet 21 1/2" span scale model for rubber power. Complete kit. One of the latest additions to the Graupner range featuring the latest ideas in prefabrication.

### MONSUN 62" span £36.40

De luxe R/C model



### TERRY

£12.50

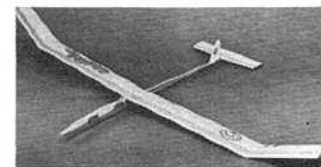
Modern high-wing cabin design. 41 1/2" span for .09 engines. A 'Quickie' kit with fully prefabricated parts - assemble in a single evening! Kit includes balsa-veneered foam plastic wings, die-cut balsa parts, all hardware, decals, etc.



### CARDINAL

£41.60

A truly SUPERB prefabricated kit with injection moulded plastic fuselage, foam wings and tail. Span 61" for 5-6cc motors. This kit is an outstanding example of modern design and use of mixed materials - plastic, foam-plastic and wood - with all parts fully shaped.



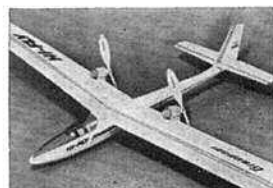
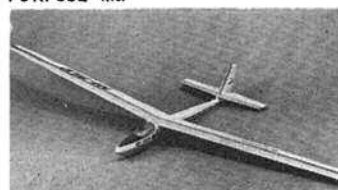
### JUNIOR

£6.80

Span 53 1/4". Model has sheet wing construction with high-performance aerofoil section - plus turbulator (all parts fully shaped). Stick-type fuselage (again shaped). Auto-rudder and dethermaliser! The beginner's model that puts you in the expert performance class.

### ELECTRIC POWER HI-FLY

With twin 'JUMBO' motors... or fly as a sailplane or pylon power! A TRI-PURPOSE kit.



HI-FLY de luxe kit ... £19.80  
Pylon engine mount ... £3.10  
El. flight motor pack ... £10.70  
El. flight installation pack £3.00

### OTHER GRAUPNER GLIDERS INCLUDE

27" span	SONNY	...	...	...	£2.15
39" span	BEGINNER	...	...	...	£4.00
45" span	JOLLY	...	...	...	£5.30
50" span	FILOU	...	...	...	£7.15

distributed by **RipMax**

see them all **AT YOUR MODEL SHOP!**

Some descriptions and prices may be subject to change, due to our policy of continual improvement, fluctuating exchange rates, etc.

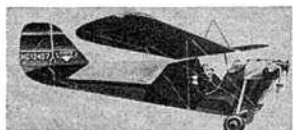
KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

# RipMax Sterling MODELS

see them all  
**AT YOUR  
MODEL SHOP!**

## RUBBER POWERED

Detailed SCALE MODELS with IN-FLIGHT ACTION FEATURES. Fully prefabricated kits with die-cut and plastic parts, rubber motor, hardware, etc. EASILY CONVERTED to engine power for control-line or R/C!



Aeronca C-3 36" span ... £4.10  
Fokker D-7 24" span ... £4.10  
Nieuport 17 biplane 24" span ... £4.10  
AT-6 Texan 18" span ... £2.35  
Piper Super Cub 18" span ... £1.75  
Cessna 180 17" span ... £1.75



Fokker Eindecker 25" span ... £2.95  
P-51D Mustang 24" span ... £4.10  
SESA biplane 22" span ... £4.10  
Jap Zero 24" span ... £4.10  
Spitfire Mk. 1 24" span ... £3.55  
Sopwith Camel 24" span ... £4.10

## SAILPLANES



SCHWEIZER 1-34  
98 1/2" span scale model £20.70

SCHWEIZER 2-32 £2.35  
43" span scale model  
SCHWEIZER 1-26D  
£15.95 70" span  
scale model  
DIAMANT 74"  
span ... £4.70



33" NIEUPORT 28 £9.95 37" PT £9.45 36" GREAT LAKES £10.60

## CONTROL LINE SUPER SCALE

32" SE5 ... £9.45  
32" FOKKER ... £9.45  
D-7 ... £9.45  
35" CORSAIR ... £9.95

## 23 NEW CONTROL LINE MODELS!!

20 1/2" span "Beginners"	42" Ringmaster ...	£5.90
Splitfire ...	40" Yak 9 ...	£5.90
Thunder Jet ...	30" Ringmaster Junior ...	£3.95
Piper Cub ...	34" Flying Fool ...	£6.50
Eindecker ...	27" Baby Ringmaster ...	£2.65
Shoestring ...	24" P-38 Lightning ...	£2.95
Thunderbolt ...	36" P-38 Lightning ...	£5.90
Cherokee ...	52" Splitfire ...	£14.75
Fokker D7 ...	42" Winder ...	£4.70
Hellcat ...	Beginners Ringmaster ...	£2.30
Focke Wolfe 190 ...	Mustang ...	£2.30
	20 1/2" span Ringmaster Biplane	£2.65



Beechcraft Bonanza 22" span ... £2.95  
Ju 87 Stuka 20" span ... £2.95  
Messerschmitt 109 17" span ... £1.95  
Curtiss Hawk P6E 16" span ... £2.35  
L-19 Birdog 17" span ... £1.75



Stearman PT-17 22" span ... £3.55  
F4U-5 Corsair 24" span ... £4.70  
Ansaldo SVA 5 19" span ... £2.65  
Focke-Wulf 190 24" span ... £3.55  
Thunderbolt P-47 20" span ... £2.95



## THE RANGE OF P.A.W.

HIGH PERFORMANCE  
DIESEL ENGINES

BACKED BY  
'BY RETURN'  
SPARES SERVICE



P.A.W.1.49DS	...	Squish Head	...	£5.94
P.A.W.2.49DS	...	Squish Head	...	£6.48
P.A.W.19DS	...	Squish Head	...	£7.02

All engines are now specially ported to produce a good performance when used with silencers or mufflers. All now also feature Squish Head type combustion chambers.

All prices include V.A.T. (8%). Obtainable from Model Shops. In case of difficulty write to:

**PROGRESS AERO WORKS**  
CHESTER ROAD,  
MACCLESFIELD, CHES., ENGLAND  
SK11 8PU

## LONGER LIFE



**BRIGHTER  
GLOW**



**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 TURNBRIDGE LTD., LONDON, S.W.17.

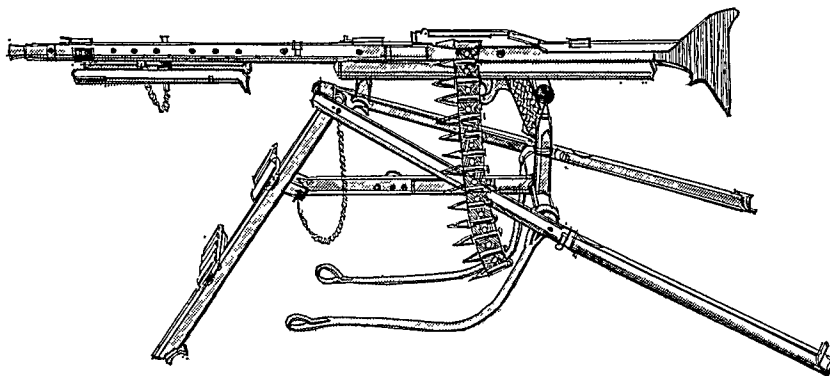
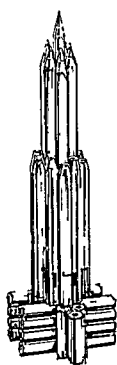


MODEL-MAKING COMPETITION

**EVERYBODY  
WINS A PRIZE!**

Start collecting your empty Bic Crystal ballpens today! Whip round your friends, bring home the empties from work, then design your model and get building! Your ideas can be simple or elaborate – like two of last year's models, pictured here. And look at the prizes! . . .

- \* PORTABLE COLOUR TV
- \* PORTABLE BLACK & WHITE TV's
- \* CASSETTE RECORDERS
- plus a prize for *every* entry –  
a pack of 10 Bic Porous Pens!



Simple ideas, or not-so-simple –  
they all have an equal chance to WIN!

Send this coupon now for your entry form!



Model-Making  
Competition

**ENTER NOW!**

To The Bic Model-Making Competition,  
c/o The Biggs Communications Group Limited,  
Red Lion House, High Street, High Wycombe, Bucks. HP11 2BX.

Please send me a free entry-form for the 1974 Bic  
Model-Making Competition.

Name: .....

Address: .....

..... A2

COMPETITION CLOSING 30th NOVEMBER, 1974.

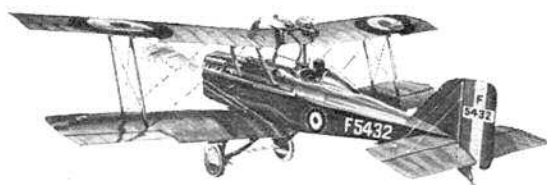
# Guillow's

## World War I Fighter Aircraft

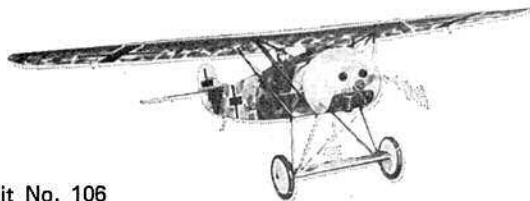
Kit No. 103  
**FOKKER D7**



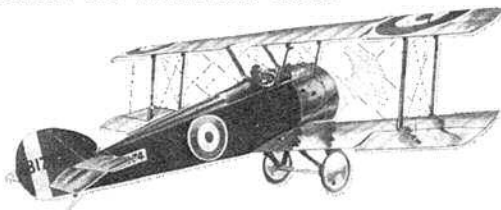
Kit No. 104 **BRITISH S.E.5**



Kit No. 106  
**FOKKER D8**



Kit No. 105 **SOPWITH CAMEL**



**ALL 18" WINGSPAN RETAIL £2.35**



Kit No. 102 **SPAD**



Kit No. 101  
**NIEUPORT 28**

ALL THE ABOVE KITS ARE DESIGNED TO BE FLOWN  
RUBBER POWERED OR CONTROL-LINE WITH .010 ENGINE.  
SEND FOR FULL MODEL AIRCRAFT & MARINE HANDBOOK 45p POST FREE.

# KEELBILD

## MODEL AIRCRAFT ACCESSORIES & FITTINGS

### WHEELS

KA1 Semi Scale Wheels 25mm. (1")	13p
KA2 Semi Scale Wheels 40mm. (1½")	22p
KA3 Size 50mm. (2") Continental Low Bounce Wheels	88p
KA4 Size 55mm. (2.2") Continental Low Bounce Wheels	£1.01
KA5 Size 60mm. (2.4") Continental Low Bounce Wheels	£1.10
KA6 Size 65mm. (2.6") Continental Low Bounce Wheels	£1.19
KA7 Size 72mm. (3") Continental Low Bounce Wheels	£1.42
KA8 Size 80mm. (3¼") Continental Low Bounce Wheels	£1.70
KA9 Size 90mm. (3½") Continental Low Bounce Wheels	£2.14

### BATTERY BOXES & RADIO ACCESSORIES

KA60 Battery Box (2 pen cells)	36p
KA61 Battery Box (3 pen cells)	36p
KA62 Battery Box (4 pen cells)	36p
KA63 Battery Box (6 pen cells)	36p
KA64 Battery Clips (pp.3)	13p
KA65 Slide Switch D.P.D.T.	22p

KA66 Single Plug Sub. miniature	18p
KA67 Single Socket Sub. miniature	18p
KA68 Jap plug & socket	25p
KA69 Telescopic Aerial	£1.14

### FUEL TANKS

KA80 Clunk Tank 2oz.	25p
KA81 Clunk Tank 4oz.	31p
KA82 Clunk Tank 6oz.	34p
KA83 Clunk Tank 8oz.	36p
KA84 Clunk Tank 10oz.	44p

### ACCESSORIES

KA10 Rubber Wing Seating - U Channel 2 pieces	42p
KA11 KDH Nylon Hinges (packet of 10)	54p
KA12 Rubber Tubing (1 metre packet)	20p
KA13 Double Sided Servo mounting tape 1¼" x ¾" (10 pieces per pkt)	30p
KA14 Aluminium Motor Mount for 10cc Motors	71p
KA15 48" length "Nylon Rod," Tube & Extenders	54p
KA16 32" length "Nylon Rod," Tube & Extenders	47p

KA17 48" length P.T.F.E. Tubing & Wire Cable	69p
KA18 36" length P.T.F.E. Tubing & Wire Cable	59p
KA19 30" length ½" x ⅛" Wing Seating Tape	23p
KA20 Nylon Rod Extenders (Packet of 2)	23p
KA21 Kilplink & Bowden Cable Extender (Packet of 2)	33p
KA22 Kilplink and 10" Pushrod (packet of 2)	20p
KA23 Kilplink (packet of 2)	17p
KA24 Bowden Cable Extender (solder type) (packet of 2)	17p
KA25 8 swg Wheel Collets	31p
KA26 ⅝" P.K. Self tap screws (packet of 20)	13p
KA34 Nylon Control Surface Horns (2 large and 2 small)	20p
KA35 90 degree Nylon Bellcranks (packet of 2)	30p
KA36 Kilpkeepers (packet of 4)	20p
KA37 30" Nylon Tube, cable, Kilplinks and extenders	42p
KA38 Nylon Hinge strip 24"	13½p

AVAILABLE FROM ALL GOOD MODEL SUPPLIERS

Trade  
Distributors:

**J.N.T. MODEL PRODUCTS LTD.**  
LONG STREET, EASINGWOLD, YORK.

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

## Heard at the HANGAR DOORS

**WANT TO KNOW** more about your hobby? The City University is organising an Adult Education Course on the Background of Private Flying (1) which should prove of immense value to modelers as well as those intending to learn to fly or who are training to achieve their Private Pilot Licence. The course of ten meetings will be arranged as follows: Principle of flight (five meetings), Practical Meteorology (one meeting), Navigation and air to ground communications (two meetings) and Aerodrome practice and aviation law (two meetings). Fee for this course is just £12 and that includes refreshments during the intervals. Enrolment is restricted, so apply early to the Adult Education Courses, Room A3.43, The City University, St. John Street, London EC1V 4PB for forms. Meetings will be held on Mondays 7.30-9.15 p.m., commencing 7th October 1974.

**EIGHTY NOT OUT.** Celebrating his eightieth birthday this month is veteran model flyer, George Foden. His memories go back to the old 'The Model Aircraft Club' and those famous rallies on Wimbledon Common when spruce and oiled silk were the common materials of model making, and when a flight landing on the tennis courts was likely to be a winner.

Mr Foden was extremely active in the movement in the immediate post-war years. He was a founder member of the East Anglian Area, on whose committee he held various offices: Chairman, Secretary and Area Delegate over a period of some ten years. On the flying field his low-wing Wakefields and A/2 gliders were to be seen at most of the Area Centralised Meetings during the late forties and fifties. In 1960 he retired from the active modelling scene to Devon, where he still lives.

He is just as interested in model flying as ever; and we can be sure model flyers everywhere will join with us in extending all best wishes to this old friend of model flying. They were top team in glider and **A SOVIET** International took place at Efurt, East Germany from 7 to 13th May with six nations competing in the three F.A.I. free flight classes. North Koreans took top individual places in glider and Wakefield and were 2nd in Power. Wake as well as top team overall. In so doing they eclipsed the best that East Germany, USSR,

Rumania, Hungary and Poland could muster. If this was an advance rehearsal for Bulgaria next year – the West had better watch out!

**BEWARE!** If you are offered a 'cheap' Veco Europe Series 0.61 cu. in. engine then it could well be stolen: a consignment of motors and silencers in their original boxes was tampered with in transit between Helmut Bernhardt and Irvine Engines. Thirty motors were stolen bearing the following serial numbers.

7421	7424	7428
7436	7439	7442
7444	7448	7458
7464	7468	7470
7475	7477	7479
7480	7483	7485
7489	7490	7491
7492	7498	7500
7502	7505	7506
7507	7509	7516

If anybody can offer information leading to the recovery of these engines then notify Irvine Engines of Unit 8, Alston Works, Alston Road, High Barnet, Herts. (tele. 01-440 4809) who would be glad to pay the usual reward.

**A CONTEST DATE** which missed our September issue is that of September 29th when the South Bristol Gala will be held at RNAS Wroughton, Wiltshire. Events include those for free-flight, control-line and radio control – see Contest Calendar for details.

**A NEW** radio-controlled world duration record for model aircraft has been claimed by Lars Gieritz of Houston, Texas, with a new record of 14 hours 29 minutes and 51 seconds. This broke the previous record by nearly two hours held by Mamoru Hirota of Japan. Also in the U.S.A., Jerry Krainock broke his own World (F.A.I.) R/C Glider Distance Record on 2nd September, covering 26 miles to his nominated goal in the Mojave Desert. Jerry actually did 31 miles later but cross-wind increased and diverted him from his nominated goal on this attempt. His sailplane was the Pierce Aero Company's new Pierce '1970' with 10 ft. foam wings, semi-symmetrical section. Total weight was 5 lb. R.S. radio equipment.

**NEWS** reaches us from a fellow modeller that he holds a KeilKraft Snipe found in a garden at Sunningdale, presumably lost from Chobham Common. Claimants should phone Walton-on-Thames

40425 giving identification of colour and make of engine.

**NATURAL FLIGHT RACE** main prize is raised from £100 to £200; and the rules are modified as follows:

- The first year's race shall consist of 1½ laps (not 10 laps as in present rules).
- Notice of any increase in the length of the race will be given before November of the preceding year.

Details of the Natural Flight Race for flapping wing (ornithopter) models were given in *Aero Modeller* December 1972. Frankly we are surprised at the lack of interest. Power driven Ornithopters were flying in the U.S.A. over 10 years ago, rubber driven models are available commercially. The development of a radio controlled power driven Ornithopter appears to be a logical extension of existing principles. There is also a prize of £1,000 to the first Birdcraft flight across the Channel, model or full-size (announced in May).

**HAROLD TOWNER** tells a story which has the strange title of *Sparrow Eats Model Aircraft*.

'In the springtime when the crocuses are out you may have noticed that the Sparrows always go for the yellow ones and just peck off the petals.

'This morning when entering the garage where I have a collection of models hanging from the ceiling, I noticed a lot of yellow bits of paper under my Tiger Moth (prototype of the APS design RC 1131), and looking up I found a bird had pecked through the lower starboard wing and there was a hole as large as the span of one's hand. The wings are yellow and I remembered a sparrow had flown out of the garage the day before.'

We all know that cows eat models, but we've never known a 'Spadger' eat them as well!

**AL LEWIS**, one of the founders of the Academy of Model Aeronautics in the U.S.A., editor of *Air Trails*, *American Modeler*, *Air Progress* and others, hard working devotee of all matters concerning aviation and greatly respected friend of thousands, died of a heart attack on 16th August. Al was a Past-President of A.M.A., and had been Director of the Hobby Industry of America. His work was recognised by many awards, among them a Paul Tissandier diploma from the F.A.I. Our sympathies are extended to his wife Iris and family in their loss.



# Simple Sprint

Why not try  
F.A.I. Class team  
racing with this  
model – and spend  
more time flying,  
less building!

designed by  
**DAVE CLARKSON**

F.A.I. TEAM RACE is a very 'difficult' event to get into because it is so technical (or at least, seems to be). One of the reasons for this is that all the published plans, motor details, mechanicals, etc. have really referred to the best available. Very little has been published for the particular use of beginners so the presentation of this *Simple Sprint* plan is an attempt to change this situation by giving newcomers a simple, easy and quick-to-build model yet completely in line with modern trends, and highly competitive. The design has been developed from my current contest model so it has a fair pedigree.

So far two *Simple Sprints* have been built, one by club-mate Graham Howard, K&B 15 (diesel converted) powered and this was placed ninth at the 1974 Nationals with a 4:39.8 heat time – not bad! Mine is getting an M.V.V.S. D7. Graham's model flies beautifully – as a contest model must – in all conditions, including gale-force winds. His model is also a little heavy at 18½ oz., mostly due to the use of a heavy motor like the K&B. Mine is lighter, scaling in at a nice 17 oz.

Perhaps I should explain some of the model features, particularly why it is a 'pod and boom' with bubble canopy and V-tail model. The basic reason is that this arrangement gives the smallest fuselage possible, thus less weight and less drag. Also, with a very small fuselage, less building is required! The pilot position is well forward so that the required maximum cross-section of the model coincides with the natural maximum cross-section. A V-tail is used for two reasons – simplicity and lightness. If the tail were flat then the model would require a fin and an extended tail-skid, the first to accord with the rules, the second to stop the tail-plane being ground away during pit stops. Finally, asymmetric wing dimensions and construction are employed to give the improved flying characteristics offered by such a planform.

Enough reasons and explanations, now to the actual construction. I start with the assumption that this is your first team racer but that you have built Goodyears, combat models, etc., before. The glue used throughout is P.V.A., except where noted. The wood grades as specified should be widely available since super-soft and super-hard grades are

avoided. I have tried to put the building instructions in chronological order and would recommend that this order is followed, particularly on the fuselage. There are some simple and easy items on the fuselage that if forgotten about can become real b...s!

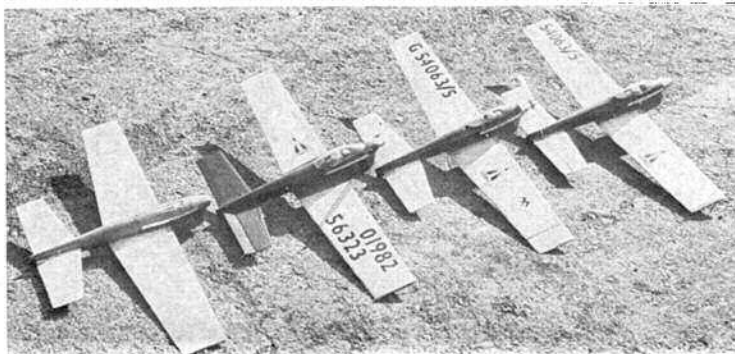
## The Wing and Tail

The easy bit! For the wing, select a sheet of 4 in. by ½ in. medium soft balsa weighing 2-2½ oz. with a nice straight grain. Cut all leading and trailing edges to size and glue together, using lots of tape to hold in position. When dry mark around the circular bellcrank you intend to use and then cut out this disc of wood, finally finishing the hole off using medium garnet paper wrapped around a suitable diameter glass jar or bottle. With the bellcrank hole cut, put in the lead-out ways as described in the *Between the lines* column, November 1973. Again, when dry, shape the wing to section using the balsa plane and finish off first with medium then fine garnet paper. Now give two coats of 50/50 dope thinnings and tissue cover using a further two coats of 50/50 dope-thinnings. Rub down lightly with medium garnet paper and finally apply a coat of 50/50 sanding sealer/dope. When this has fully dried out, bring up to a beautiful, smooth shiny finish using fine garnet paper. The bellcrank mount can now be glued into its recess and we have a nearly finished wing.

Cut out the bits for the tailplane and glue them together using tape to hold everything in place. When dry, carefully sand to shape. Now cut out the elevator, but not the horn way; cut the tail in two at the centre-line, chamfer the joint and re-glue together with dihedral shown. When dry reinforce this joint using ½ in. wide strips of nylon. Only now (when dry again) may the horn way be cut out. Bend up the horn from 20 s.w.g. wire and solder as shown on the plan. Epoxy the horn into pre-sanded grooves in the elevator and reinforce these joints with 1 in. wide strips of nylon epoxied on. Finally, finish off the tail as for the wing (i.e. all that doping, tissue covering, sanding, etc.) and then sew on the elevator.

## The Basic Metal-Work

The heart of it all is the motor crutch and for utmost simplicity, this is made from a length of ½ in. x 2 in. aluminium strip – with vice, electric drill, hacksaw and an assortment of files, shape the crutch to exactly fit that shown on the plan. Carefully drill and countersink the hold-down bolt ways using 7/64 in. and 7/32 in. drills respectively, and drill the motor holes and tap 6BA. While you are covered in metal filings, you may as well make up the tank from an old soup can and ½ in. OD copper tubing. Be very careful with the tank, it is so very easy to go way over size! As far as the filling valve is concerned then I recommend the spring-spike types as manufactured by Gunter Schwartz, Alan Cooper, etc. as illustrated in the July, 1974, issue, since these are easily



A line of development! At right are the two Sprints used by Dave Clarkson and John Daly, followed by Graham Howard's Simple Sprint and Dave's latest, as yet unpainted, version. A good basic design with no 'frills', but certainly competitive.

filled using a squash bottle – an important point if you have no pressurised refuelling system yet, or if it springs a leak.

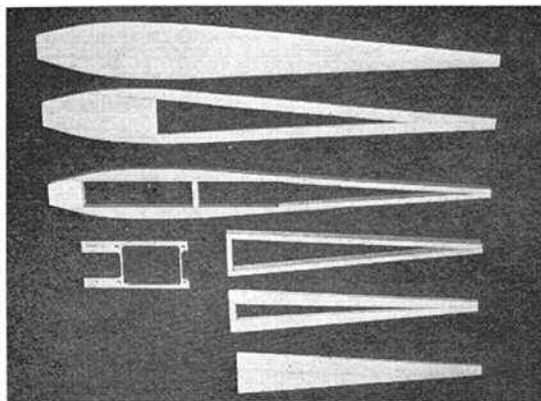
### The Fuselage

Rather a lot of pieces of balsa are involved here, so I cut out a complete kit of parts first.

Start off by cutting the lengths of  $\frac{1}{4}$  in. sq. Ramin and shape their outside profile to that on the plan – finish off using medium garnet paper. Accurately drill the hold-down bolt positions using a  $\frac{7}{64}$  in. drill and counterbore using a  $\frac{7}{32}$  in. drill on the underside. Now wax four 6BA bolts (wiping off surplus wax) and using these waxed bolts through the motor crutch, pull 6BA nuts into the hardwood, preceded by lots of 5 min. epoxy. When set hard, pray that you waxed well and then loosen the 6BA bolts. Add onto the hardwood the  $\frac{1}{4}$  in. sheet front spacer,  $\frac{1}{4}$  in. x  $\frac{1}{4}$  in. middle spacer and the  $\frac{1}{4}$  in. x  $\frac{3}{16}$  in. rear extensions using P.V.A. (and tape where appropriate) and do the 6BAs up tight again so that this, the basic model crutch, is the right shape when dry.

Make the fuselage floor by gluing together the longitudinal strips of  $\frac{1}{4}$  in. x  $\frac{1}{4}$  in. balsa with the  $\frac{1}{4}$  in. sheet front spacer and when dry, glue this frame to the  $\frac{1}{4}$  in. medium sheet balsa bottom. The fuselage front top cover is laminated up as indicated, remembering to put in that piece of  $\frac{1}{4}$  in. ply for the rear hold-down bolt. When the top cover is dry, sand its rear-facing end flat and glue temporarily to the top of the motor crutch. The rear top cover is more complex. Firstly, glue up the lower and upper frames, then glue together and when dry chamfer the top frame to nothing at the rear. Next, remove the lower inner edges of the top frame to give the typical cross-section shown. Glue on the  $\frac{3}{16}$  in. sheet top.

The pod sides are laminated from three pieces of  $\frac{1}{4}$  in. soft balsa, and the pod floor from one thickness each of  $\frac{3}{16}$  in. ply and  $\frac{3}{16}$  in. soft balsa, with the undercarriage mount which is laminated up from  $\frac{1}{16}$  in. plywood. The first assembly step is to shape the inboard facing sides of the pod so that the motor will fit and that the air ducts are as desired – see plan. Cut away on the outboard side of the inboard pod side for the undercarriage mount by cutting in vertically with the hacksaw and chiselling out the wood to give a canyon. Securely glue in the undercarriage mount, then, using the  $\frac{1}{4}$  in. aluminium cover as a template, drill through and install 6BA nuts epoxied onto the back of the mount. Now glue to the sides the  $\frac{1}{32}$  in. ply duct edges and glue the sides to the bottom spacer at front and back with short (say  $\frac{1}{4}$  in.) lengths of  $\frac{7}{16}$  in. x  $\frac{1}{4}$  in. balsa pre-glued onto



Kit of 'bits' for the fuselage reveals the pre-hollowed arrangement which saves much tedious, difficult work with gouges, glass paper, etc.

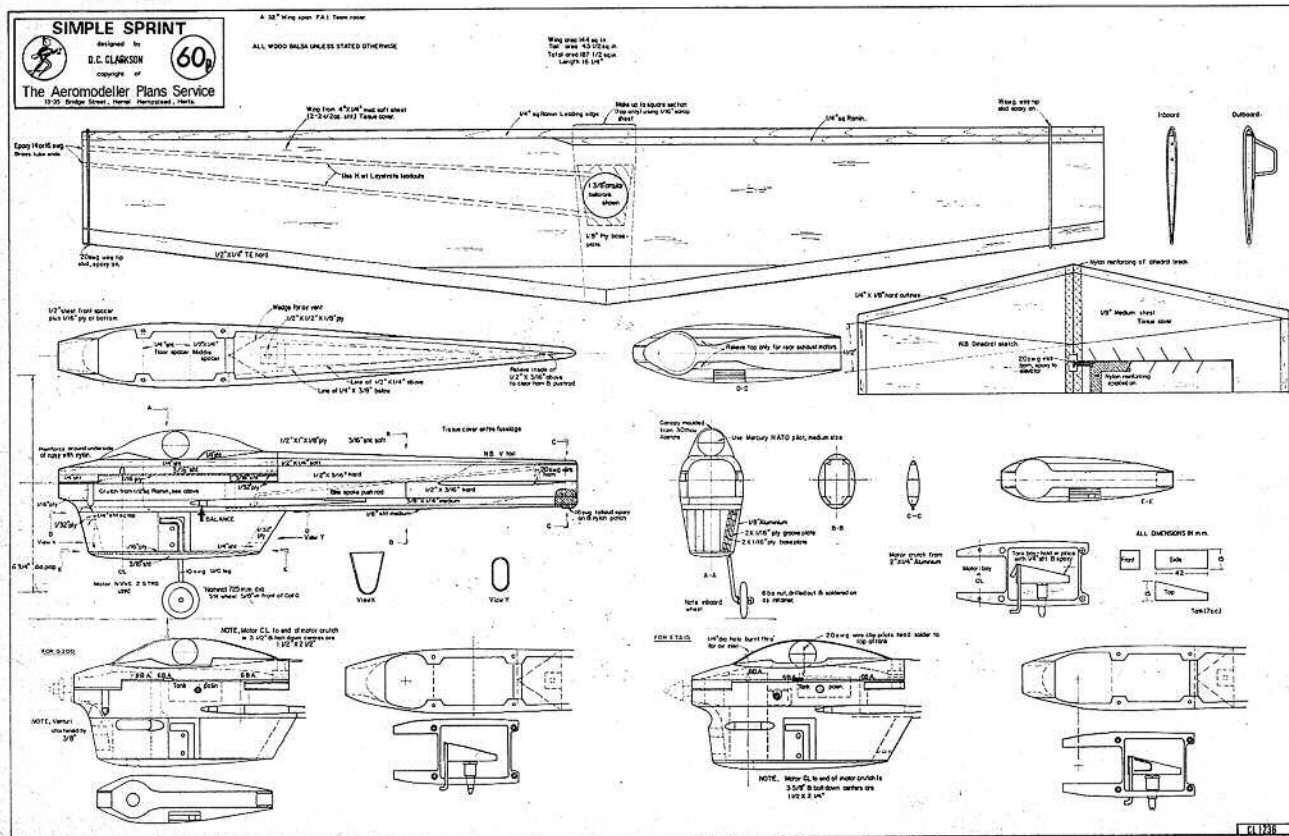
the floor. The top spacer is a laminate of two of these bottom type spacers with  $\frac{1}{32}$  in. ply in between. When dry, glue finally the pod onto its correct position on the fuselage bottom.

Tack glue together the basic crutch, rear top cover and fuselage bottom, then shape the fuselage, finishing off with medium garnet paper. The next step is to split it apart into all of the bits you tack glued together. Chamfer the inside upper edges of the fuselage floor and remove all the unwanted hardwood from the basic fuselage crutch.

### Final Assembly

Build up the wing centre to a square section on the top surface only, then drill the bellcrank pivot bolt hole. Epoxy the pivot bolt in place, then put the leadout wire onto the bellcrank, finally fitting the bellcrank and soldering the retaining nut. Glue the wing to the fuselage crutch preferably clamping up with small G-clamps, followed by the tailplane after fitting the pushrod. The fuselage bottom has to be quite heavily relieved at the wing position to enable it to fit snugly

FULL-SIZE COPIES OF THIS  $\frac{1}{4}$ th SCALE REPRODUCTION ARE AVAILABLE AS ORDER NO. CL1236, PRICE 60p (INCLUSIVE OF POSTAGE AND V.A.T.) FROM AERO MODELLER PLANS SERVICE, P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE.



- glue to the bottom of the basic fuselage crutch.

Looks like a model now, great! Cut through the motor compartment floor and sand away this and the pod inside from the top (a fiddly job I know) until the motor fits. Complete by installing the tail-skid, the air exit guide/top front cover hold-down block, and finish off the fuselage using dope, tissue and sanding sealer. Further work is required on the front top cover, i.e., drilling for the hold-down bolts and epoxying into place a suitable pilot's head and the bubble canopy.

Almost finished now, so bend up your tip skids and epoxy in place - whilst you are messing about with epoxy, use one of the few clean fingers you have left to run epoxy fillets around the wing/fuselage, tail/fuselage and canopy/fuselage joints. When set, paint the fuselage if you want it to look nice.

Apply S.M.A.E. number, club transfer etc., and thoroughly fuel-proof using RipMax TufKote for lightness and resistance to yellowing with age.

#### Mechanics & Flying

Fit the tank to the motor crutch by epoxying it in place, between  $\frac{1}{4}$  in. sheet balsa. Now the motor should preferably be treated to one of Allan Cooper's socket head compression screws and also to a plastic (Tufnol, Nylon, Delrin, etc.) venturi. If you have a spray bar across the venturi then a choke diameter of 5.5 mm. should be about right, but if it is a peripheral type then try 3.2 mm. diameter. The U/C leg is from 10 s.w.g. wire and a T/R wheel is essential, look to the *Goodyear Directory* for a suitable supplier. Install the leg into the mount using silicone rubber bath seal to get a little shock absorption capability.

The model is now ready to fly and I recommend that the first flights be done using a Tornado 7 x 6 nylon prop to see how the model handles at take-off and landing. I do not intend to say any more on flying as this is something that the beginner to F.A.I. should have already learnt at Goodyear, and in any case is a 'personal' thing and must be learnt for yourself.

#### Motors, etc.

For the beginner, there is little point in trying to get a 'super' motor. Even if you did, you would not get it to work super-well. It is always best to 'learn your trade' on a standard commercial motor, so that disasters do not cost too much, and spares are (relatively) easily available. In this situation you can afford to try to really get the absolute from your motor and make the mistakes that are inevitable in learning this - if you never learn how to get the last rev out of your motor, then you will always miss the essence of F.A.I. racing. On this basis, your best 'first motor' must still be the Super Tigre G20 D, and I go no further than that! The G20 D can be an excellent motor and examples of it have performed at best World levels. As a first prop the 7 x 6 Tornado is fine although you will find yourself short of range (great for pit stop practice). When you feel that you need better props, a Bartels 'Drazek Special' is the standard choice, preferably trimmed to around  $6\frac{1}{2}$  in. diameter and well thinned.

For practice, wet conditions, and for at least your first few contests, lightweight 'Laystrate' lines are the best choice - the speed penalty being almost negligible.

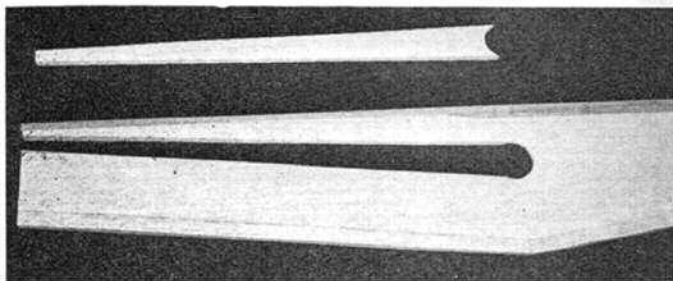
For a fuel mixture, I recommend: 50 per cent Paraffin, 30 per cent Ether, 20 per cent Castrol M to which add 3 per cent Amyl Nitrate.

If you are careful to keep the motor rich, this is quite suitable for running-in motors. Again for starters, I recommend that you use a squash bottle, with 'golf-tee' filler as shown on the plan, for filling the tank in the interests of simplicity. Pressure systems are great for pitting speed, but if you are still learning about how to start motors first/second flick every time, why bother? If the motor always seems under-primed (dry) after filling the tank, crimp the tank overflow pipe just a little to increase the prime. Remember that if you have to put more than say two or three crimps in the overflow pipe, then something else is wrong (like a worn-out motor or a restricted or kinked fuel tube).

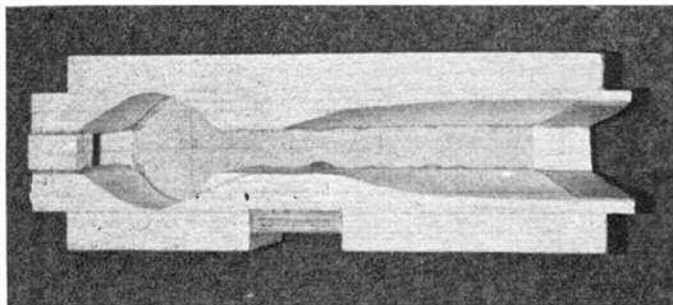
#### Conclusion

*Simple Sprint* is a naturally light F.A.I. Team Racer and is in the modern trend of 'the minimum model'. With a G20 D up front, you should be able to produce your model at 18 oz. or less. This lightness is an essential part of the modern approach to F.A.I. - T/R, as so well explained by the Metkemeyers in their article in the October 1973 *Aeromodeller*. The other part of the modern trend is to go for speed, and only when you have got your speed, do you look for range. 25 sec/10 laps is the '5 minute heat barrier' speed and if you can get this speed, if only for 24-25 laps, then regular appearances in semi-finals and even finals at contests should be expected.

That is the message, 'speed and lightness' *Simple Sprint* puts you well on the path!

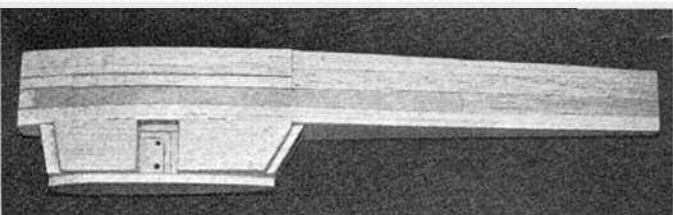


Above, leadout ways are cut in inboard panel as described in previous 'Between the Lines' column. Just cut out the 'wedge', groove edges to accept tubes/lines and cement together again before shaping to section.

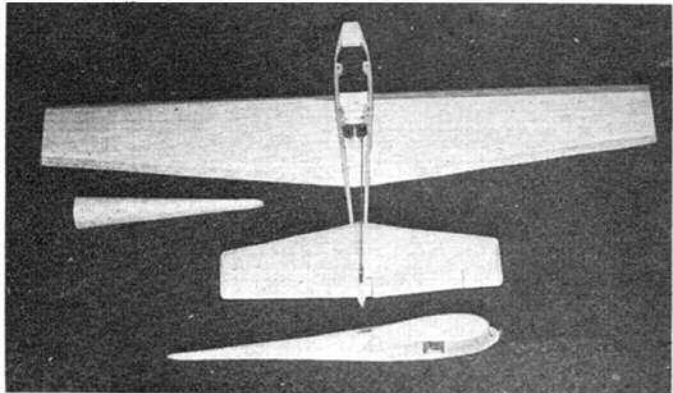


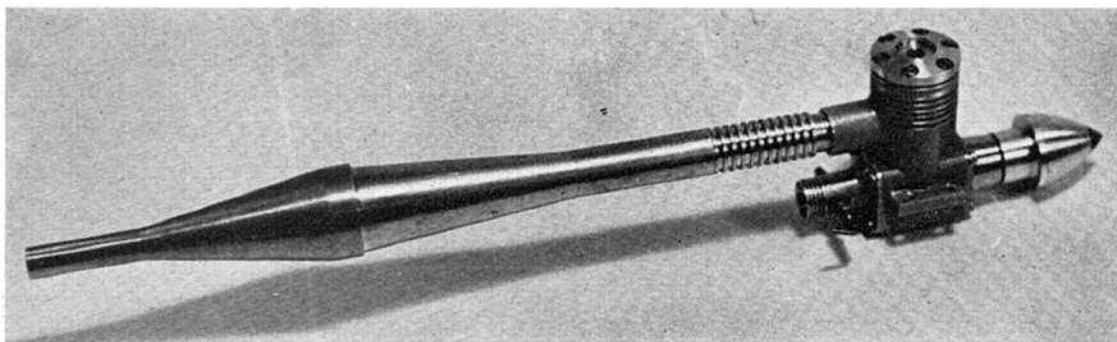
Above, plan view of 'pod' area before external shaping reveals careful attention to cooling. Note particularly routing of air around cylinder head - do not have too large a gap between cowl sides and cylinder -  $\frac{1}{4}$  in. is about right. This will force air through cylinder fins.

Below, there may seem to be a lot of wood, but once the razor plane and sanding block has been to work, only the essentials are left, and the fuselage is automatically hollow. Note recessed ply plate to accept u/c leg.



Below, nearly there now! Be very, very careful to align fuselage crutch correctly - check that it is square in all directions. Likewise ensure tailplane is truly mounted and parallel to wing.





## LATEST ENGINE NEWS by Peter Chinn

### 'YS' Pressure System

Over a year ago (in the August 1973 issue to be precise) we mentioned that we had had on test an entirely new and rather impressive Japanese-made fuel system and ended with the words: 'Further details to follow'. Shortly afterwards, in Italy, this system made its mark when it was used by Tsugutaka Yoshioka in winning the World R/C Aerobatics Championships.

To those patient souls who have

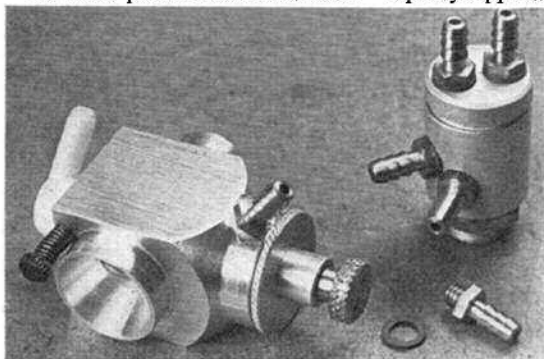
scanned each succeeding L.E.N. in the hope of seeing the promised details, we apologise. The fact is that the components of the system passed out of our hands on loan and we only recently got them back.

The system, known as the 'YS' Pressure System and made by the Yamada Manufacturing Company Ltd. of Inuyama, Japan, is intended primarily for radio-controlled aerobatics but should be equally applicable to any type of

model where it is essential to maintain fuel/air mixture strength between narrow limits, irrespective of tank size or position, model attitude or flight manoeuvres.

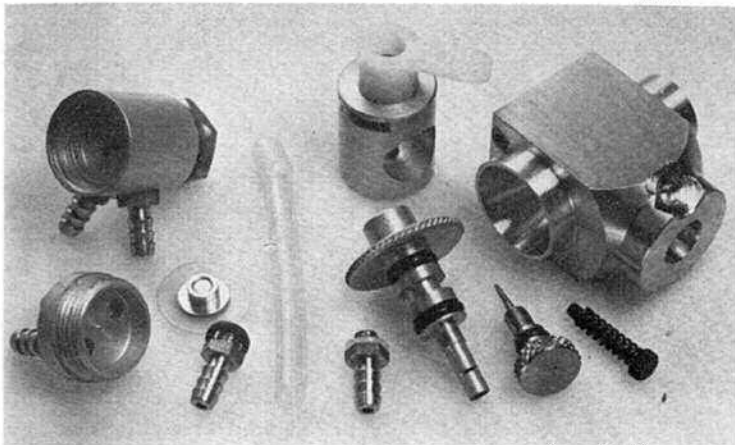
In general, one can exclude here, all free-flight models because their very short power flight which, ideally, does not deviate significantly from a climbing pattern, requires only a very small fuel tank placed close to the engine and, after allowing for acceleration effects, fuel delivery pressure remains fairly constant. One can also rule out most control-line aerobatic models since it is common practice to utilise varying fuel pressure (and thus mixture strength), to provide a measure of automatic control over engine power as the model moves between level flight and overhead manoeuvres. But at the opposite end of the scale, it is obvious that a really accurate means of making sure that mixture strength remains at the optimum for maximum power throughout a flight could be useful for control-line speed (where fuel delivery pressure is greatly affected by centrifugal force) or for any type of model in which it may be desirable to place the tank at some distance from the engine—for example in certain pusher or canard designs, or for a long-distance or duration R/C (or C/L) model in which a very large fuel tank needs to be placed near the centre of gravity.

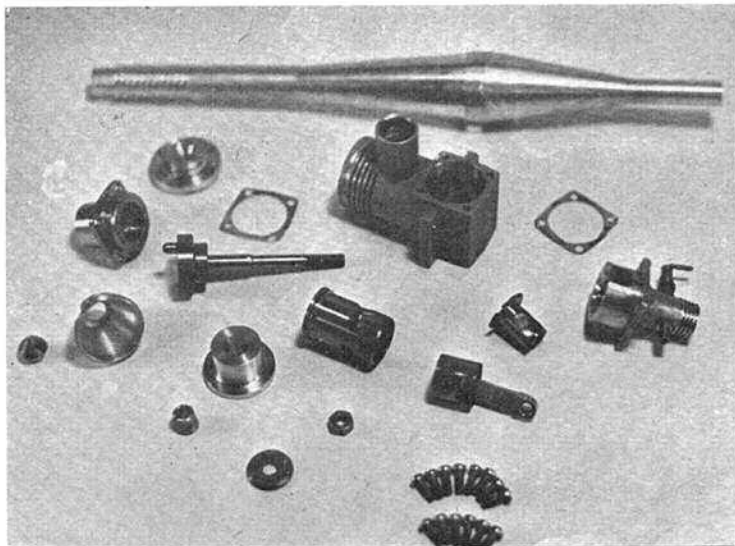
For well over twenty years it has been common practice with C/L speed models to pressurise the fuel supply, either by means of a bladder type fuel tank or by tapping crankcase compression to pressurise a sealed rigid tank. Compared with normal suction feed, this narrows the variation in fuel delivery pressure at the carburettor jet and so reduces the



Heading shows the new Russian 'Sprint' 2.5 c.c. piped motor.

Left, the Japanese 'YS' pressurised fuel system features a large choke carb. and ingenious pressure regulator. Below is seen the pressure regulator and carburettor parts with, between them, the simple 'split-tube' fuel tank non-return valve.





Parts of the 2.5 c.c. 'Sprint' engine. Its design closely resembles that of Zhidkov's 1972 Soviet speed championship winning motor.

variation in fuel mixture strength. However, it has long been appreciated that merely pressurising fuel delivery is not the complete answer and that some kind of automatic regulator is not only desirable but is essential if a high pressure system (as distinct from a silencer-pressurised system) is to be used with a throttle equipped engine.

The 'YS' system incorporates just such a regulator. Basically, the system consists of (a) the pressure regulator, (b) a nipple for tapping crankcase positive pressure only via the rotary valve and (c) a non-return valve for installation in the fuel tank. Being intended primarily for 10 c.c. R/C engines, it includes, also, a special throttle-type carburettor having a very large choke.

The idea of a pressure regulator is not new. Older readers may recall the Jim Walker Fuel Regula-

tor invented some twenty-five years ago. The Jim Walker device, however, was much simpler and still depended on carburettor suction to operate, whereas the 'YS' regulator is coupled into the pressurisation system as well as being interposed between the fuel supply and carburettor. It works like this:

The 'YS' pressure regulator, itself, consists of a three-chamber cylindrical machined aluminium body, containing a diaphragm and a spring-loaded fuel valve and fitted with four brass nipples. The gas pressure inlet and outlet nipples are mounted side-by-side in a detachable end-cap which encloses the pressure chamber containing the diaphragm. The fuel inlet and outlet nipples project radially from the side of the body, the inlet from the lower chamber and the outlet from the centre chamber. The body is 17 mm. o.d. and has a threaded 11.5 mm. spigot

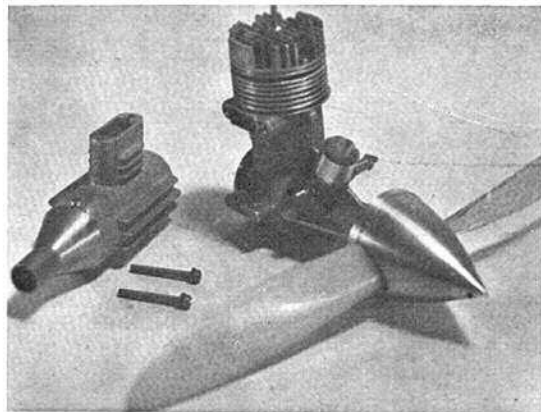
base with a brass hexagon nut for purposes of mounting the unit. Actually, it can be installed either way up but, for the purpose of the following description, we will assume it to be mounted with the pressure side of the system at the top as in the photograph of the complete regulator and carburettor.

If the engine to be used does not already have a rotary-valve timed crankcase nipple, it is necessary to install the one supplied, positioned so that it will be uncovered by the rotary-valve during the positive phase of the cycle - i.e. when the piston is descending. A suitable length of fuel tubing is then fitted between this and one of the two pressure nipples on the regulator.

A fuel tank having three inlet-outlet nipples is necessary. To one of these, a simple non-return valve (supplied) is fitted on the inside of the tank and this is coupled to the other pressure nipple on the regulator. We now have the means of maintaining a high pressure within the fuel tank, sufficient to force fuel to the carburettor, even with the fuel tank held two or three feet below the engine. The fuel line from the tank goes (via a filter) to the fuel inlet nipple on the regulator and another length of tubing connects the regulator fuel outlet nipple to the carburettor. The plumbing is completed with a filler tube on the tank which must be provided with a suitable sealing cap or bung.

When the engine is running, positive pressure is created in the chamber above the diaphragm and this (which has an aluminium centre pad) presses down on the stem of the fuel valve, causing it to open and allow fuel to pass from the fuel inlet chamber to the fuel outlet chamber and so reach the carburettor. It is only possible, therefore, for the engine to be supplied with fuel while it is running. If it stops, pressure on the diaphragm ceases and the regulator valve closes, shutting off the fuel supply to the carburettor.

In practice the system works very well. The Yamada Company now makes a 10 c.c. R/C engine, the 'YS-60', equipped with a built-in 'YS' regulator. We had a pre-production version of this engine on test some time ago and, despite



Recent addition to the range of engines available to Russian modellers is the 7 c.c. 'Raduga' seen here with the silencer made for it.

its very large choke carburettor (74 sq. mm. effective choke area, which is between two and three times as large as that of the average 10 c.c. R/C engine), we found it possible to vary fuel head by as much as five feet without upsetting mixture strength at the carburettor.

To test this, we connected the engine, via long lengths of fuel tubing, to a hand-held tank. This was then raised and lowered from 30 in. above to 30 in. below the carburettor jet. The engine continued to run at full power without missing a beat.

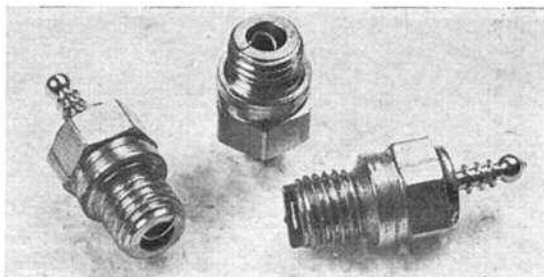
The special R/C carburettor that is supplied for use with the 'YS' pressure system is of the automatic fuel metering type. It has a conventional barrel throttle, with mixture control via partial closure of a slit type jet as the throttle rotates between the full-throttle and idling positions. One simply adjusts the main needle-valve, in the usual way, while the engine is running wide open and then sets the idling mixture by moving a large diameter knurled disc like that of the American Perry carburettor.

The latest production versions of this carburettor (which is made in various spigot sizes to suit most 10 c.c. engines) have a pressure die-cast body in place of the machined body of the earlier version shown.

### New Russian Engines

The best engines made in the Soviet Union are invariably the specials (particularly those made for team-racing and speed) that are constructed singly or in very small numbers specifically for contest use. As we all know, these

**New Fox Racing Plugs.** Available in short reach, long reach and long reach idlebar type, they feature large diameter single-coil elements. See June L.E.N. for details.



have been outstandingly successful in FAI team racing. However, the USSR has no privately-owned model engine firms turning out large numbers of high quality engines such as we have in the West and the model motors available to the average Russian modeller, as distinct from the specials made for or by the USSR's top competition flyers, are seldom such as would excite interest elsewhere. Designs tend to be dated and standards of construction have often tended to be rather poor. Therefore, when a new quantity-produced engine does appear, this is something of an event.

Two such new Soviet motors have been announced during recent months and, while we have little technical information on them at present, we do have photographs, by courtesy of one of our USSR correspondents.

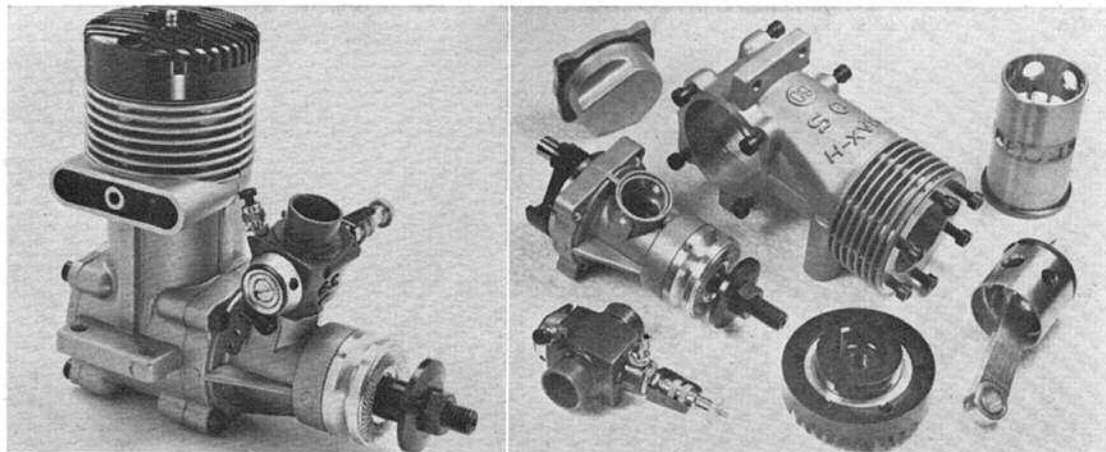
One of these motors is the 'Raduga', a plain bearing, shaft-valve stunt type glowplug engine of 7 c.c. swept volume. This is a size apparently favoured now in the USSR for C/L stunt motors, since a 7 c.c. displacement is also featured by the Russian 'Akrobat' introduced in 1969. The 'Raduga',

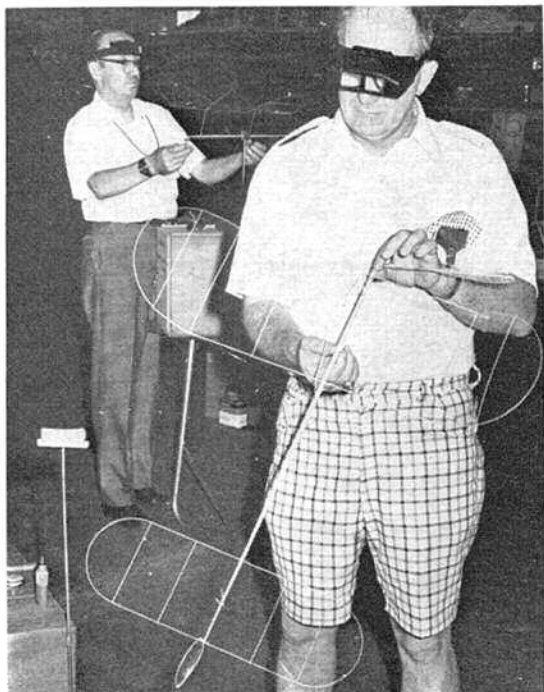
however, has Schnuerle porting (unusual in a motor of this type) and also includes a silencer.

The other motor is the 2.5 c.c. 'Sprint', a rear-exhaust piped speed motor designed by the 1972 Soviet speed champion, Stanislav Zhidkov. Not surprisingly, the 'Sprint' is very similar in design to Zhidkov's championship-winning engine. It features a rear rotary drum-valve similar to the type used by the earlier Natalenko 'Start' racing engine (and also used by O.S. for their rear induction engines including the Max 40SR featured in last month's A.M. Engine Test Report) and, of course, has Schnuerle scavenging. It has a one-piece crankcase and cylinder casing with integral circular-bore exhaust into which the tuned pipe is plugged. The crankshaft has enclosed peripheral counterbalancing slots and a 6 mm. journal which runs in the usual two ball-bearings these being fitted into a machined front housing.

Incidentally, although Zhidkov comes from Moscow, the Sprint engine is being manufactured nearly 2,000 miles away at Frunze in the extreme south of the Soviet Union.

Now reaching the U.K. is the latest and most powerful version of the well-known O.S. Max-H60F engine. Known as the 'GR' series and identified by a black cylinder-head instead of the previous gold anodised one, it features a new crankshaft, new chromed bore cylinder-liner with six exhaust ports, new piston and con rod and a new automatic fuel metering carburettor. Finely finished and powerful.





Right: the magnificent Ernest Kopeccky memorial trophy, a model encapsulated in smoked acrylic, awarded for longest single flight in a World Championship.



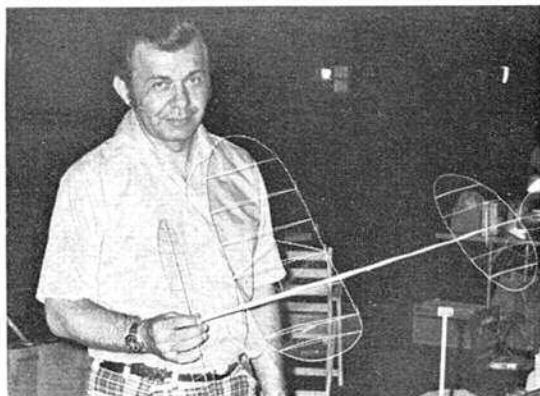
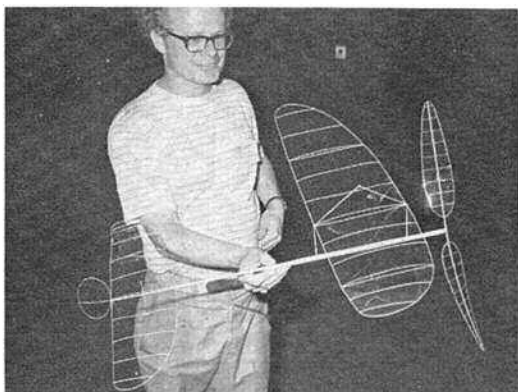
## OPEN INDOOR. at LAKEHURST

WHEN the last flights of the 1974 Indoor World Champs were made, the delayed Open events started almost immediately to make up for lost time. But the rains which wrecked round 5 of the Champs (as reported last month) also drenched whatever enthusiasm might have been remaining among the visiting competitors. Few, if any, of the World Champs team members had the inclination to start off all over again in a five-flight (best to count) marathon after the previous ordeal. So the triple event (65cm F.A.I., Open F.A.I. and A.M.A. Class D, 300 sq. in.) was something for those who were otherwise tied to time-keeping, team managing or similarly occupied over the Championships days. In other words, the roles of the spectators and the competitors were reversed.

Throughout the week there had been a build-up of expectancy over Erv Rodemsky's monster. Last month we mentioned the problems of transporting indoor models - how about moving one from California to New Jersey (the width of the U.S.A.) with a span of 57 in.? Erv is an airline Captain and he had hoped to



Top left: Russell with his F.A.I. class model, being readied. Centre: 'Never thought this'd happen!' Pennyplane inventor Erv Rodemsky and Seattle's Doug McClean with latter's Pennybipe which did 14:40. Two were farthest travelled U.S. competitors. Bottom left: Ray Harlin who provided much of the processing equipment with A.M.A. Class D design that had amazing slow prop, climb/cruise, was second. Below: F.A.I. class by Ron Plotsky.

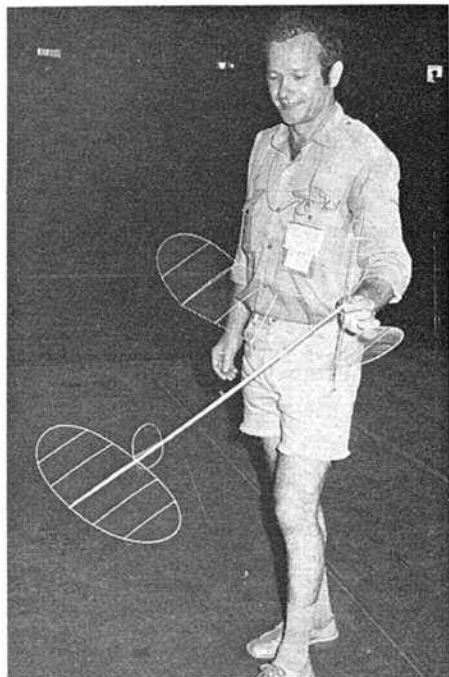




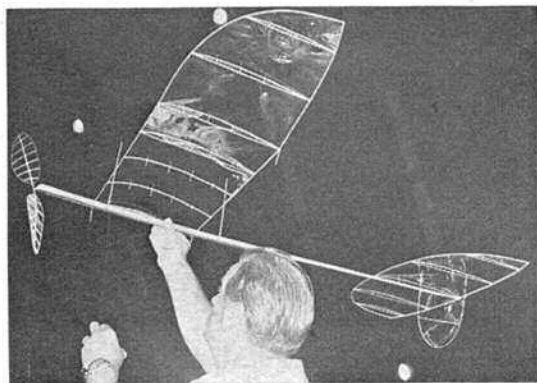
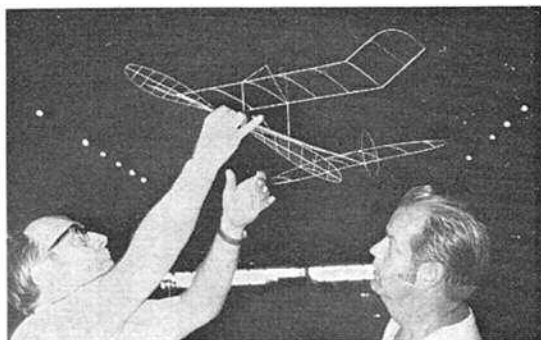
get his crated giant on the 747 flight deck. Alas he miscalculated on that spiral staircase and his model jumbo took a chance on the passenger deck, so when it first flew at Lakehurst it established a World Record for repair patches! One hole in the 600 sq. in. wing was as big as many a Pennyplane's whole wing area. Erv's test flew through the night. At 3 a.m. he was doing well into the 45 minute area, and the hour was expected to be broken when the rubber combination was sorted out (a loop of 5mm Pirelli was average for its 36 in. prop). But in the contest, the monster went the way of many another and it hung up in the ceiling at just one second better than 32 minutes. Erv reckons that in Santa Ana he'll break that elusive hour yet!

Top times came with Class D. The U.S. team manager, Dick Kowalski, bore out his high times of 40 minutes in practice by winning with 42:32, while Ray Harlin who had helped provide so much of the processing equipment for the W/Champs deserved his second place with 35:36. Ray's model was specially interesting for its wing and tail shape, said to be effective in self-steering away from solid objects like walls and catwalks, while his prop r.p.m. was incredibly slow (about 30). Another equally slow prop turner was John Triolo, flying a *Radlina* which is a Manny Radoff, Jiri Kalina influenced design with Cardington origins, also having 'reversed' tip shape as the leading edge curves back to meet the trailing edge. John's best was 35:49, the longest flight by an F1D class model all week, and one that was made as an immediate second flight after a stalled first flight touched down prematurely. John simply let the motor back off for its turns a little more and released from almost floor level! Dan Domina was second in the class with 35:36 and Sal Cannizzo third with 35:31. So the 65cm F.A.I. 1gm models on the whole out-performed the big 'uns. And, if anything, could be said to have stolen the thunder of the monsters, it was the really small ones, mostly flown for fun as Pennyplanes. Doug McClean's biplane, almost a staggered tripe, was a last day eye-opener for all the visitors (see photo). who after seven days of indoor flying might well have thought there were no surprises left undiscovered at Lakehurst. **RG**

Above left: Lakehurst interior, makeshift worktables take over the floor space, sides arc to cathedral peak.



High time of 35:33 in W/Ch won Kopecky Trophy for Karel Rybecky (Czech). Below: top in F.A.I. Open event, John Triolo made 35:39 his record at Lakehurst in Hangar No. 1 is 37:44, a Radoff design. Bottom: that man Rodemsky again, with 600 sq. in., 57 in. span monster, best time so far 45:50; weighs just over 1/2 oz.



If you can't buy it

# MAKE IT!

Part 3 of Flt. Lt. John Stroud's series on money-saving ideas

End view of box reveals the built-in electronics for recharging the starter battery, a system described in the August issue. The battery, cut down from a 12 volt unit, described in Part 1, is securely housed to the left of the centre panel inside. Reel of control lines is mounted at opposite end.

TOOL BOXES come in all shapes and sizes, from cardboard boxes to cabinet-made jobs full of drawers, etc. You may think your tool box has one purpose, and that is to carry tools and accessories, but my work in the Royal Air Force has taught me that it can contribute a valuable extra – the instant tool check. When working on full-sized aircraft it is frightening to find that a tool is missing after you have wrapped up the job; the list of places the tool *could* be must include inside the aircraft, and if it is in the aircraft, it could jam mechanism or short out an electrical circuit with disastrous results. Tight tool control systems all centre round a device called a shadow board, which is a board to which one clips tools, and on it are painted the outlines of the tools. Every time one stops work the tools are put back on the board. Instantly it is obvious if one is missing and a search is started. How does this become valuable for modellers? If you have ever driven 100 miles to a competition and arrived without control lines or plug spanner you will know! The tool box I have

designed provides instant checks and carries all the equipment I need for flying. A ten-second check ensures that I have all the equipment, tools, spares and accessories needed.

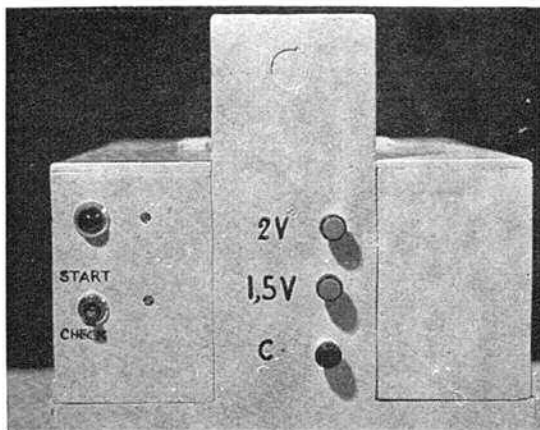
Although the design of the box lays down specific dimensions and materials, these can, of course, be modified to suit your own equipment and also what materials you can obtain easily. Remember you will have to carry it, so do not try to put too much in, or make it of material that is unnecessarily heavy.

## RECOMMENDED MATERIAL SIZES

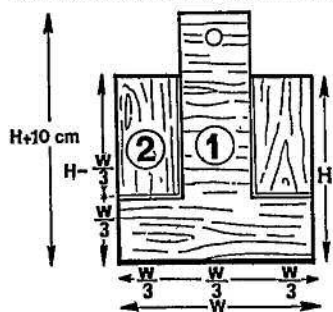
End plates	—	$\frac{3}{4}$ in. plywood = t1
Centre	—	$\frac{3}{4}$ in. plywood = t2
Sides and top	—	$\frac{1}{2}$ in. plywood = t3
Base	—	$\frac{3}{4}$ in. plywood = t4
Handle	—	1 in. dia. dowel
L = 40cm W = 30cm H = 25cm		

Before making the box get together all the equipment you wish to carry – Table 1 suggests a list for an average modeller which fits my standard box with a little room to spare. Alternative material for

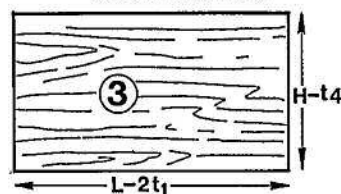
*continued on page 565*



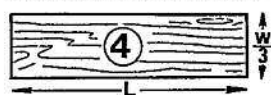
END PLATES: 2 off No. 1, 4 off No. 2



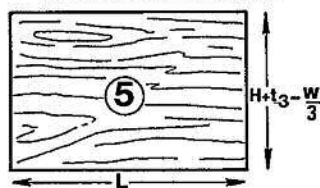
CENTRE: 1 off No. 3



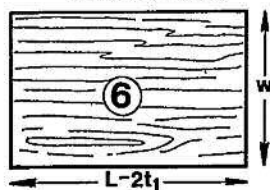
SIDES AND TOP: 5 off No. 4



LOWER SIDES: 2 off No. 5



BASE: 2 off No. 6



Left: With one of the sides unhinged, the contents are easily accessible. Note the 'shadow painting' on the lid – a quick glance shows if any essential item is missing, in this case the control line handle. Do not carry too much equipment, the weight soon builds up!



## CZECHOSLOVAKIA HOSTS MEETING NOTED FOR RECORD PARTICIPATION AND RESULTS 26-28th JULY, 1974

PICTURE, IF YOU CAN, an almost ideal flying site consisting of three smooth-surfaced circles, each surrounded by safety fences, fenced off line-park areas, clubhouse and plenty of room for spectators and you have a fair impression of the site of the 1974 World Championships. Add a good practice site nearby, very efficient organisation, generally good weather and some 207 competitors from 22 countries and the result is a very successful meeting – thanks to the Czechoslovakian modelling authorities, members of the local club and townspeople of Hradec Králové for hosting the meeting. Their hospitality even extended to providing each team with interpreters, who just happened to be young and female!

The greatest single innovation at the meeting was, of course, the use of line groupers – a system whereby one control wire is kept behind the other during flight to minimise drag, and which is detailed fully in the *Between the Lines* column elsewhere in this issue. As the line groupers gave such an increase in performance (up to 20 km/hr. in speed and up to 1½ seconds in 10 laps for team-racers) many of the final results achieved may be regarded as 'false'. This is not to decry the efforts of those who used groupers,

but bear in mind their advantage when comparing the results with those of 1972. Frankly, all competitors we asked who used groupers disliked them and would like to see them banned, but at present cannot afford to do so while their use is 'legal'. Needless to say, those who did not use groupers liked them even less – but not necessarily for the same reasons!

### Speed

Over the years various measures have been enforced to slow down speed models in order to improve safety and, of course, to reduce timekeeper error. 'Hot' fuels were banned and replaced by straight methanol/oil mixture, mono line control was outlawed – two line control being mandatory, and most recently the thickness of the control wire was increased to 0.4 mm. However, at each World Championships progress has outstripped the restrictive measures – this year being no exception! Now the performance available has virtually outstripped the pilots. Both Ugo Dusi and Giancarlo Ricci have reached over 300 km/hr. in practice – but could not fly in the pylon at this speed. This speed involves the pilot, with hand in the pylon yoke, circulating at a dizzy (literally) 1.2 seconds per lap, at the same time maintaining control of his model. Not only impractical but dangerous too.

It seems almost superfluous to mention that an Italian is the new World Champion, and that he used a Rossi 151! On this occasion it was Ricci who placed top with a best speed of 279 km/hr., a speed equalled by Dusi (who incidentally was flying as an individual defending his 'World Champion' title, not as a team member), although his back-up flight was a 'mere' 266 km/hr.

Ricci, in common with many others, used a completely asymmetric design with the engine mounted sideward in fashion on the outboard side – a layout necessitated by his front-induction Rossi (if the engine were mounted inboard then the tank itself would be too far inboard). A uniflow tank fed the motor which turned a home-cast 6 x 8 in. glass fibre propeller, while the whole model (metal winged and with pine fuselage) weighed just 460 grammes complete.

Dusi however used the same conventional design as he did in Helsinki, with pipe pressurised fuel tank; the only obvious difference being the tailpipe which was belled out slightly (as was Ricci's). Both had fuel shut-offs fitted, but not used as they had perfect runs. As soon as the engine was started the model was released and quickly airborne

The 'old' and 'new' World Champions! Giancarlo Ricci (left) equalled Ugo Dusi for top speed, beating him by a better back-up flight. Dusi was not in the Italian team, he flew as reigning World Champion – the only one to take advantage of this new F.A.I. ruling. Both used front induction Rossi's.



## Aero Modeller

without the use of any form of fuel switch. Of course, it did help to have Ugo Rossi as an 'accessory' especially when it comes to selecting piston/liner fit! The seal on these top motors was fantastic - they felt more like diesels when turned over! Ugo swears that the motors were set deliberately rich in order to keep the speeds sufficiently 'low' for the pilots to keep up with them... Needless to say groupers were employed - the tube/tape variety - at around 4 in. spacing for some 75 per cent of the line length.

The other two members of the Italian team were 'Super Tigre' men, Grandesso and Prati both having discovered the secret of groupers in time for the Italian Speed trials, and this is what brought them their place on the team. Certainly it must be admitted that as yet the X-15 is no match for the Rossi. Nonetheless, the factory interest was evident in both Snr. Garofali and Garofali Jnr. being there to look after their men. Both used identical, fully asymmetric designs, with the engine mounted sideward inboard to keep the drag inboard of the thrust-line (rear induction remember). Uniflow tanks and glass fibre props copied from TopFlites, and modified to 142 x 155 mm. completed the hardware. Both the pipes and carburettors were non-standard items, while the groupers they used were moulded in plastic (in fact, Grandesso was selling these to other teams, which accounted for the sudden, almost universal appearance of groupers). The very high revving engines (probably 3-4000/r.p.m. higher than Rossi's) sounded superb, but the stopwatches told otherwise; the fastest speed being 257 km/hr. (Grandesso) and they filled seventh and eighth places.

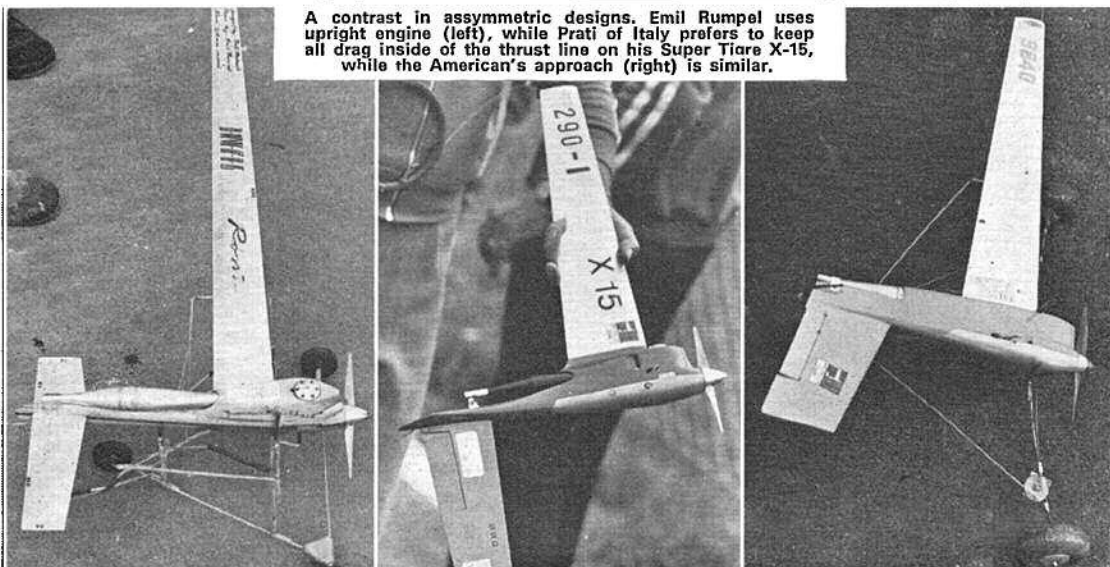
The Americans have for years been recognised as among the world's best speed flyers, and as expected they provided the stiffest challenge to the Italians. They too favoured the fully asymmetric (inboard wing, outboard tail only) layout, featuring metal wings and inboard facing engines. They had rear induction Rossi 15's, both converted front rotary engines (using TWA backplate castings and home-made rotor) as well as factory rear induction Rossi 15's. Fuel switches were fitted, but not used, while fuel shut-offs were also featured on operation of full-down elevator. Various props, were tried including Schuette-Spahr glass fibre moulded 6½ x 7 in. a wooden single blader, and an American GF prop known as K & W 6 x 6½ in. altered to 5.7 x 7.2 in. Tanks were chicken-hoppers.

Chuck Schuette lay third after the first day's results, but a poor second run left him in dire straits for his third and final attempt. Flying very late in the contest, he was lying around eighth when he achieved a 'good 'un' - 266 km/hr, which just clinched third spot. For this run he used his factory Rossi 15 RV and single-bladed prop. Rumour had it that it was an ABC motor - but this was denied by Mr. Rossi himself. However, when stripped down for processing, the top of the liner seemed to be remarkably yellow in colour for steel...

Bob Spahr was close behind in fifth spot, just 6 km/hr. slower, but far less fortunate was Roger Heminway. Failing to record a run in the first round, he was really motoring in the second when his lines snagged the pylon just as he was going for an official time. The model hit the ground, bounced and then hit the safety fence - the engine/pan unit passing through it, fortunately without hitting anyone. He was thus forced to use his conventional design (with front induction

## FAI SPEED

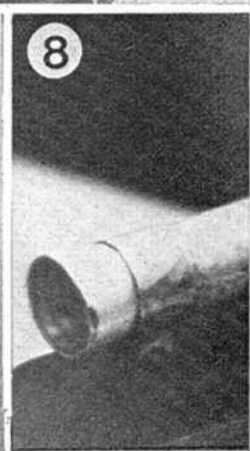
			Best Flight Km/hr	Engine
1	G. Ricci	Italy	279	Rossi
2	U. Dusi	Italy	279	Rossi
3	C. H. Schuette	USA	266	Rossi R.V.
4	J. Fröhlich	BRD	266	Rossi
5	R. Spahr	USA	260	Rossi R.V.
6	R. Brechet	Switzerland	260	Rossi
7	R. Grandesso	Italy	257	Super Tigre X-15
8	A. Prati	Italy	255	Super Tigre X-15
9	W. Kühnis	Switzerland	251	Rossi
10	Z. Somogyi	Hungary	246	Rossi
11	I. Mohai	Hungary	243	Rossi
12	L. Bilat	Switzerland	241	Rossi
13	S. Kalmar	Hungary	240	Rossi
14	J. Pacheco	Spain	238	Rossi
15	J. Lenzen	BRD	236	Rossi
16	J. Magna	France	235	Rossi
17	E. Rumpel	BRD	233	Rossi
18	R. Jarry-Desloges	France	232	Rossi
19	S. Burcev	USSR	230	Rossi
20	D. Enfroy	France	227	Rossi
21	G. Bajdalinov	USSR	227	Sprint
22	R. Hagel	Sweden	226	Rossi
23	L. Eskildsen	Denmark	226	Rossi
24	S. Zidkov	USSR	225	Rossi
25	L. Parramon	Spain	225	Rossi
26	M. Pietinen	Finland	225	Rossi
27	A. Rachval	Poland	220	Rossi
28	L. Boncev	Bulgaria	219	Super Tigre X-15
29	D. van Opstal	Belgium	219	Rossi
30	P. Holman	UK	218	Rossi
31	L. Gaya	Spain	218	Rossi
32	D. Girod	DDR	218	Rossi
33	A. de Brie	Holland	218	Rossi
34	W. Holle	Holland	218	Rossi/ST X-15
35	B. Martinelle	Sweden	218	Rossi
36	V. Fagerström	Finland	218	Rossi
37	Ch. Kitipov	Bulgaria	215	Rossi
38	E. Purice	Romania	213	Rossi
39	D. E. Smith	UK	213	Rossi/ST X-15
40	J. Gürtler	CSSR	213	Rossi
41	K. Enquist	Sweden	211	Rossi
42	S. Sesumi	Japan	211	Rossi
43	J. Zwolinski	Poland	209	MVVS
44	R. Metkemeyer	Holland	206	Rossi
45	W. Firbank	UK	204	Rossi
46	S. Skotniczny	Poland	203	Rossi
47	S. Rodriguez	Cuba	202	MVVS
48	L. Subrt	CSSR	198	Rossi
49	K. Gottlöber	DDR	197	Rossi
50	S. Mensik	CSSR	197	Rossi
51	A. Baez de la Nuez	Cuba	194	MVVS
52	C. Anido	Cuba	189	MVVS
53	I. Popov	Bulgaria	169	Rossi
54	R. Heminway	USA	-	Rossi RV/F.R.

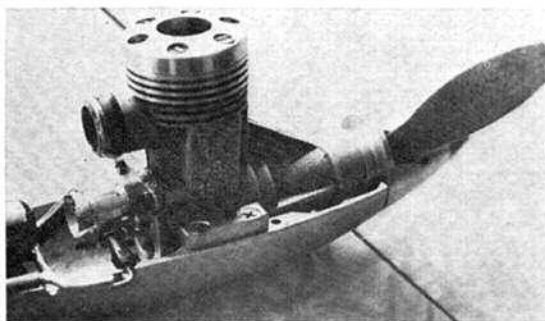


A contrast in asymmetric designs. Emil Rumpel uses upright engine (left), while Prati of Italy prefers to keep all drag inside of the thrust line on his Super Tigre X-15, while the American's approach (right) is similar.



1. Chuck Schuette was fastest American with rear induction Rossi - placed 3rd. 2. Switzerland's Ray Brechet placed 6th with 260 km/hr, metal skimmed wing. 3. Unlucky Bob Heminway of U.S. failed to record an 'official'. 4. Fastest of the Super Tigre men - Grandesso. 5. Winfried Holle, long-time Dutch speed filer, used both very old 'Stuppi' design as well as conventional model. 6. World record holder before this meet - Louis Bilal's Rossi powered conventional design. 7. Superb last flight by Josef Frohlich gave him 4th place. 8. Top Italians had slight bellmouth on tail pipe of exhaust system. 9. Hard working British trio were just about 50 m.p.h. too slow! Left to right are Bill Firbank, Pete Halman and Dave Smith. 10. Ugo Rossi (right) looks on as Dusi takes the wraps off Ricci's winner.





Chuck Schuette's factory rear induction Rossi - note single-bladed wooden prop. Motor rumoured to be an ABC, but denied by Mr. Rossi, although the liner certainly looked the right colour!

Rossi) for his last run, but again failed to achieve a run.

The West Germans, as we know only too well, trounced us at the British Nationals, so how did they fare? They used the same equipment as flown in England i.e. Lenzen and Frohlich used asymmetric balsa winged Kingfisher designs with Miebach tuned Rossi's running on crankcase pressure and centrifugal force fuel switches, while Rumpel used the same hardware in his high aspect ratio metal-skinned asymmetric model (he receives so many questions about this model that he has now written all information, including dimensions, on the model to save losing his voice!).

It was, in fact, Josef Frohlich who placed best of this group (fourth) despite hitting the ground in the first round - he finally equalled Schuette's last speed, but dropped a place as his back-up speed was poorer. Lenzen came 15th with two good runs but the second was spoilt by his groupers ('squashed tube' variety) which objected to the 'spiralled' wire, causing some to point in strange directions adding more drag rather than lessening it. Emil failed to find top form and recorded no higher than 233 km/hr., two places lower in the results.

Current record-holder Louis Bilat (at 266 km/hr., using groupers) failed to have the necessary luck and could not better 241 km/hr. from his usual very orthodox, metal-skinned balsa winged model, although team-mate Brechet using similar equipment placed a very creditable sixth with 260 - and in fact the Swiss placed second in the team awards.

Our own fortunes? To be fair, we never expected to win (I) but finding that the Italians were some 50 mph faster was more than a little discouraging! However, the British team all worked hard to do their best, but could not match their normal home performance, no matter what they tried.

Best was Pete Halman using the late Alan Woodrow's motor in last year's model of conventional layout. Although he made up a set of grouped lines (using plastic groupers from Grandesso) his coiled wire prevented them from giving much advantage (just 2 km/hr.) and he could feel vibration along the wire. Bill Firbank unfortunately broke his best model in practice when he discovered the hard way that the safety fence at the practice site was arranged in an oval, not circular fashion. His reserve could not match its normal performance. Newest team member Dave Smith had both Rossi and Super Tigre X-15 models, but he too ruefully admitted that they just did not have the horsepower to be truly competitive.

As for the rest of the 54 strong field - the vast majority used Rossi's, mainly on piped pressure and it was mainly a choice of who was lucky enough to have a really good motor capable of turning a lot of prop, and the ability to set it correctly.

It is also pleasant to report that there were no 'problems' over timekeeping or with the organisation in general, the only complaint being over the rather 'watery' fuel supplied, which had a devastating effect on glow heads which too will keep Fratelli Rossi smiling all the way to the bank!

## Aerobatics reported by Steve Blake

BEFORE GOING into any depth about this competition, I must make it clear that I left Hradec Kralove feeling more than a little disappointed about the overall position of the Aerobatics event in relation to both Team Race and Speed, for reasons that I shall expand upon later.

However, first some details of the actual competition itself. That most important factor, the weather, was really very kind to us, being very consistent and predictable on each of the three days. The wind built up from calm in the early morning to a midday maximum of 10-15 knots and lessened slightly

towards the evening. Skies were mostly clear and the intense sun at a comfortably high angle most of the day. Overall the flying site is probably the best we have ever had for a World Champs and the surface obstructions caused only a minor amount of turbulence, though it should be pointed out that this would have changed had the wind come from behind two large trees on the site. As now seems inevitable the stunt circle was only just big enough for maximum length lines, pity a few more feet of grass surround were not available as several people found themselves pinned to the fence to avoid the larger models.

New models were very scarce. Of the 16 in the fly-off only five were new to World Champs, and two of those belonged to flyers who had not competed before. Throughout the entire field I noticed only one noteworthy innovation, this being the cross-section of Cappel's (Italy) control surfaces which were left untapered. This is a method that has long been used by radio control modellers to improve control response at low movement angles, since at these angles the control surface is working in turbulent air. Certainly Cappel's model flew well and did not suffer any loss of stability in level flight; I feel that this idea could be very useful in many C/L stunt designs.

Different engine types still abound, but perhaps the Super Tigre 46 is slowly becoming accepted as one of the best stunt motors available, and was used by several more flyers this year. On the subject of engines, more and more flyers are obviously using modified motors, personally I have used 'breathed on' motors for three years. However, following this competition it is evident to me that the possibilities for tuning stunt motors are greater than I had previously imagined. Most of the mods. used were an effort to reduce crankcase volume, and therefore increase the pumping efficiency of the motor. This has the dual effect of producing more torque on rich settings and improving the 'switching' of the motor through manoeuvres. Plotsin, who used a Merco 35 with his own piston/liner had moved the position of the piston baffle to achieve the same results.

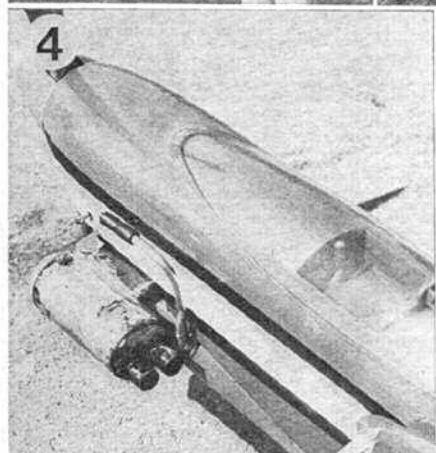
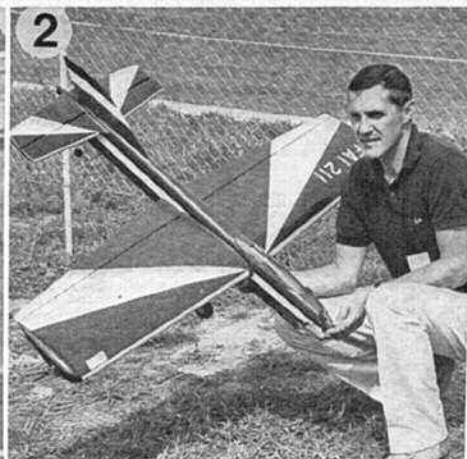
On the flying side this proved to be a very competitive year particularly in the middle field. My own impressions are that there are approximately ten flyers who have an edge at the top, then about 20 that are still very good but with little to choose between them, followed by the remainder of the field who are noticeably behind the rest.

The final result was generally received better than any I can remember by the pilots themselves, although much to my surprise some of the judges were privately expressing some reservations about the overall outcome.

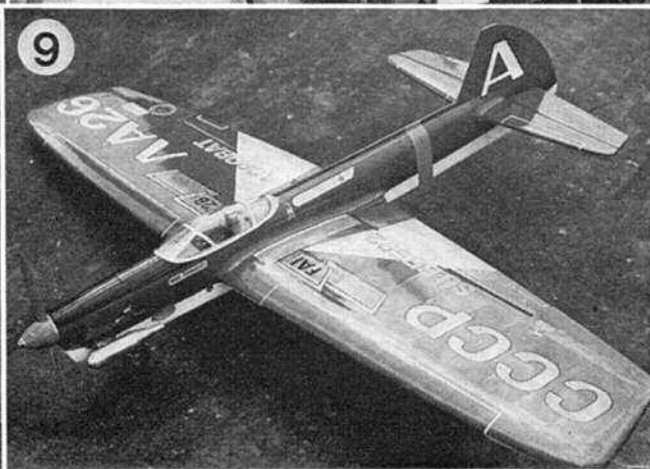
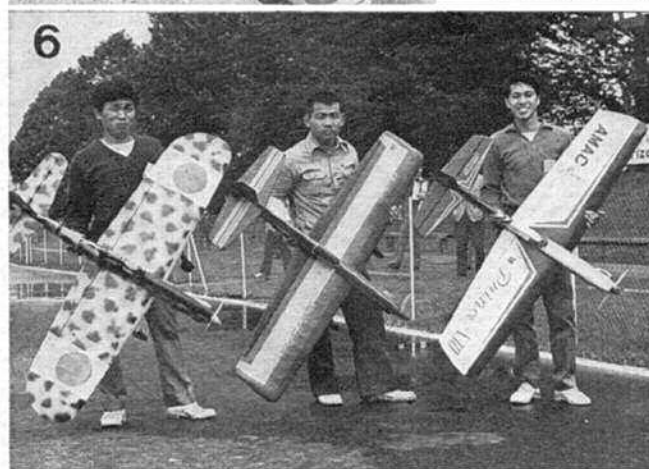
Now to expand upon my opening comment. It is a very difficult thing to judge the relative standards reached by different kinds of model flying. However, it is my opinion that stunt has slipped so far behind team race and speed that the difference is startling. In the other events things move much quicker, and constant technical innovation is the order of the day. In this respect stunt is firmly in the doldrums, the models having improved little over the past 20 years. For example many teams in speed and T/R arrived in Czechoslovakia unaware of the use of line groupers, however many saw how they were used in practice, bought the necessary parts locally (not easy) and had them working well in the competition. If anyone had a comparable innovation in stunt I am convinced that it would take a couple of years before it would be considered worth copying.

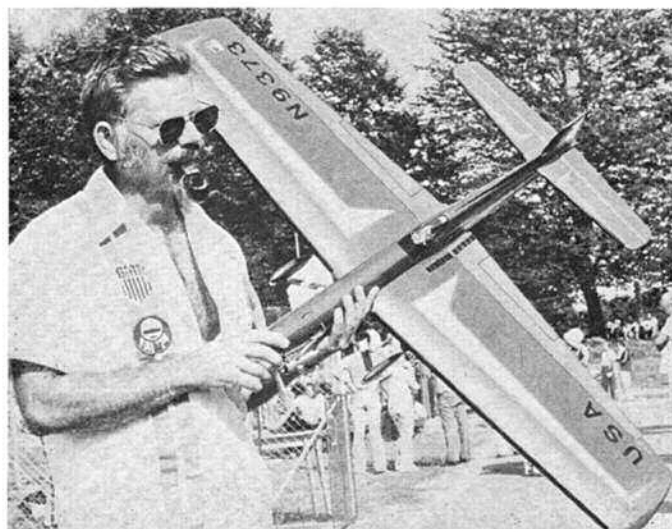
Judging has, of course, always been a source of fierce argument over the years. Before going on to discuss this I must make it clear that I believe the five judges this year to be fair and honest men doing a difficult and voluntary job to the best of their ability. However, I do believe that a judging problem exists in stunt, and that it stems from the interpreting of the rules. Many competitors were unhappy that smoothness rather than dimensional accuracy seemed to get the high points. To my mind a read of the stunt rules quite clearly shows that it is the dimensional accuracy of the manoeuvre that is all important. The general feeling in Czechoslovakia was that the importance of line angles and the size of square corners were largely ignored. In order to improve the situation I believe that some sort of permanent body should be set-up for judges and a dialogue started between judges and flyers in an attempt to produce an accepted approach to judging. For an attempt to be constructive in my criticism, I suggest that rather than awarding points for what is performed, it is possible (and desirable), particularly at World Champs standards to judge by totalling errors during a manoeuvre.

To explain this idea further take the example of the square eights, these consist of the following points, each where it is possible to make errors, 4 corners size and



1. Bill Werwage, reigning World Champion, used the same model as at Helsinki. Clemente Cippi of Italy has large area, very simple design. 3. Obviously a new model - a rare sight at this meet - George Marinov of Bulgaria prefers plenty of wing area. 4. Cippi used very short muffler on his S.T.46, note twin pipes double outlet area? 5. Seized engine in fly-off cost Josef Gabris dearly - usual 'Super-Master' design. 6. Japan fielded a full team - 1 to 4 are Fujita, Yamazaki and Sasaki. Used Enya 45s with silencer pressure. 7. Esjkin's stunter. Placed 5th overall. 8. Dziuba of Poland flew this tandem-wheeled stunter with MVVS 35. 9. Russian's Listopad had beautiful finish and unusual planform.





Left, Bob Gieseke won the aerobatics event – a very popular and well deserved victory after many years of disappointment. Above is Billion of France, who flew exceptionally well to place 4th overall with his large 'Olympus' powered by a Merco 49.

angles, base height, top height, width, precision (i.e. 'kick' in corners, etc.). Added to these is the positioning of the second over the first. As can be clearly seen it is possible to make 15 (or more) errors of some degree in this quite simple shape. At one point per error it is possible to achieve a minus score! Therefore, we need to decide the relative importance of errors, and these need to be published.

Another point where stunt flyers tend to fall behind their team race and speed contemporaries is in competitiveness. It is really amazing how many really good flyers spoil their chances by a casual approach to details such as take-offs and landings.

I believe Bob Gieseke won the title by his sheer determination to do so, every part of one of his flights shows that he is going for every point available right up to the moment the model stops rolling after landing.

Personally I wonder if the time has not come when it would be desirable to introduce a mild form of specification for stunt models. My aim being to eliminate problems in judging differing sizes of models flying on various lengths of lines. Two restrictions could produce this effect quickly, a fixed line length and a maximum engine size.

Feelings amongst the flyers concerning the still-new idea of a fly-off round were mixed. Some countries still seem to prefer the old system of three full rounds and I would not be surprised to hear of moves to change the rule again. Conversely, many feel that the fly-off works well.

As for the performance of the British team as a whole, the result showed a good consistency as only five places separated all three of us. I feel that we could all have placed higher had the wind blown, as few countries it seems fly stunt competitions in rough weather. However, it is difficult to compete in some respects; on talking to one American flyer I discovered that they take about 400 hours to make a model (4 times my own average) and spend roughly 20 hours per week on the flying field!

Gene Schaffer was the 'new boy' of the American team – but placed 6th, ensuring that the U.S.A. took team award as well. Superbly finished model has 22 coats of finish, weighs 58 oz and has 720 sq in. wing. He likes to put in 30 hours of practice a week!



## AEROBATICS

### Fly-off Rounds

			1	2	Total	Engine
1	R. Gieseke	USA	2647	2726	5373	Fox 35
2	W. Werwage	USA	2645	2632	5277	Super Tigre 46
3	B. Jurecka	CSSR	2570	2641	5211	MVVS 35
4	G. Billion	France	2642	2536	5178	Merco 49
5	V. Esjkin	USSR	2624	2540	5164	Akrobat 40
6	G. Schaffer	USA	2605	2491	5096	Super Tigre 46
7	I. Cani	CSSR	2588	2492	5080	MVVS 35
8	L. Compostella	Italy	2514	2483	4997	Super Tigre 46
9	K. Plocins	USSR	2539	2428	4967	Merco 35
10	M. Vanderbeke	Belgium	2434	2513	4947	Merco 49
11	A. Listopad	USSR	2423	2490	4913	Fox 35
12	T. Fujita	Japan	2381	2363	4744	Enya 45
13	E. Mayer	Finland	2411	2322	4733	HP 40
14	C. Cappi	Italy	2452	2245	4697	Super Tigre 46
15	J. Gabris	CSSR	74	2534	2608	MVVS 35
16	S. Rossi	Italy	76	2442	2518	Super Tigre 46

### Initial Rounds

		1	2		
17	M. Rocher	France	2437	2297	Merco 49
18	O. Andersson	Sweden	2349	2422	Fox 35
19	J. Mannall	UK	2005	2374	Merco 35
20	S. Blake	UK	2354	2368	Fox 35
21	B. Metkemeyer	Holland	2364	2336	Super Tigre 46
22	A. Yamasaki	Japan	2152	2345	Enya 45
23	G. Egervary	Hungary	2301	2342	Veco 45
24	J. Newnham	UK	2129	2334	Merco 35
25	S. Sasaki	Japan	2215	2314	Enya 45
26	H. van den Hout	Holland	2293	2313	Veco 45
27	R. Edel	Holland	2302	2226	Fox 35
28	L. Aalti	Finland	2287	1836	OS40
29	L. Eskildsen	Denmark	2232	2094	Merco 61
30	R. Lauron	France	1969	2204	Merco 49
31	G. Weinwurm	Hungary	1994	2191	Moki 40
32	I. Udvardi	Hungary	1539	2188	Moki 40
33	G. Liber	Belgium	1899	2141	Merco 49
34	S. Kraszewski	Poland	1843	2098	MVVS 35
35	G. Marinov	Bulgaria	2048	1981	Rainbow 46
36	J. Kalev	Bulgaria	1971	2003	Super Tigre 46
37	P. Dziuba	Poland	1858	1980	MVVS 35
38	A. Jankov	Bulgaria	1905	1721	Super Tigre 46
39	J. Wasik	Poland	1850	1732	MVVS 35
40	G. Craioveanu	Romania	1740	1842	MVVS 35
41	A. Keller	Switzerland	1582	1820	Veco 45
42	B. Karlsson	Sweden	1802	1752	-
43	R. Liber	Belgium	1017	1802	Merco 49
44	D. o Bunand	Cuba	1385	1644	MVVS 35
45	P. Ganzmann	Switzerland	30	1582	Fox 35
46	F. L. Juan	Cuba	1415	1543	MVVS 35
47	D. R. Jose	Cuba	1056	1100	MVVS 35



Above, Italy's Luigi Compostella still prefers to mount his Super Tigre 46 upright - uses plenty of control surface area. Right: team race winners Sapovalov/Onufrienko with their 1972 model which placed third on that occasion. Despite lack of groupers they were equal to the best on speed and had a 40 lap range at least.



## Team Racing

		Round 1	Round 2	Final	
1	Sapovalov-Onufrienko	USSR	4:17.2	disq.	8:26.1 TMA
2	Bugl-Straniak	Austria	disq.	4:09	8:42.5 Bugl
3	Fontana-Amodio	Italy	4:29.6	4:07.3	8:44 Bugl
4	Heaton-Ross	UK	4:15.6	4:04.5	Bugl
5	Nore-Ekholm	Finland	4:19.7	4:08	Rossi
6	Maslov-Plocins	USSR	4:28.2	4:10.7	TMA
7	Gürtler-Baumgartner	Austria	4:11.8	4:13.6	Bugl
8	Trnka-Drazek	CSSR	disq.	4:13	MVVS
9	Tinev-Raskov	Bulgaria	4:17.5	4:16	Bugl
10	Larson-Ryllin	Sweden	4:22.1	4:19.4	Rossi
11	Rudd-King	UK	4:25.5	4:19.6	S.T. G.15 RV
12	Metkemeyer-Metkemeyer	Holland	4:27	4:20	Bugl
13	Babicev-Bebesko	USSR	4:20.8	4:20.4	TMA
14	Hodgkins-McCollum	USA	4:22	4:23.2	TMA
15	Bader-Kaul	BRD	4:23.6	4:36.8	HP 15
16	Borer-Studor	Switzerland	disq.	4:25.4	Bugl
17	Brendel-Glodek	BRD	disq.	4:28.5	Rossi
18	Bobberg-Siggard	Denmark	4:28.6	4:35.9	ST.G15 FI
19	Hasling-Rivold	Denmark	disq.	4:29.2	Rossi
20	Votpyka-Komurka	CSSR	5:20.2	4:29.5	MVVS
21	Borer-Fritsch	Switzerland	4:34	4:30	Bugl
22	Fischer-Nitsche	Austria	4:30.7	4:47.5	Bugl
23	Pontan-Winkler	Sweden	4:31.4	4:54.2	S.T. X-15
24	Lucev-Lucev	Bulgaria	4:39.5	4:32.5	Bugl
25	Onesti-Pirazzini	Italy	4:35.8	5:14	Rossi RV
26	Visser-Buys	Holland	4:37.6	disq.	Bugl
27	Kodytek-Safler	CSSR	4:39.3	5:00	MVVS
28	Ilg-Schwarz	BRD	4:40	disq.	HP
29	Jordanov-Stancev	Bulgaria	67 r	4:45	ST G15 RV
30	Delhez-Dessaucy	Belgium	4:52	4:47.7	O.D.
31	Krause-Fauk	DDR	53 r	4:49.6	MVVS
32	Bengtsar-Böhlén	Sweden	4:53.9	disq.	K&B
33	Duran-Carraaco	Cuba	5 r	4:54	MVVS
34	Mohai-Kuti	Hungary	disq.	4:54	Bugl
35	Ratkai-Nyarady	Hungary	6:14.8	4:54.8	Moki
36	Tribe-Tribe	UK	4:56.5	5:35.5	Bugl
37	Lerf-Burik	Hungary	4:59.7	5:53.3	Moki
38	Nelson-Mearns	USA	5:00	5:00	K&B/S.T. X-15
39	Wasik-Rosinski	Poland	disq.	5:01.6	Rossi
40	Nagy-Mesáros	Romania	disq.	5:04.8	Moki
41	Galkowski-Ziemniak	Poland	5:11.1	disq.	Bugl
42	Nordlund-Fagerström	Finland	—	5:11.2	Rossi
43	Fischer-Oesterle	USA	5:19.4	5:31.6	Bugl
44	De Angelis-Massari	Italy	5:22.7	5:32	Bugl
45	Kant-Baars-Kant	Holland	disq.	5:23.5	Bugl/ST G15 FI
46	Benitez-Agraz	Cuba	5:24	5:59.3	MVVS
47	Estrada-Hurlado	Cuba	5:25.1	5:33.8	MVVS
48	Adrot-Bellelle	France	—	5:25.3	Bugl
49	Borer-Giger	Switzerland	5:51.9	5:29.5	Rossi
50	Salach-Jozwiak	Poland	5:30.4	5:40.8	ST G15 FI
51	Delor-Surugue	France	6:00.5	disq.	K&B
52	Pulido-Pastor	Spain	disq.	disq.	Bugl
53	Enfroy-Billon	France	disq.	disq.	Rossi

## Team race

Line groupers also found their way into the team race circle with the result that many teams were able to clip 10-15 seconds off their normal heat times and so some of the 'incredible' heat times that were recorded were perhaps less of a reflection on increased pit work efficiency and engine development than may at first be thought. Not that standards have not improved - they have, especially amongst the lower placings where competition is extremely fierce. The other major change since the Helsinki meeting was predictably enough, the dominance of the Bugl engine in the majority of cases in perfectly standard form. Some 18 Bugls were used by the 53 competitors, the next most popular motor being Rossi 15s, both factory and home-converted diesels, while Super Tigre fanciers have fallen considerably - a complete contrast to '72.

Perhaps line groupers did not provide an even bigger advantage due to their newness - most teams making them up at the contest site and times will fall still further when prop sizes have been adjusted to make full use of them.

As it was, there was little 'new' on the model or equipment side. Many teams had Bugl engines fitted with the Bartels 'Bugl' style prop in Paul Bugl style models, while others continued with their existing designs, albeit striving for lower weight. Everyone used pressurised re-fuelling systems, and virtually all had fuel-shut-offs operated by down elevator - only Hasling/Rivold using an electrically operated device.

And so to the racing itself. The opening heat was a disappointment with Nordlund/Fagerstrom (actually Aarnipalo was pitting as proxy for Nordlund) non-starters due to a badly flooded Rossi, Rosinski/Wasik of Poland suffering from binding lines causing their deep bellied racer (the cowl enveloped the wheel) to hit the ground and the elevator finally falling off to merit disqualification while Delhez/Dessaucy of Belgium had a trouble free run from their home-built motor. Heat 2 saw Duran/Carraaco of Cuba snag their lines and run-in, leaving Hodgkins/McCollum of USA and West Germans Ilg/Schwarz to race. The Americans returned a promising 4:22 with their plain TMA powered racer, despite slow landings and relatively poor restarts, while the Germans, devoid of groupers and also three stopping were just not fast enough with their elderly HP15 model.

The second US team, Nelson/Mearns flew in Heat 3 but set the K&B over compressed. A look of horror came over Henry Nelson's face as he attempted to back off the comp. at the first stop - he had the wrong sized Allen key with him... Christine Kant (Holland) was even more unlucky; the wing cracked at the first landing, only to fall off as the model left the ground. Meanwhile, Borer/Fritsch of Switzerland had a trouble free run of 4:34 from their Bugl 15 fitted with a Bartels Fischer-Nitsche prop and using plastic groupers.

Heat 4 saw the disqualification of Mohai/Kuti when their all-Bugl machine collided with the Spanish team's model at the first pit-stop. As no-one had completed 50 laps, Visser/Buys could not be allowed to continue, and so these latter teams were awarded a later re-run. Heat 5 proved unlucky for the Dutch Metkemeyer brothers - the motor cut on take-off following a pit stop. Rob retrieved the model and restarted it quickly, but the 4:27 time would obviously have been better. Needless to say, they used a Bugl/Turtle, and no groupers. Their Swiss opponents Borer/Giger had a striking swept V-tail racer, Rossi powered and weighing 520 grammes but which suffered from ground handling problems and a badly 'missing' run. They used sheet brass groupers at 12 in. spac-

ing, but a slipped catch followed by a series of motor cutting problems ruined their chances. Lucev/Lucev of Bulgaria have now replaced their Super Tigre with a Bugl, but were not quick enough.

Heat 6 promised to be fast, but was not! Firstly Trnka/Drazek of the host country were disqualified for high flying – the result of binding groupers (tape/tube variety, at 4 in. spacing, made at the eleventh hour) while Bulgarians Jordanov/Stancev's ST G15 RV cut on take-off following their second stop. A quick restart followed, but the motor quit again and the model ran-in. Meanwhile reigning World Champion Plotin flying with new pit man Maslov was short of range, needing three stops to record 4:28.2.

Tinev/Rashov of Bulgaria had a fast race with their Bugl, helped by periods of solo flying while Italians De Angelis and Massari suffered from setting problems and Czechs Votypka/Komurka had their familiar MVVS powered *Hot Dog* design cut out on take-off in Heat 7. Just the Italians used groupers – the plastic type.

Only Bengtsar/Bohlin of Sweden completed Heat 8, as Enfroy/Billon were disqualified when the jury saw the model arrested while a clear two feet in the air, and the Rumanian team were similarly despatched for a 'foot out' offence.

First British appearance came in Heat 9 when the much experienced team of Rudd/King met Lef/Burik of Hungary and Poles Galkowski/Ziemniak with an all-Bugl machine. And what a race from the Feltham pair! Their *Scorpion* model (as flown at the Nationals) did not have a fuel shut off, but the ST G15 RV (fitted with Dave Rudd's own rear drum induction) cut at exactly the right spot for super-fast pit stops at 33 and 66 laps. Superb team work brought them their fastest ever heat – 4:25.5 (using groupers of course) a time well clear of their rivals.

In the next race, Krause/Fauk of East Germany retired after the second pit stop when their MVVS model twice suffered cutting on take-off (such a common error of the whole meeting) finally running into the circle. Meanwhile, Austria's Gurtler/Baumgartner, using their all-Bugl model recorded an incredible 4:11.8 (albeit with two warnings for pulling on overtaking) and Babichev/Bebesko of USSR recorded 4:20.8 despite their TMA proving slightly reluctant to start and without the aid of a single grouper.

The next heat, No. 11, saw the third Russian team – Onufrienko/Sapavalov with their 100 mph, two stopper versus Onesti/Pirazzini of Italy and Salach/Jozwiak of Poland. Predictably, the Russian recorded a fast (4:17.2) time, but their motor was very loose, taking up to 12 flicks to restart. The Italian model cut on the far side of the circle to slow them, while an unscheduled stop at 98 laps ruined the chances of a good time from their rear-induction Rossi. The Poles suffered badly from a slow start plus lower airspeed of the ST G15 FI.

Our second opportunity came in the twelfth heat, when Heaton/Ross came to the line with their new model which weighs 17 oz., and is powered by their latest Bugl which arrived the day prior to the Nationals. With a John Gray moulded 6½ x 7½ in. GF prop, and tape/tube groupers, it flies at 97 mph in traffic. A first-flick start got them away rapidly and they had a well-nigh perfect race resulting in a 4:15.6. This was aided by it being virtually a two-up race, Hasling/Rivold retiring after two laps when the prop nut on the Rossi came loose. The other team, West Germans Bader/Kaul also had a good run from their HP15, but lacked the advantage of groupers. Their racer featured a sprung u/c – the wheel reaches forward for rapid take-offs, but swings backwards for landings enabling the model to be tipped onto its nose-skid for rapid braking.

The Tribe brothers then appeared in Heat 13, using Ron Tribe's version of a Bugl racer, weighting 17½ oz., and fitted with Bartels Bugl CF prop. Unfortunately, disaster overtook them when the motor cut immediately on take-off, following a first-flick start. Mick rapidly retrieved it and 6 flicks later it was away. The first pit stop was perfect, but the second was slower due to a compression adjustment being necessary and the final time of 4:56.5 an obvious disappointment to this team, still only in their second year of FAI T/R. Even more unhappy were their adversaries Fischer/Oesterle of USA whose K&B rear ended Bugl powered early version of the *Turtle* was off tune and not doing more than 90 mph. In contrast, Swedes Larson/Rylin put in a very fast time with their Rossi turning a Rossi carbon fibre prop.

For once Werner Siggard deserted his unconventional metal skinned models, resorting to a five year old Rumpel tuned Super Tigre G15 (in an equally old 600 gm conventional machine) which on a small choke can achieve 50 laps per tank at a respectable speed. However, in Heat 14 pilot Bobjerg cut the motor after 25 laps as it was overheating and this obviously spoilt their time. Fischer/Nitsche of Austria used a 450 gramme Bugl model, but no line groupers, and were surprisingly slow (4:30.7) while the Hungarian team of Ratkai/Nyarady were very slow due to a severely cooked-up Rossi.

Motor man Paul Bugl had acquired a set of plastic line groupers and was going well in Heat 15 until he too suffered a motor cutting on take-off following a pit stop. In his

endeavours to catch up, he was disqualified for whipping on overtaking. Fellow racers Benitez/Agraz of Cuba had a slow run and slow stops from their MVVS racer while Pontan/Winkler of Sweden had a straightforward run of 4:31.4 from their Super Tigre X-15, 'dieselised' by dropping in a Kosmic piston/liner. In the next race, Borer/Studer were disqualified for stepping out of the pilot's circle too early, while Brendal/Glodeck were disqualified for whipping excessively with their Rossi racer which we saw at our Nationals. The race not yet at half distance, Estrada/Hurlado of Cuba were given a re-fly.

Heat 17 was a two up affair between Saffler/Kodytek with their usual, glass fibre fuselaged design powered by a MVVS, and Fontana/Amodio using Bugl power in a 14 oz. design featuring built up sheet covered wings and tail. Both used groupers; the Italians metal flags, the Czechs tape/tube variety at 6 in. intervals for 50 per cent of the line. An extra stop at 95 laps spoilt an otherwise excellent time for the Italians, while the Czechs had three scheduled stops with no problems. Heat 18 was another two up race, between Delor/Surugue of France and Nore/Ekholm of Finland – the latter using a Rossi with Rossi 7 x 7 in. prop in a model weighing just under 500 grammes and which normally achieves 40 laps per tank.

In the race, Nore cut the motor after 5 laps to adjust the comp. and it then really flew, missing badly at first then picking up into a perfect run. Delor's K&B overheated badly, causing a 20 second stop and it was rather slow throughout. Nore took advantage of this, receiving two warnings, and achieved 4:19.7 despite that extra stop. He uses metal groupers at 4 in. spacing for approximately 25 feet of the line length.

The last race of the day was a re-run for Visser/Buys of Holland using their faithful *Turtle*/Bugl combo, together with Estrada/Hurlado of Cuba and Pulider/Pastor of Spain. This was an unlucky draw for the Dutch as neither of the other pilots were very experienced, taxing Hank Visser's skill in avoiding collisions. The Spanish team were subsequently disqualified when the pilot's foot left the centre circle too early, and the Cuban toured round leaving the Dutch ample opportunity for passing. Their ensuing time of 4:37 (no groupers) however needed improvement if they were to qualify for the semis.

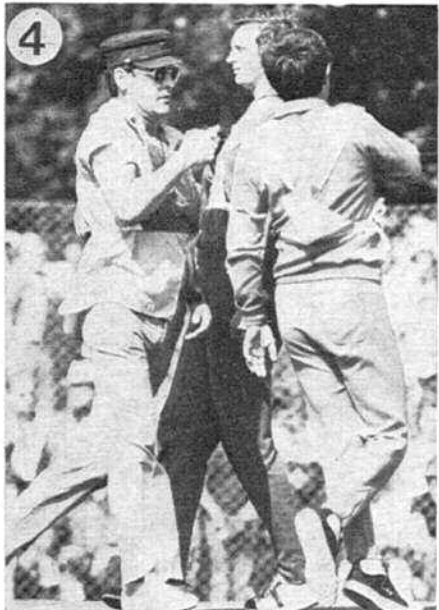
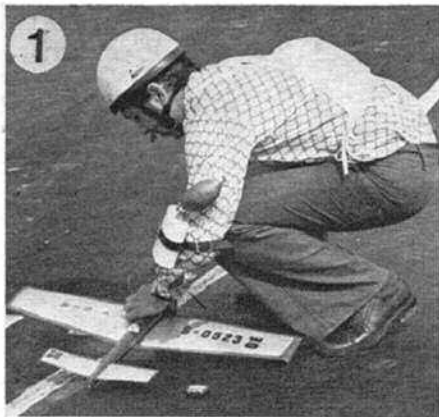
The second competition day also saw the second round held in sunny, hot conditions with very little breeze – almost perfect for racing. First to break the ice were Estrada of Cuba using an MVVS in a rather old, very conventional model, Mohai of Hungary with his all-Bugl model (less the full length crutch though) and Bobjerg/Siggard relying on their Super Tigre model once more rather than risk using their ex-Emil Rumpel Rossi. The race was relatively slow (after round 1, the slowest semi final qualifying time was 4:23, and it was obvious that several teams would beat this). The Danes finished first in 4:36 following a stop after only 18 laps due to overheating and a generally over compressed run, while Mohai had one slow stop to spoil his chances. The Cuban's again showed improved form, but are not yet competitive.

Heat 2 was a slow affair. Italians De Angelis/Massari needing four stops, Kant/Kant suffering from overheating with their ST G15 FI reserve model while Nelson/Mearns of USA suffered from the opposite ailment – their Super Tigre X-15 getting cooler and cooler after the second tank. Tribe/Tribe then appeared in Heat 3 to redeem themselves, being matched with Adrot/Bellolle of France plus Hungarians Ratkai/Nyarady. However, the British pair's luck was right out (despite hard practising from 5 a.m. of that morning, they certainly did their best) when at take-off their model rolled forward a few feet and then the motor cut – Mick retrieved it, restarted in six flicks and was away. More trouble followed at the first stop (25 laps) as the Frenchman landed at the same time and Micky missed the catch. The subsequent retrieval finally spoilt all chances of a reasonable time. Subsequent examination showed that dirt in the overflow pipe prevented the motor from being primed, which accounted for the relatively slow re-starts. Meanwhile the French using a Bugl (fitted with 'Fischer/Nitsche' prop) and the Hungarians failed to achieve good enough times for their three stoppers.

More troubles were evident in Heat 4. Firstly Saffler/Kodytek of the local club landed at 10 laps to back off compression – only to miss the catch. Hasling, suffering from an overheating Rossi, had to utilise his electric shut-off at 33, 48 and 68 laps while Visser/Buys had their fuel shut-off continually vibrate to the 'off' position forcing them to retire.

Despite very fast stops and high airspeed, Brendal/Glodeck could not better 4:28 in Heat 5, but they were low on laps. Normally their Rossi 15 with Bartels 'Fischer/Nitsche' prop returns 33-36 laps at just over 100 mph – no groupers – but on this occasion they landed at 26, 55, and 85 laps. Borer/Fritschl fared better with their Bugl, and but for a slow initial start could have made the semi finals. Gurtler/Baumgartner of Austria however made no mistakes to record 4:13.6 (helped by groupers needless to say) although this was marginally slower than their first heat!

Larson/Rylin really had their Rossi motoring in Heat 6, their 4:19.4 putting them in a strong position, although this



1. One of the fastest pit men in the business - Straniak of Austria refuels Paul Bugl's racer. Placed 2nd. 2. Delore of France used high aspect ratio design, K&B powered. 3. Fastest of the meet - our own Malcolm Ross (l) and Derek Heaton. 4. Final pilots - Paul Bugl at left, Sapovalov in centre and Fontana at right. 5. Amodio warms up the lightweight, 3rd placed, racer. 6. Volypka/Komurka still use their superbly finished 'Hot Dog' design. MVVS power. 7. Bebesko adjusts TMA engine - only Russian team not to reach semi finals. 8. It wasn't that bad Al Richard Oesterle (the tall, tall, pilot) and Al Fischer of USA were right out of luck - used early version of 'Turtle', Bugl power. 9. Boror/Fritschl were one of several teams to use all Bugl model. 10. Bobberg with 5-year-old Super Tigre model suffered from overheating problems. 11. Krause/Fauk of East Germany used very fast factory prepared MVVS.





Dave Hudd and Richard King flew two fantastic races – each one far better than they have performed at home when everything 'clicked' into place. Groupers helped – copied from the Americans, which shows advantage of arriving at contest site a couple of days early! Used John Gray moulded prop, size 6½ in. x 8 in. Only missed semi finals by 2 seconds.

was later beaten to just push them out of the semis. Nordlund/Fagerstrom had far less luck with their Rossi needing an extra stop at 18 laps to adjust compression a common ailment obviously with this motor, which seems super sensitive. Fischer/Nitsche of propeller fame had a relatively slow run – a pity as otherwise there would have been three Austrian teams in the semis.

In contrast, the next race was very close, resulting in the fastest time so far (4:09) for Bugli/Stranick with an immaculate performance while Tinev/Rashov also two stopping their Bugli were just seven seconds slower, but Hodgkin/McCollum needed a comp. adjustment at their second stop – the TMA was slightly 'hard' throughout the race. Heat 8 saw a real mix-up! Votynka of Czechoslovakia was landing just as the Russian team of Sapovalov/Onufrienko were taking-off and they crossed lines passing under the Czech model – the Russian prancing at an angle of 45 deg. doing their model little good. A re-run was given to the Czechs and the unscathed Bulgarian Lucev brothers; the USSR team being disqualified.

Onesti/Pirazzini suffered from the common ailment of their motor cutting on take-off to produce an unscheduled pit stop while Krause/Fauk of East Germany had an extra stop at 99 laps with their very fast (but no groupers) MVVS racer in Heat 9 to spoil their chances. The third team, Bader/Kaul of Germany just could not get enough speed from their ageing HP15.

With a 4:15.6 time already under their belt, Heaton/Ross were pretty well assured of a semi final place, which must have helped their nervous system when they entered the circle for Heat 10. Drawn to fly against old favourites Drazek/Trnka and Rossi equipped Wasik/Rosinski of Poland they then proceeded to reel off the fastest time of the meeting, creating a new British record in the process! For this 4:04.5 heat they used their original 2-part Bugli (a 'five minute' motor according to designer/builder Paul) in their old repainted, camouflage model, which weighs some 19 oz. and uses a South African moulded GF prop of 6½ x 7½ in. dimensions which will give up to 45 laps. With precise piloting by Derek and first class pitting by Malcolm, the run was quite uneventful – groupers to the rescue again! With the excitement of such a fast time, the Czech's time of 4:15 almost went unnoticed, but it gave them a spot in the top nine results.

In complete contrast the following race was very poor – only Hungarians Lorf/Burick completing the race and they cut on take-off forcing a re-start followed by an extra pitstop due to loss of laps, while Delor of France was disqualified for a 'foot out' offence and Galkowski/Ziemnick's model ran in at the second stop. Heat 12 saw the chances of three Russian teams in the semis disappear when Babichev/Bebesko suffered from two slow pit stops while Borer/Fritschl the engine cook-up on the last tank. Benitez/Agraz of Cuba toured round for a slow time. Traditional (friendly!) rivals of the British the Metkemeier brothers had a race free of problems in Heat 13, but while their 4:20 time looked promising, it was finally beaten to push them into 12th place overall. If they had used groupers the picture would have been very different . . . ! Their opponents Schwarz/Ilg were disqualified after 38 laps while the sole Belgian team had an initial slow start and their engine was just not competitive with the best available.

British team comedians Rudd/King performed so well in the first round that they knew they could not better their time in Heat 14 but surprise, surprise, they did – and by a full six seconds! Once again the engine cut in exactly the right place each time, and Dave hammered the model onto the ground on each occasion to have it very swiftly refuelled, restarted and released by Richard King. Fantastic! Jokers they may be, but a very competent team too when it comes to it. Bulgarians Jordanov/Stancev also used Super Tigre power but could not match the English (OK . . . and Irish!) for speed while Borer/Giger of Switzerland suffered from Rossi-itus i.e. an extra pit stop and 15 laps to adjust comp. Heat 15 was another race with but one familiar – Bengstar/Bohlin of Sweden being disqualified for whipping on overtaking, while the only Spanish team retired when their motor cut on take-off and the model ran-in leaving Poles Salach/Jozwiak a re-run.

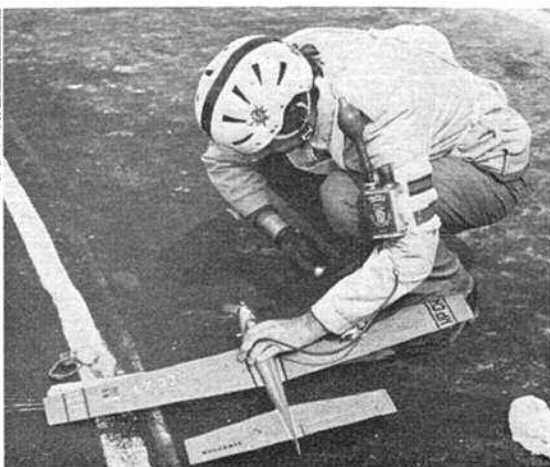
Enfroy/Billon of France seemed to lose their gamble of using groupers (plastic variety) as the model was clearly out of proper control and they were subsequently disqualified in Heat 16. Borer/Studer (a 'Borer' flew in each of the Swiss teams – a record?) had a good first run from their Bugli, but the 4:25 time just wasn't quite quick enough! Nagy/Mesáros' Moki powered racer, lacked the necessary power to achieve a respectable time.

Maslov/Plotsin of USSR must have been nervous in Heat 17 as they needed a really good time to qualify. On this occasion they used their spare model which had featured a retracting undercarriage, although this had failed in practice and was subsequently converted to being fixed and the 'hole' filled in with scrap balsa. He was drawn to fly against Nore/Ekholm, potentially the best of the Rossi operators and Duran/Carracco of Cuba. The race was uneventful until the very end, Plotsin flying at just under 100 mph and landing at 34 and 68 laps. However, by mistake he cut the motor after 98 laps, fortunately having sufficient airspeed to correct this mistake by gliding for an extra lap. Meanwhile, Nore had problems, cutting his motor after 98 laps and splitting the leading edge on the outboard wing of his *Karbunkle* design.

The lap counters claimed that some of the wing fell off and the Finns were disqualified although subsequent examination showed this not to be so, and a reflight was allowed later.

In the last official heat Fischer/Oesterle met Fontana/Amodio in a two up race. The Americans had a slow start from their Bugli and repeated this at 25 laps. The motor then hardened up at 42 laps and took some 30 flicks to restart and in all the Italians had some 25 'solo' laps, which certainly did not slow them, and they subsequently recorded the second fastest heat of the contest! In their re-run, Nore/Ekholm had similar good fortune, their sole competitors being Poles Salach/Jozwiak who had a slow run including a motor quitting on take-off.

At last, at long last, the semi finals – and as ever there were many tales of bad luck. First to suffer was Trnka/Drazek – at their second pit stop (50 laps) Milan Drazek missed the wing and caught the tailplane which regrettably could not take the strain and protested in the only way it knew . . . Tinev/Rashov's Bugli cut on take-off following the second pit stop (70 laps) and consequently they were slowed (1) to 4:19.3. Fontana/Amodio had a near perfect run (pit stops taking 5, 7 and 5 seconds respectively) to record 4:12.5. Next, it was time for the British luck to run-



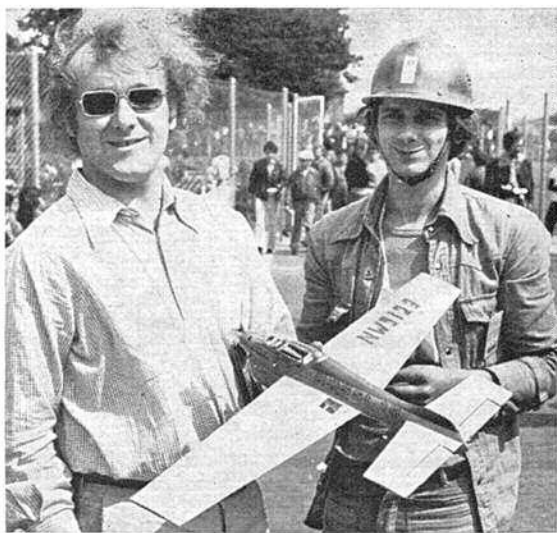
out. Malcolm and Derek had reinforced the outboard wing of their old racer (as used in second round) with glass fibre, but at their first stop the inboard wing broke. A tragedy – for once we were really in with a chance for a place in the final. This left Bugl/Straniak and Onufrienko/Sapovalov on their own and the result was very close and very fast – the Austrian team finishing in 4:05.5. The Russians 4:08.5! The Russians were using their second string motor, their best one having been damaged in their second round mêlée. Straniak set the Bugl slightly under-compressed as if the settings are spot on the motor tends to harden up when overtaking.

The third semi saw another mix-up with subsequent re-run. As Nore came in to land, Baumgartner was already pitting, but the top cowl had fallen off his model and the Finnish team's lines snagged this obstruction. In addition the Austrian's model was off the ground, resulting in their disqualification. In the re-run, Plotsin suffered a badly missing run at first, but this picked up after 30 laps, but he needed three stops and recorded 4:15.1 – not good enough as it proved. Nore had worse problems – his Rossi going off tune needing a stop after only 10 laps, and then at 75 lap stage he missed a catch and had to run – back one segment, resulting in a 4:31.8 time.

The final thus consisted of one Russian, one Italian and one Austrian team – and promised to be fast! It was too, and completely uneventful, all pilots flying very fairly and all pitwork superb. Airspeed was virtually identical (only Onufrienko/Sapovalov not using groupers) and there were virtually no opportunities for overtaking. In the end the Russian team won due to their better range reducing the need for one extra pit stop – they landed at 40, 80, 120 and 160 laps (consistent!) while Bugl stopped at 33, 66, 103, 139 and 173 laps and the Italians at 33, 68, 100, 131 and 165 laps. Thus in 'the year of the grouper', a non-grouper user proved victorious, but it was far from the Russian dominated event that had been forecast!

On reflection, just what did happen to the Russian threat? Since their team trials when all the top teams qualified with sub-four minute times, speculation was rife – including rumours of them using piped Rossi's! However, as events proved, their new drum induction TMA's did not seem to live up to expectation, and were very marginal on range in some cases, although it must be admitted that had they used groupers then the results would probably have been very different. For once their usual tactics of arriving at the site at the last minute failed to pay off, they missed out on a major advantage, and were clearly shocked by this new development.

One last further point needs amplifying. Although the British teams may not have walked off with all the prizes (although we did receive third team prize in team-race), they worked extremely hard, and perhaps even more important worked as a team in every respect of the word. Even the supporters were not left out – John Gray performing much useful work on propellers for the T/R lads, while nearly



Brendel/Glodeck had very fast Rossi 15 mounted in Rumpel magnesium pan and inboard tank. Rather heavy at 520gm – uses Bartels Fischer/Nitsche prop. Same model as flown at our Nationals.

everyone was involved to some extent in making the groupers! Thanks must go to Dave Clarkson for swiftly purchasing the dozens (literally!) of hypodermic syringes from which the tubes for the groupers were made – it obviously pays to have a diabetic on your team! This we hasten to add was before Dave was co-opted onto the international T/R jury where he proved a tower of strength to the organisers, even if he did not expect to spend his holiday 'working'! In addition, no mention of the team can be made without thanking Gordon Isles for being Team Manager par excellence. Not only did he deal most efficiently with the contest side of affairs, he also acted as tour-operator (including arranging a cut-price party flight, nursemaid and general factotum to team and supporters alike. Thanks Gordon – never retire, 'cos we certainly will never find another worker like you! And finally, a word of thanks to Ron Irvine of Irvine Engines for his kind sponsorship in the form of supplying track suits for all team-members. No longer are the British recognisable as a 'scruffy bunch' – they now look and act like proper teams. PSR

Yer actual British team – all resplendent in track suits, courtesy of Irvine Engines. Standing (from left to right), are John Newnham, Pete Halman, Jim Mannall, Mick and Ron Tribe, Dave Rudd, Steve Blake, Richard King and Dave Smith, while in front are Bill Firbank, Malcolm Ross and Derek Heaton.



#### NATIONAL TEAM RESULTS

<b>Team Racing</b>	
1 U.S.S.R.	12:48.3
2 Austria	12:51.5
3 U.K.	13:20.8
4 Czechoslovakia	13:21.8
5 W. Germany	13:32.1
6 Bulgaria	13:33.5
7 Sweden	13:44.7
8 Holland	14:21.1
9 Switzerland	14:24.4
10 U.S.A.	14:41.4
<b>Aerobatics</b>	
1 U.S.A.	15.889
2 Czechoslovakia	15.521
3 U.S.S.R.	15.258
4 Italy	14.977
5 France	14.111
6 Japan	13.872
7 Holland	13.834
8 U.K.	13.564
9 Hungary	12.555
10 Belgium	11.963
<b>Speed</b>	
1 Italy	791 km/h
2 Switzerland	752 km/h
3 W. Germany	735 km/h
4 Hungary	729 km/h
5 France	694 km/h
6 U.S.S.R.	682 km/h
7 Spain	681 km/h
8 Sweden	655 km/h
9 Holland	642 km/h
10 U.K.	635 km/h



## ERIC COATES' FLYING SCALE COLUMN

Dennis Bryant's Pfalz D.XII is covered with Coverite lozenge pattern covering material. This is an iron-on type material, but is woven, not a plastic film, and available from the sole U.K. importer, Vernons Models Supplies of 69 Clive Close, Potters Bar, Herts. Expensive, but saves hours of painstaking work with the paint brush!

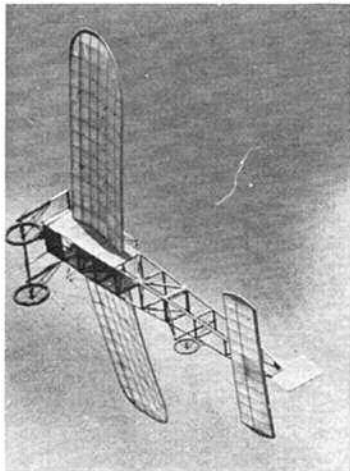
THE GOOD WEATHER which seems to be blessing the major scale events this season again beamed on the S.M.A.E. All Scale Meeting held at Little Rissington on July 14th. After a fortnight of relatively bad weather a calm morning greeted prospective competitors on the airfield. The wind remained light during the morning when the first rounds in all competitions were flown, but this freshened up to around force 3-4 in the afternoon, dissuading the majority of the F/F flyers from taking their second and third flights. The majority of the more robust Class 2 Radio models flew throughout the afternoon, showing once again how much better this class of scale model copes with average English conditions - hence its great current popularity.

Seventeen entries were made in R/C, of which 15 flew. It was a very closely-fought battle for the first three places, which went finally in the order of merit of the static marks. The flight scores were in fact a reversal of this order. C. Moss, flying a Messerschmitt Me 163, having the highest flight score yet finishing third. Impressive as this model appeared darting around the sky, marred to me I am afraid by the yellow disc of the propeller flashing in the sunshine, I was most surprised that the judges awarded it a higher flight score than the typically superb performance put

in by Brian Taylor flying the *Spitfire Mk. 1a*. I have heard people remark that Brian flies his 'Spit' too slowly, and in these days of 600 m.p.h. airliners I suppose it must be hard for the younger generation to realise that the Battle of Britain was fought with fighters capable of not much more than half this speed. As if to verify the realism of Brian's flying, shortly after he landed that familiar nostalgic Merlin crackle could be heard in the skies and a lone Spitfire flew over the airfield at about 8,000 ft., showing that if anything Brian flew too fast!

Winner of the event was the *Tipsy Nipper* of Jack Sheldon. This model is, of course, a Class 1 model if ever there was one. A lot of people hold the opinion that obvious Class 1 machines, such as this, should be barred from Class 2 competitions. I cannot agree with this point of view as if a model, carrying a tremendous amount of detail (and hence extra weight) as this one, much of which is not considered during Class 2 judging, can be made to fly as well or better than the majority of models which should be lighter (but very often aren't) then such a model deserves to win. There may be a case for a novice's competition, when such people as Jack and Brian would automatically be barred, but this is outside the terms of reference of the S.M.A.E., and is really more the province of the Club rally.

I flew the *D.H.9a*, for the first time in competition this year, in the F/F event, in the relative calm of the forenoon and apparently won quite comfortably. Vic Driscoll's venerable *Wapiti*, undoubtedly a better model than my 9a, was not performing particularly well that day and came second. The pendulum elevator seemed to be kicking it about the sky in some very unscale-like lurches. On his second flight, however, once clear of the ground it steadied and made a fine sight with its silver wings against the blue sky to record a time of 2:35; finally descending at the other side of the airfield. In third place was Dick Hibbert flying the *Gladiator* I first saw at the Old Warden meeting. Dick unfortunately lost this model for a two-hour period after a trimming flight in the morning and, therefore, missed the calm period. It was really quite windy when he flew, his first flight turned right and ended up in the usual prang; luckily on the grass. No serious damage ensued and the 'Glad' was airborne again for a second attempt 10 minutes later. After another failure, chiefly caused by the weather,



No, the picture is not shown the wrong way round, that really is the climbing attitude of Dennis Binnie's free-flight Bleriot. Huge model refused to stall and had superb glide!

his last flight was a beauty in the difficult conditions. Since Old Warden a Frog 100 has been fitted which provides sufficient power for this 26 oz. 1/12th scale 'heavyweight' to beat the elements.

The most amazing flight was provided by the *Bleriot Monoplane* of Denis Binnie. This huge model (17 in. chord mainplanes) is now powered by a Rivers 3.5. Immediately after hand launch the nose reared up to an angle of 60 degrees – a stall, followed by a sickening crunch, seemed inevitable but no, the model continued to climb in this attitude at about 3 m.p.h.! What Monsieur Bleriot would have made of it I know not, but I cannot think the judges, Ron Moulton and Denis Thumpston, can have awarded a very high mark for realism in flight! After about a minute's engine run a height of around 100 ft. had been attained. When the engine stopped the model dropped its nose to the horizontal and the glide that followed must have been the envy of Elton Drew competing alongside in the Area centralised glider competition. A truly remarkable flight. How about 30 degrees downthrust Mr. Binnie?

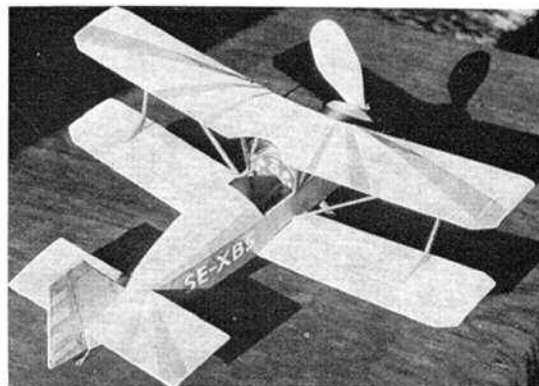
F/F being flown at the opposite end of the field prevented me observing any of the C/L flights. There being only four competitors it was all over when I returned downwind to view this and the radio.

#### Results:

		Best		
R/C Class 2		Flight	Static	Total
1. J. Sheldon	<i>Tipsy Nipper</i>	933	1170	2163
2. B. Taylor	<i>Spitfire Mk.1</i>	1004	1100	2104
3. C. Moss	<i>M.E.163b</i>	1025	960	1985
Free Flight				
1. E. Coates	<i>D.H.9a</i>	955	632	1581
2. V. Driscoll	<i>Wapiti</i>	650	772	1422
3. R. Hibbert	<i>Gladiator</i>	720	505	1225
Control Line				
1. M. Staples	<i>Avro 504K</i>	686	1118	1804
2. D. Ashfield	<i>Albatros D.V.</i>	745	632	1377
3. W. Cordwell	<i>Avia B.4</i>	635	555	1190

Although not competing, a very interesting model at Rissington that day was Dennis Bryant's *Pfalz D.XII*. The first R/C version of this fine W.W.I German fighter I have seen. The most interesting feature of this machine was the lozenge fabric covering of the wings. Dennis had used the new American iron on *Coverite* material; distributed in the U.K. by Vernon's Model Supplies. This comes in two scales, 1/6th and 1/8th, so is only suitable for relatively large models. Although it is not strictly necessary, Dennis had also doped and fuel proofed his wings

The 'Ugly Duckling' from Peck Polymer – a Nesmith Cougar which nonetheless holds U.S. 'Peanut' duration record.



One of Peck Polymer's latest addition to their fast growing range – the attractive Andreasson BA4 – kit is based upon the drawing published in the November 1969 issue of this magazine. Nice flier.

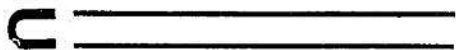
with eggshell polyurethane varnish. At around £4 per square yard retail in the U.K. it is an expensive way of covering (£16 for the Pfalz wings), but it looks far more convincing than any lozenge paint job I have seen – and infinitely quicker, and easier, to apply. For enthusiasts of W.W.I machines there is no doubt now that British Prototypes are not only best from a flying standpoint and are a darn sight cheaper to produce, Khaki paint still being less than £1 a pint!

\* \* \*

The great interest being shown in Peanut models in the U.S.A. has resulted in quite a number of kits for these diminutive models appearing in that part of the world. Some I have seen are good, others indifferent and some pretty awful... The most consistent line of kits for quality with sensibly chosen subjects, which are not too difficult to build and get to fly reasonably well, appears to be Peck Polymers; several of which I have already reviewed in this column. The two latest released, sent to me via John Stennard of *Small Scale Services*, are eminently suitable for contest work – the *Nesmith Cougar* and the *Andreasson B.A.4*. The former is a rather ugly American homebuilt, not unlike a vintage cabin rubber duration model of the 'Ajax' era. Not surprisingly then this model holds the current American Peanut duration record with a flight of over nine minutes – made, presumably, outdoors with thermal assistance! These kits arrived a week or two before the first-ever official S.M.A.E. Peanut competition to be held on August 17th at Cardington. (I hope to report on this competition next month.) I rushed the prettier *B.A.4* together in a weekend to fly in this event and passed the ugly sister over to Lee Bees clubmate Norman Hudson to complete in a more leisurely fashion. These kits follow the standard of

continued on page 556

# BETWEEN THE LINES



by Dave Clarkson

Attractive semi-scale Class B racer by Barker/Orriss/Hill uses Eta 29 on 10 per cent nitro fuel which usually results in 100-105 m.p.h. for 40 laps range. Prop is cut down Bartels 8 x 8 in.



## THE YEAR OF THE GROUPEUR

We aeromodellers are an ingenious lot. Whenever rules threaten to stagnate the level of performance then science and no little brain work comes to our aid, shortly followed by frantic dandruff displacement by the rule makers in an effort to restore the *status quo*. This particularly applies in speed where of mono-line, tuned pipes, power increasing fuel chemicals and now groupers, possibly only tuned pipes will last into 1975 (most of these improvements having been banned years ago). Of course the speed boy's improvements have usually found almost exclusive use in speed because they have been developed for this purpose, but every now and then they come up with a beauty that is universally applicable. First it was Super Tigre's open-loop porting, then the TWA's Schnuerle porting, and now it is line groupers.

Line groupers? — let us look at some theory. With two lines hanging in the air and well separated, then the drag produced is twice the drag of one line (logical). However, if one line can be arranged to always lie directly behind the other with only a tiny separation, then the drag is much reduced, to about 1.2 x the drag of one line. Sounds simple, but for years people have tried to achieve such an arrangement. This year in Italy the Super Tigre speed team made the first successful demonstration of grouped lines (this accounting for the fact that they beat the Rossi 'team' in their trials). Following this, the details spread secretly around the world (strangely avoiding such places as Russia). Those who arrived early at the World Championships in Hradec Kralove (like the British Team did), and who had not got the message beforehand, had just enough time to 'get grouped'.

Before launching into how to make up grouped lines let me issue some warnings. As a member of the T/R Jury at the World Champs., I know that we had to disqualify two teams, and furthermore two teams were withdrawn with races unfinished by their team managers because their grouped lines had locked solid, resulting in uncontrollable models. If the world's best can have such problems, then so can we ordinary modellers. Grouped lines are potentially highly dangerous since if they are made up using line that is not naturally absolutely straight (i.e. no tendency to curl up), or if one small kink develops in the wrong place — near or in a grouper — or if foreign matter gets into any grouper, then all control disappears. When you realise that nearly all wire does have a natural tendency to curl and that between 30 and

150 groupers may be employed per set of lines, then I am sure that we can all see that the chances of losing control are high. Coupled with the fact that one set of grouped lines takes two people four hours to make, then I agree with those who wish to ban them. The other side of the coin is that successfully grouped lines give 5-7 per cent speed increase on team racers and, because line drag is a bigger proportion of the total drag, 8-10 per cent speed increase on speed models.

There are two ways of grouping lines:—

### two-line hole single-line hole

The two-line hole method is easier to use but is more likely to give trouble as, opposed to the single-line hole method which is a real pain to employ but gives better control. I explain these below.

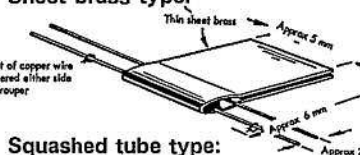
### Two Line Hole Method

This method employs pre-made groupers which comprise a small aerofoil with an elongated hole through the front, through which both lines are free to move. The individual groupers may be of plastic or metal — the Italians used nice moulded plastic ones whereas the Germans used hand-filed ones from squashed aluminium tube, and the Swiss cruder ones from sheet brass. Some typical dimensions are given in sketches below:

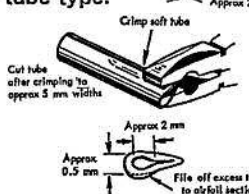
### Moulded plastic type:



### Sheet brass type:

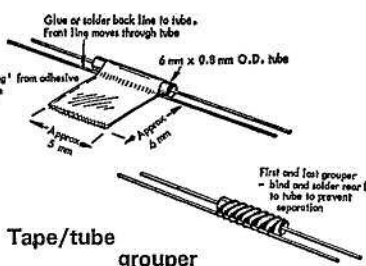


### Squashed tube type:



### Single-Line Hole Method

A real pain is this one. One 'obtains' some 0.8 mm. outside diameter, 0.4-0.5 mm. internal diameter tube, cuts it into 6 mm. lengths, deburrs/bellmouth both ends and then loads the required number of these onto the front control line. Each tube is then glued or soldered to the back line (do not get glue or solder into the tube or onto the front line or trouble lies ahead!), see below. Each one in the correct place spaced as required. Now — a few hours later (oh! the pain) — 'flag-up' using sticky tape, trim the flags to size and finally make up the loops at the ends as per usual.



### Tape/tube grouper

Simple and easy wasn't it! As to the all important question concerning the number of and position/spacing for the groupers, the truth is that no one has had sufficient time to establish 'ideal' settings. At the Champs these varied from 30-150 groupers spaced at 3 in. to 10 in. gaps, going from one-third to two-thirds up the lines to the handle. If your groupers work then you get the speed increases already mentioned, if not you get a rather slow model! (just think of the drag of all those 'flags' sticking up into the airflow). The point is that the more groupers you use, the more chance there is of locked controls (a squashed or blocked grouper) and, if you exceed a certain grouper spacing which varies according to the type of grouper, the type of line and the air velocity over the line, then the turbulence created in the air by the passage of the front line will separate the back line with the resulting high drag.

There is one form of grouper that is a safety feature and imparts little or no speed advantage and this is the handle grouper. The advantage of a handle grouper is that it pulls the lines together close to the handle, therefore if the lines get snagged on the pylon or by another pilot, then both lines get

snagged and not just the down line (causing an instant crash) as normally happens. The common form of handle grouper is a brass ring or sleeve slipped over both lines 8 in. from the handle - a length of c/l wire between handle and ring hold it in place.

Any possible rule amendment banning line groupers should be so written as to allow handle groupers of this type.

### Viewpoint - Whatever happened to our Trials?

Despite the excellent results achieved by our team race men at the recent World Championships in Hradec Kralove, few would claim that the Trials last November could have produced the best team. There has been much correspondence in the S.M.A.E. newsletter *Model Flying* in the past months on this topic and I am sure that most of the interested parties are well informed concerning the pro-and-con arguments revealed there. The point was that doubt existed whether a one-day Trials held in winter conditions could possibly select the best team for a four-day contest in a foreign country held at the height of summer. As a result of this doubt, the S.M.A.E. C/L Technical Committee decided and announced via *Model Flying* that, as an experiment, selection for the 1975 European Championships Team would be on a multi-contest basis with an option for those for whom transport is difficult to put in all of one's qualifying flights (for T/R anyway) at a specially held Trials. This struck me as being particularly sensible, after all the S.M.A.E. (and that means many of us - the members) pays a lot of money in entering Teams for such Championship events and therefore we should experiment to determine how to select the Team most likely to succeed, especially when doubt exists concerning the present method.

For the first time for many years the S.M.A.E. will be selecting (I assume) a Combat team to represent the U.K. internationally - an event at which we should be totally dominant. Few Combat fliers would claim that the results of one contest can ever be conclusive because of the luck-of-the-draw element when it comes to selecting the best fliers, and for this reason the C/L Committee invited a highly respected and

Winners of the 1973 South African Postal International were, surprise, surprise, Heaton/Ross (or judging by the picture, revealing their magnificent prizes, Heaton/Heaton / Ross!). Since last year's event went down so well with the entrants (no entry fee for we foreigners - it must be unique!), the organiser, John Wellman invites entries for the 1974 edition. Send an addressed envelope with International Reply Coupon to John, at PN Box 11131, Johannesburg, Republic of South Africa, for details.



successful combat team to its deliberations on the subject of Trials. We therefore have two reasons for the multi-selectors experiment, firstly the doubt concerning the present system and secondly the combat team selection problem.

Sensible, logical, etc., the C/L Committee had done a good job (as I saw it anyway). However at the last meeting of the S.M.A.E. Council it was decided to cancel the whole thing well after this experiment had got well under way. Apparently the main reasons for cancellation were:-

- Some interested competitors had not learnt of the new selection procedure in time.
- Some of the nominated selection events were not directly organised by S.M.A.E. but were organised by Area Committees of the S.M.A.E.

I believe that the C/L Committee feels highly frustrated by this decision to cancel and I can understand why since the reasons for cancellation are rather weak. After all Area events are held under the auspices of the S.M.A.E.

since Areas are a constitutional part of the S.M.A.E. and the S.M.A.E. had at its disposal (and used) an excellent vehicle for communicating decisions to its members - *Model Flying*.

I suppose that now we have to fall back onto the one-day Trials system no doubt organised right at the end of this season or right at the start of the next - all just as before. We have lost a valuable opportunity to experiment with the best method of selecting the best team - a team that rightly commands priority in the allocation of the S.M.A.E.'s sparse funds. We will have all of the 'aggro' seen at the past Trials with the extra spice of a combat team lottery.

### Midland Area Rally - Wymeswold - 11th August 1974

Re-timed this year so as not to clash with other contests, this meeting produced a new U.K. final record in F.A.I. team race as well as a number of fine performances in this and the other events. The organisers had obviously put a great deal of effort into this

Seems ye editor has created a 'mini fu:ore' over the Nats T/R finals. Firstly, winners Helmich/Kroon (right) used the Bugl powered version of their camouflaged racer, not the Rossi as stated (sorry, all concerned, especially Paul Bugl - have to confess to making same errors last year, which must be some kind of record!). Secondly, it seems that the remarks made concerning the Dutch victory were misinterpreted. You may recall that their model and Heaton/Ross touched and that the situation was 'confused'. We certainly received as many versions of the occurrence as witnesses we asked! However, Henry Helmich and Jan v.d. Kroon would like to put the record straight: Derek had been trying to pass, and eventually managed to, but as he passed (low) the motor died. Henry, appreciating the situation, applied 'up' to avoid a collision, and just touched Derek's elevator with his sprung u/c. Henry blames no one, but got the impression that we disliked foreign teams winning at our Nationals. Far from it! Without Continental competition our own standards would still be way behind - the Dutch have become particularly good teachers!



contest and are to be complimented on a deservedly successful Rally. The weather was dry throughout with the wind at first quite blustery but reducing through the day to almost nothing.

#### Goodyear

The feature of the day was the failure of the Feltham glow merchants to 'produce' anything, essentially owing to blown plugs and generally bad re-starts which also assailed the equally fast glows of Daly/Howard and Mr. Salisbury and friend. In the first round our MVVS threw a rod, and with it about a quarter of the piston. A rod replacement (we had a spare) and some hand filing of the piston to remove ragged edges and get it round again had it O.K. for the second round and subsequent flights - maybe sub piston induction helps because we did our fastest ever Goodyear final to win! With Malcolm Ross and Jim Woodside on holiday, Derek Heaton teamed up with Pete Sutherland to fly Pete's models, and surprised themselves (and the rest of us because both are normally pilots) by qualifying for the Final which was completed by Davies/Broadhead of Wharfedale with their Taipan 3.5 BB Schuerle glow powered Argander. The novice final had the youngsters (and little too) Allcock/Gennard dwarfed by novices Bryant/Haycock and Walker/Woodhead.

#### Open Final

1. Clarkson/Daly (Norwest) MVVS Deerfly
2. Heaton/Sutherland (Norwest) ETA Deerfly
3. Davies/Broadhead (Wharfedale) Taipan 3.5 Argander

#### Novice Final

1. Bryant/Haycock (Feltham) G.15 RV - Deerfly
2. Allcock/Gennard (Tipton) MVVS - Argander
3. Walker/Woodhead (Nottingham) MVVS - Argander

Note all the Deerfly/Argander's - where oh where have all the Ginnys gone?

Glen Alison with attractively decorated version of Steve Blake's 'Starmaker' design weighs 42 oz. and uses Fox 35 with O.S. silencer for power.



#### F.A.I. Team Race

With a new Final record achieved by winners Hammond/Williams of Feltham using an 11-year-old G.20D in one of their beautifully constructed and finished models, this was one of the most competitive races of the year. The distinctive Bugl exhaust is becoming a familiar sound on the British contest field since no less than four teams used these motors - Tribe/Fry (new combination), Smith/Harknett, Neville/Graham and Langworth/Williams. Strange that these should be headed by much more mundane motors - the aforementioned G.20D and our K&B. Most teams now have models that will do under 4:50, which must be discouraging for newcomers. For the semis John and I produced our grouped lines much to the disgust of the other competitors (sorry lads) to record the fastest heat of the day at 4:23. Other fast heats were:

Smith/Harknett	4:36 (Bugl)
Tribe/Fry	4:36 (Bugl)
Langworth/Williams	4:42 (Bugl)

and also again to everyone's surprise Heaton/Sutherland with a 4:55 (good pitting Petel).

In the final, Hammond/Williams pulled out a real surprise finding ten extra laps range over their earlier range of 26 laps. We tried too hard shooting for a 4-stop final. After stops at 40 and 80 laps (compression adjust at 80) the model came down at 119 laps so John leaned it - too lean for we came down again at 121 laps and then proceeded on doing just under 40 laps per tank to do our last stop at 195 laps. Meanwhile Bernie Langworth had retired when his Bugl stopped rather ominously (and expensively?) and Hammond/Williams going on really fast and faultlessly to record this new U.K. Final record done, let it be said without the assistance of line groupers and with a cracked liner. No doubt about this record since Jim Hammond had both Bernie and myself to keep him 'in order' in the middle and all three models were doing much the same airspeed (Bernie's Bugl only doing 29 laps per tank though).

1. Hammond/Williams (Feltham) 8:50
2. Clarkson/Daly (Norwest) 9:18
3. Langworth/Williams (Wharfedale) rtd.

## FLYING SCALE COLUMN continued from page 553

their earlier counterparts, i.e., good quality wood, very clear plans and lightweight plastic wheels of  $\frac{3}{4}$  in. dia. (Incidentally, these ultra lightweight, backless, wheels are available separately from John at 6p a pair and complementary 1 in. dia. jobs at 8p a pair.) Two changes, however, have been introduced - the 5 in. diameter Kaysun prop has been replaced with a somewhat cruder  $5\frac{1}{2}$  in. narrow bladed unit with a ratchet freewheel moulded in the hub. This looks suspiciously like the prop fitted to the ready-to-fly *Sleek Streak*. The other change, which definitely is not for the better as far as mail order customers are concerned, is that the stout lidded cardboard box has been substituted by an eye-catching, three-colour flimsy carton.

Long standing readers of this magazine will remember that Walt Mooney's drawings of the *Andreason B.A.4* were featured in November 1969 issue as the original peanut plan in a British publication. The Peck kit is based on an update of these drawings. It all goes together very nicely and the three colours of tissue plus the press-on decals enable a reasonable reproduction of SE-XBS to be made. I did not use the kit prop, but cut down one of my favourite Tern 6 in. paddles to 5 in. diameter. Ample  $\frac{1}{4}$  in. strip rubber of really excellent quality is provided in the kit, a single loop being an ideal combination for this prop and model.

It is always best to trim 'Peanuts' outside over grass in calm weather rather than in the hangar as the ground is more forgiving until you get the trim right. It was hardly calm the night I trimmed the *Andreason* - at least seven knots of wind. The stability of this little machine, however, is amazing. It coped with the breeze as well as a duration model. No ballasting was required; the C.G. was perfect at about 50 per cent of the upper chord. Only trim required was  $1/32$  in. downthrust and a bit of right rudder and she was climbing to 30 feet or so on a couple of hundred turns followed by an excellent glide. Indoor flying reports will follow next month - a highly recommended kit.

Latest Peck Polymer 'Peanut' kits are supplied with this rather narrow-bladed unit in lieu of the excellent Kaysun props. A ratchet free-wheel system is moulded into the hub - the whole unit strongly resembling that fitted to the ready-to-fly *Sleek Streaks*.





# FREE-FLIGHT COMMENT

by John O'Donnell

Brian Faulkner launches his magnet steered glider from the slopes of Ciywd - uses glass fibre rod fuselage on simple V-dihedral design.

TRADITIONALLY there is a tendency to regard model flying as a summertime pursuit, enjoyed to the full in the warmer weather (and longer evenings). This might still be true for other branches of the hobby - but not for the contest side of free-flight. Recent years have seen a marked reluctance to stage major meetings in the period from about mid-June until late August. The reasons are not hard to find.

The modern free-flight model, with its performance boosted by skilful thermal utilisation, needs a considerable amount of space for a contest flight in even a moderate wind - hence it is only too liable to overfly the available facilities. The surroundings of most airfields consist of farmlands, with a high percentage of fields containing growing crops, and there are obvious problems with retrieving models. None of this is new - but once it was only relevant to the odd thermal flight of an occasional model. Nowadays the same downwind region is apt to receive a cloud of D/Ting gliders, and the problems are magnified enormously.

This situation applies world-wide of course - and is part of the background to the still-liable Russian proposals to curtail the performance of World-Championship models. As an aside I would refer readers to the editorial remarks in last month's *Hangar Doors*, and to my own dissertation in the *May Aeromodeller*.

To some extent the problems inherent to free-flight can be side-stepped. For example there are venues *without* adjacent crops, and hence they would appear to be the obvious choice for summer events. The classic example was Chobham Common, but similar sites ought to exist elsewhere. Perhaps we should drop our 'airfield complex', and look a little further afield!

Security restrictions imposed earlier in the year at Topcliffe Barracks (as it now is) caused the Leeds Rally to be moved to Elvington and brought forward to 9th June. The change was for the worse in that the weather proved most unreasonable - and unpleasant. Immediately after events commenced at 10 o'clock there came rain, plus an increase and shift in the wind.

Competition Secretary John Godden then decided to cut maxs from three to two and a half minutes, and to reduce the number of A/2 flights from seven to five. Since the contests had already started, even if no-one had flown, these changes caused a certain amount of complaint. John admitted that his decisions were unconstitutional and that he might well be 'held to account' for them - but nevertheless he thought that they were expedient in the circumstances. In these days of delegation, sub-committees, and generally 'passing-the-buck' it is refreshing to encounter someone who will 'carry the can' for what he decides to do. I would criticise John's decisions in this instance - but not his approach to his job.

Ironically the wind dropped somewhat - and conditions were quite flyable for a while. Patches of sun gave rise to plenty of strong lift. However the wind increased in mid-afternoon, and the intermittent showers were hardly pleasant. Finally a lengthy period of rain in the late afternoon was followed by about 20-30 minutes of almost dead calm before the contests closed. This variable weather made for a rather strange set of results.

Winner of the Ciywd magnet steered slope soaring event at the 'new' Moel Arthur slope was Peter Dolby with long, tubular fuselaged glider of conventional A/2 layout but slightly more area.

All events were flown using a 'limit line' to prevent contestants moving downwind to fly tactically. The requirement was simply that models had to be launched *upwind* of the specified line - as distinct from being launched from a line as is the F.A.I. procedure.

A/2 was by far the most popular event with a total of over 30 entries and re-entries. The eventual winner was Mike Fantham with four maxs surrounding a middle flight of 2:18. This total was only five seconds above that of Dave Hambley who was 'lucky' in having a couple of 'close' maxs. The next two places were both achieved on re-entries - going to Terry Dilks and Pete Stewart respectively. The presence (not to mention success) of long-distance competitors at a Northerly venue is, in itself, note-worthy.

The combined mini event was well supported - if little more than an A/1 contest. First was Al Wisher with a factored-up total of 9:72, including four maxs. Second place went to Ron Firth flying a *Satellite* to a 9:04 total. Tony Rushby was third with a genuine 8:38 from his 1/4A model.

Russell Peers took Open Power with a treble from his K&B 40 powered Nationals winner. Main opposition came from Keith Harrison who cut his D/T too fine by three seconds on his first flight. Third was John Sayer thanks to Ewan Jones failing to hand-in his flight card after his final flight with his 1/4A model (which I timed o.o.s. at two minutes odd).

Open rubber was almost unbelievable in producing *no* trebles! Four fliers started with two maxs apiece - but no-one managed a third flight of 2½ minutes! 'Least worse' and event winner was Arthur Wharrie who attributed his final 2:16 to having got his model wet, and hence warped. Second place went to opportunist Barry Kershaw who realised scores were low, entered with but half-an-hour to go, and got in three quick flights with a Wakefield to total just under seven minutes. I tried the same approach just a little too early, i.e. before the wind dropped completely, and lost my notorious *Scram* in a very dense wood just outside the 'drome'.

Another late flier to seize his chance was Ewan Jones who used a brace of Mercury *Mallards* to max out in Vintage. This necessitated a fly-off against Al Wisher and his *Lulu* -



the only such decider of the meetings. Ewan won by nearly a minute to demonstrate that 20 seconds engine run has an advantage over 250 feet of tow-line. Doug Scott was only four seconds short of making the fly-off a three-way affair with *Pylonius*. The vintage event was run to N.A. rules – which are the same as the S.M.A.E.'s except for specifically prohibiting turbulators!!

Chuck glider saw Pete Bayram notch up another win – but only by a couple of seconds margin over John Turner. In third place and little behind in score was Dave Yates of my club. Final event was Precision – won by Ted Smales with an aggregate error of 11.9%. This is based on the difference between five times the entrants initial flight and his actual five flight total. Very modest flights seem the preferred approach.

Prizes at this meeting were in cash, the free-flight winners and placemen sharing a total of £30. This figure is well above the receipts from entry fees, so must reflect a subsidy from the host club.

The Fourth S.M.A.E. Area Centralised Meeting was held on 16th June, and from what I hear the weather seems to have been good throughout the country. At least there were high scores reported from widely separated areas – so perhaps this particular set of results means more than is usually the case when weather variations favour one end of the country.

Venue problems caused the North Western Area to fly with the Northern Area at Driffield – an airfield in East Yorkshire. Consequently a number of fliers elected to use the recently introduced option of flying on their own, or decentralised. This choice is available for those who are over 100 miles from an area venue. Presumably driving distance is the criteria, rather than that measured 'as the crow flies'.

Although Liverpool fliers did well at Cork (a mere 70 miles from Merseyside) the most successful result undoubtedly came from Keith Harrison flying on the already mentioned Helton Fell. He did an eleven minute o.o.s. fly-off to win the *White Cup* for open power. His model was powered by an O.S.15, flown with 14-15 minutes of fuse, and was returned a day or two after its fly-away. Runner-up was Russell Peers, flying his K & B 40 model at Driffield, and getting 8:18 down behind a wood on the immediate skyline. John West was third with a 7½ minute fly-off at Ashdown Forrest, just a little ahead of Pete Harris flying at Barkston Heath.

Both the other events were topped by Southampton club members flying at Beaulieu. Phil Ireland won the trophy-less Open Glider contest with 10:45, comfortably ahead of Dave Glue who got 9:11 at the same venue. I would expect that Phil used an A/2 and Dave the 100 in. model that did well at the Nationals. Third place went to John Burke (one-time of *Norwich* but now with the *Falcons*) who got just over eight minutes on his fly-off at Barkston Heath. These results could have been different as the next two fliers, Gerry Pink and Peter Scrivens both D/T'd early at the Western Area venue of Merryfield. Having heard that their fly-offs drifted in opposite directions I asked Gerry how long he might have been seen for without D/T – and got the answer 'indefinitely'. All-in-all there were 29 trebles recorded throughout the country from exactly one hundred entrants.

In all there were 29 trebles recorded throughout the country from exactly one hundred entrants.

Alan Jack won the *Weston Cup* at Wakefield with an eight minute fly-off. Perhaps I should explain that F.A.I. rubber and glider events have a single unlimited fly-off when con-

tested at these Area meetings. Alan attributed his success to his club's interest in the *Plugge Cup*, and hence to the provision of pilot models to mark lift for him. These tactics also helped Ted Rose to secure third place with a 20:41 aggregate. Richmond club members, flying at Bassingbourn, placed second and fourth nationally. Mike Fantham did seven maxs and a 2:10 fly-off, whilst Pete Williams managed a 20:21 aggregate. Joe Barnes, flying with his club at Cork, was the only other entrant to clear twenty minutes.

This type of contest has changed considerably since its original conception of providing local competitions for National contests. Nowadays some of the keener fliers will travel further than they need in order to use a better venue or, hopefully, obtain better weather. Some London Area members, for example, prefer Beaulieu to the alternatives. On the other hand, some fliers neglect their own Area venue to travel to a nearer neighbour. Bassingbourn attracts Stanstead members for just this reason. In other cases the home area cannot provide a suitable venue and its members are obliged to travel in order to compete at all.

Different areas react differently to visitors – and it is obviously sensible (and polite) to check prior to arriving. The Northern Area, for example, ask visitors to write for permission in advance – a formality intended to give them some measure of control over their attendance. There was a tendency at one time for a sizable portion of the country to favour Topcliffe, a situation that hardly merits the term 'area-centralised'.

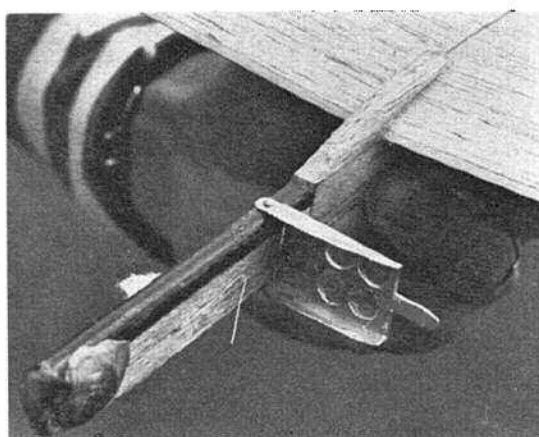
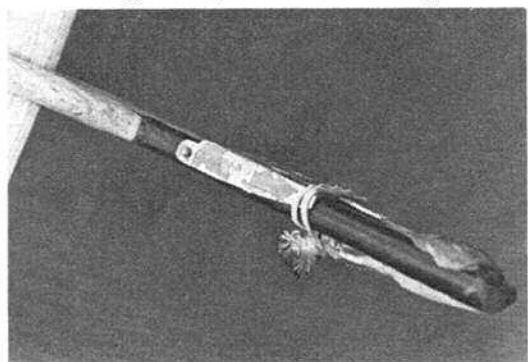
Beaulieu was the venue for the Southampton Free-Flight Gala held on 23rd June, and I have Alan Jack to thank for both results and a prompt and comprehensive report, which I have had to abridge.

The weather forecast was not good, with a prediction that the wind would freshen to force 7 by the end. In fact the wind started from the east at 10:15 m.p.h. – a direction which provided almost 2½ miles of heath. As the day progressed the wind gradually fell and by 4 o'clock was virtually flat calm. The wind eventually reversed in direction facing a move at fly-off time when the drift was only about 5 m.p.h. The sky was overcast all day and apart from a few spots of rain during the fly-offs was dry and fairly warm. Lift early was plentiful if not exceptionally strong and followed typical heathland 'bubble' type nature. As the wind dropped so did the thermal activity – to the discomfort of the glider fliers.

There were two glider classes, A/2 and Open, both flown from a line. No-one complained about this double innovation. Indeed many were happy to enter the second comp. when things went wrong with their first entry. Only Pete Williams did well in both classes. One thing was obvious – entry takings were increased sharply from the same number of fliers. Most used the same models in both classes but, knowing that an open fly-off was inevitable, the psychology was a little different.

F.A.I. glider was the premier event with a £10 prize. Flying was slow to start and most subsequently regretted their reluctance with the sparsity of lift later in the day. Groups of circling birds attracted many glider fliers, but were apt to indicate swarms of insects rather than thermal lift! The usual long waits were seen, especially as many models showed no evidence of lift until past the line. The winner Bob Bailey showed much patience after getting his first three maxs fairly quickly. Mike Fantham, Dave Barnes and Pete Williams all had three or four early maxs, but dropped late flights. Cliff James eventually 'split' Mike and Dave, flying well after dropping his second flight. Both Mike and Cliff had to re-enter to obtain success.

Now you see it, now you don't! Nose detail of John Tipper's Nationals winning chuck glider reveals the fuse operated vane-type dethermaliser. Despite this, he still lost one model in the contest at 16 minutes out-of-sight!



The Open Glider fly-off was in fact held last in order to expose the models' still air performance. A large lightweight would have been ideal for the conditions, but the five participants all flew A/2s. Pete Stewart was first to tow and after a 400 yard run found definite assistance to do a competitive 2:54. The rest surprisingly decided not to follow. Subsequently Dave Digby, Steve Marriot and Martin Shepherd towed one after the other to find little help. Dave and Steve tied with 2:10, and later flew off again to resolve the situation. Steve was then the better but by little margin. Pete Williams waited till near the end of the fly-off period and found reasonable air to place second with 2:34.

In the open power event virtually everyone max'd out, hardly a surprise in such benign conditions. A couple of fliers had to re-enter to record their troubles! In the fly-off there were a couple of patches of 'good' air. Laurie Burrows found help worth perhaps an extra 30-60 seconds with his F.A.I. model. Likewise Pete Harris had help, but Russell still beat him by five seconds without apparent assistance. Both were using 40 powered models. The second patch of lift, late in the period, saw John Hook do 8-9 minutes - but off an over-run.

Maxing in Open Rubber was also easy - with Trevor Grey being the only fly-off participant who needed to re-enter. The only good air during this fly-off was right at the beginning of the period. Norman Elliot got away a couple of minutes before everyone else and thus won him the contest. Ron New also flew early for second place. Trevor Grey flew in the middle of the period, did not climb too high, but glided well to come third.

The remaining scores seemed low considering the perfect conditions. Binoculars were allowed for the contest flights but not for the fly-offs. The reasoning was that open-ended flights should not become a test of the fliers' ability to provide telescopes better than their fellows. The responsibility for providing the hardware would surely fall on the competitors in any practical situation. In fact all fly-offs were timed to the ground.

The prize money was made up of £25 donated by interested club members, and a similar sum collected in entry fees. Distributing this amongst the winners of the four classes provided better rewards than is customary. There was also a £2 junior prize, worked out by expressing the participants' place as a percentage of the entry in that event. Anthony Fantham was a clear junior winner.

\* \* \*

On the same weekend the Chester club held its annual Clywd Slope Soaring Rally. Although now principally a two-day Radio event, a free-flight-cum-magnet contest was run on the Sunday.

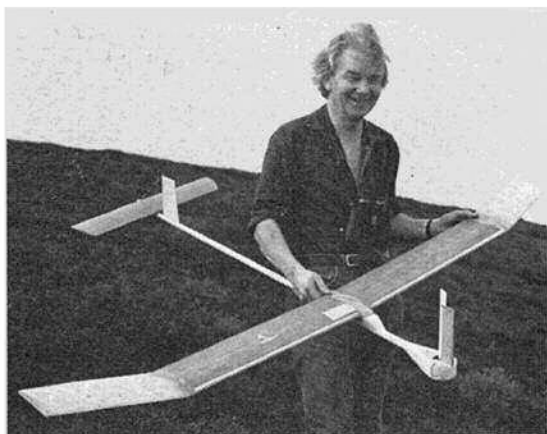
Due to the prevailing wind directions a new and hitherto unseen site was used for the contest. Moel Arthur, as it is called, was less impressive than the usual mountain as regards altitude - but was indisputably a better test of soaring ability. The wind was light, but provided adequate lift. It was decided on the day to run the contest with three flights to a four minute max, and this proved a good choice in the conditions.

I have seen magnet models fly well before, but not several together in different hands, nor so consistently. This class of model has acquired a certain mystique that seems unjustified - provided that the model is designed and set-up correctly there seems little about magnet models that could not be handled by any competent free-flight modeller. The examples at Clywd were not extreme in either design or construction - but most flew well and consistently.

The contest was won by Peter Dolby of Sheffield with one max and two just a few seconds short, giving a total of 11:46. This was half a minute ahead of his clubmate Jeff Palmer, and regular participant Roy Sutton. Peter's winning model was a little larger than A/2 area with a 7 in. chord wing mounted on a long turbulator fuselage. The design in fact was conventional for this class of model, it is only fair to comment that the winners, plus Paul Fynn (who put himself out of the prize list with a bad flight caused by a mis-set forward fin), treated this event quite seriously - and have obviously done a considerable amount of flying. To encourage others they are hoping to run a special 'private venture' contest for this type of model later in the year. Details appear in the *Contest Calendar*.

The junior event was also contested, if with more enthusiasm than duration. Winner was Christine Gregory of Sheffield flying a tipless version of the Graupner Junior A/1. There was nothing more to this modification than a lack of time to complete the construction! Even so it flew better than the opposition from the Chester Club.

The awards comprised shields for the two winners, plus the *Gosling Trophy* for the best single flight. The latter had a tie at 6:39 between Jeff Palmer and Ray Sutton, a coincidence that is a little less remarkable when it is remembered that both were using similar D/T timers wound right up! Neither flier was willing to push the other to a fly-off - and they agreed to share the trophy for six months each.



Second placed at the Clywd meet was Jeff Palmer with short nosed soarer. Magnet steering is not the 'black art' which it appears - see *Contest Calendar* for details of next event with novice prize.

## RESULTS

### Penrith Gala, Helton Fell, 2nd June

Open Rubber, 1. R. Peers (Falcons) 6:17, 2. J. B. Maxwell (Wigan) 5:02, 3. J. O'Donnell (Whitefield) 1:28. Open Power, 1. R. Peers (Falcons) 7:11, 2. J. Sayer (Darlington) 5:59. Open Glider, 1. J. O'Donnell (Whitefield) 6:00, 2. D. Hambley (York) 5:53, 3. J. B. Maxwell (Wigan) 0:45.

### Leeds Rally, Elvington, 9th June

A/2 Glider (5 x 2½ mins) 27 entries and 4 re-entries. 1. M. Fantham (Richmond) 12:18, 2. D. Hambley (York) 12:13, 3. T. Dicks (Falcons) 12:03, 4. P. Stewart (Crookham) 11:38. Open Rubber (3 x 2½ mins) 12 entries plus 2 re-entries. 1. A. Wharrie (York) 7:16, 2. G. Kershaw (Liverpool) 6:55, 3. R. Firth (Vulcans) 6:18. Open Power (3 x 2½ mins) 7 entries plus 1 re-entry. 1. R. Peers (Falcons) 7:30, 2. K. Harrison (Penrith) 7:27, 3. J. Sayer (Darlington) 6:44. Combined Mini (5 x 2 mins), K factor used, 13 entries. 1. A. Wisler (Croydon) 9:27, 2. R. Firth (Vulcans) 9:04, 3. C. A. Rusby (Grimsby) 8:38. Chuck Glider (5 from 91 min) 19 entries plus 1 re-entry. 1. P. Sayram (C/M) 4:12, 2. J. Turner (Darlington) 4:10, 3. D. Yates (Whitefield) 3:52. Vintage Duration, (3 x 2½ mins) 10 entries. 1. E. B. Jones (Sunderland) 7:30 plus 3:24, 2. A. Wisler (Croydon) 7:30 plus 2:27, 3. D. Scott (Morley) 7:26. Open Precision (4 entries). 1. E. Smales (Blackburn A/C) 11:9 per cent error, 2. B. Harding (Darlington) 14:3 per cent, 3. F. Burke (Leeds) 15:3 per cent.

### Fourth S.M.A.E. Area Centralised Events - 16th June

"White Cup" (Open Power) 45 scores 6 trebles. 1. K. Harrison (Penrith) M plus 11:07, 2. R. Peers (Falcons) M plus 8:18, 3. J. West (Brighton) M plus 7:38, 4. P. Harris (Evesham) M plus 7:17. Open Glider (100 scores 29 trebles). 1. P. Ireland (Southampton) M plus 10:45, 2. D. Glue (Crookham) M plus 9:11, 3. J. Burke (Falcons) M plus 8:02, 4. G. Pink (Bristol & West) M plus 6:49. "Weston Cup" (Wakefield) 57 scores. 1. A. Jack (Southampton) M plus 8:01, 2. M. Fantham (Richmond) M plus 2:10, 3. E. Rose (Southampton) 20:41, 4. C. P. Williams (Richmond) 20:21. Plugge scores after 3 events. 1. Southampton 790 points, 2. Norwich 702 points, 3. Crookham 586 points, 4. St. Albans 585 points.

### Southampton Free Flight Gala, Beaulieu, 23rd June

A/2 Glider (5 x 3 mins) 28 entries plus 8 re-entries. 1. R. Bailey (St. Albans) 15:00, 2. M. Fantham (Richmond) 14:52, 3. C. James (Crookham) 14:47, 4. D. Barnes (Liverpool) 14:07. Open Glider (3 x 3 mins) 30 entries plus 8 re-entries 5 trebles. 1. P. Stewart (Crookham) M plus 2:54, 2. C. P. Williams (Richmond) M plus 2:34, 3. S. Marriot (C/M) M plus 2:10 plus 2:20, 4. D. Digby (Croydon) M plus 2:10 plus 2:05. Open Rubber (3 x 3 mins) 17 entries plus 1 re-entry, 11 trebles. 1. N. Elliot (Croydon) M plus 7:26, 2. R. New (Croydon) M plus 5:59, 3. T. Grey (Sittingbourne) M plus 5:27, 4. B. Hyde (Torbay) M plus 5:15. Open Power (3 x 3 mins) 13 entries plus 2 re-entries, 10 trebles. 1. R. Peers (Falcons) M plus 5:43, 2. P. Harris (Evesham) M plus 5:38, 3. L. Burrows (Blackheath) M plus 5:05, 4. C. Chapman (Torbay) M plus 4:32.

### Chester Slope Soaring, Moel Arthur, near Mold, North Wales, 23rd June

F/F-cum-Magnet. (Senior) 6 entries. 1. P. Dolby (Sheffield) 11:46, 2. J. J. Palmer (Sheffield) 11:17, 3. R. Sutton (Leak) 11:09. Junior 3 entries. 1. Miss C. Gregory (Sheffield) 1:23, 2. D. Wolley (Chester) 0:48, 3. K. Hewitt (Chester) 0:29. Gosling Trophy (best single flight). Tie, J. J. Palmer (Sheffield) & R. Sutton (Leak) 6:39.

### Club Championships, Stradishall, 30th June

Club Placings 13 clubs entered. 1. St. Albans 269 points, 2. Southampton 252 points, 3. Stanstead 242 points, 4. Norwich 240 points, Anglia 240 points. Individual Rubber 23 entries 14 trebles. 1. M. Pressnelli (St. Albans) 9:00 plus 8:38, 2. D. Smalley (Norwich) plus 8:32, 3. J. Hopper (Stanstead) plus 7:26. Individual Power, 22 entries 9 trebles. 1. R. Peers (Falcons) M plus 7:16, 2. R. Bailey (St. Albans) M plus 5:38, 3. J. Hook (Southampton) M plus 4:58. Individual Glider, 32 entries 15 trebles. 1. S. Bowles (Norwich) M plus 3:50, 2. G. Read (Anglia) M plus 3:10, 3. J. Cooper (Southampton) M plus 2:58.



THE EIGHTH annual SAM Champs was scheduled for Lakehurst long before the creation of the AerOlympics and thus became part and parcel of the week long festival of model flying. It contributed 19 events.

SAM rules are long established and are based on two datelines. Designs which were kitted or published prior to December 31, 1938 are *Antiques* and those which appeared prior to December 31, 1942, are *Old Timer*. Anything post 1942 has to come into 'Special Event' classification. All *Antiques* must use spark ignition engines for which the engine run is either 30 secs or is limited by

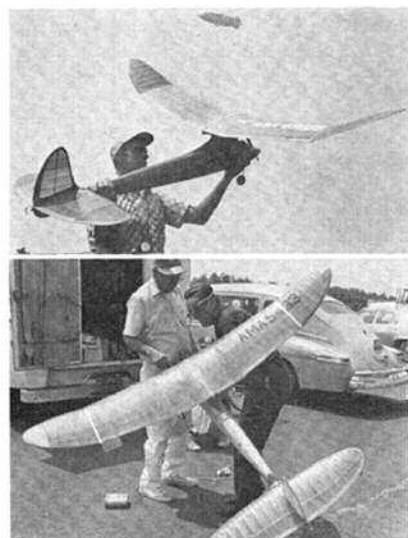
$\frac{1}{8}$  oz of fuel per lb of model, or 5 seconds per lb of model weight, according to the event, and all flights are R.O.G.

*Old Timers* can use any kind of ignition and the usual engine runs permitted are 10 secs for glow hand launched, 15 secs glow ROG, 20 secs ignition hand launched and 25 secs ignition ROG.

Variations include the 'Texaco' for pre Jan '39 designs with ignition engines only, permitted  $\frac{1}{4}$  oz of fuel per lb of model up to  $\frac{3}{4}$  oz maximum and anything less than 4 minutes is an attempt! Half scale Old Timer is exactly what it says - for .049 engines and Replica .020 is for pre Jan '43

Top: Bruno Markiewicz says goodbye to Super Cyke Sailplane when 3rd max failed to D/T. Second Sailplane with Goodyear blimp flying over is Ted Patriolia's with ST35. Third sailplane is San Diegan's Larry Boyer's with ignition McCoy 60.

Below left: Mr 'OT' himself John Pond, check that 6,000 round trip Chrysler registration! Model is OR60 Dallaire. Below: R/C OT winner Leon Shulman and Super Zomby - hasn't lost his touch in thirty years of contest flying.





designs scaled down to suit the Cox .020 and allowed 20 secs run. This is a growing class which is bringing in many youthful fliers as distinct from the OT diehards. The latter are turning to R/C assist Old Timer which for us was the revelation of Lakehurst and the AerOlympics. All the thrills of a big ignition (or glow) 60 powered *Playboy*, *Sailplane* or *Zomby* roaring vertically for 20 secs with an R/C elevator trim to hold the climb angle are followed by a 10 minute max with  $\pm$  penaty points and a 75 ft circle spot landing. It is the nearest thing to deck-chair flying we've seen - and when thermals are

Top: Frank Kastory and son with Dick Korda Wake, was 2nd. Below, John Pond and Ron Moulton plus John Haggart's 'So-Long' (OR 29) flown to 5th place by proxy. Below right, still exchanging banter after 30 years of it - Frank Ehling and Joe Beshar, the greatest characters.

powerful, as at Lakehurst, R/C assist tends to look more sensible than casting precious vintage engines and hours of model construction up at risk in pure free flight. The losses in the vast surrounding woods were heartbreaking. Flying 'B' cabin proxy for John Haggart, we got a 5th - and all 4 above were at one time lost in those pines. Pete Freebrey made a *Firefly* for rubber stick class, placed 4th and was equally grateful to still have the model. It was great to see the *Korda Wakefields*, *California Champs* and other cabin rubber designs, even greater to see the pioneers still in action. What a wonderful fellowship they have and what a pleasure it is to be in their company.

Top: Mr Lakehurst, Cdr, Jack Bolton and some of his fleet. Holding back the Super Cyke Sunduster is Gerry Camp, came 5th. Right, the New Ruler, always a beauty, by Ed Rargus with Super Cyke.



# topical twists

by 'Pylonius'

illustrated by 'Sherry'

## Foam is the Spur

When looking at the price of new radio kits you are likely to hit the ceiling. But *that* need not be all that disastrous, for you could dislodge a few ceiling tiles, and with same build a super-cheap range of delta models. Already suitably carved pieces of kitchen liner are floating over our flying fields, cocking a sleek snook at the inflating world below, and who knows what you could do with a pair of old wardrobe doors or a roll of floor covering?

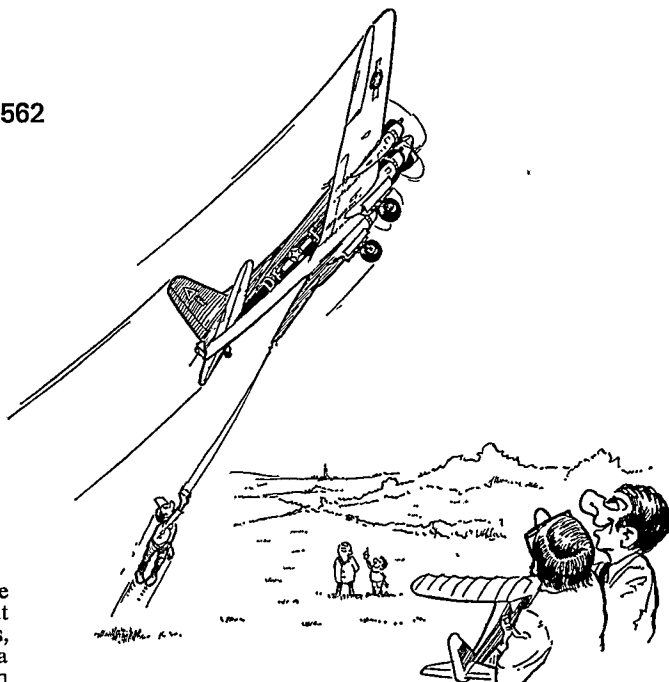
## 1910 and All That

'I say, Reggie, old chap, d'you mind giving us a heave with the old stringbag on to the back of the buggy? Whoa, there. Old Dobbin up front goes a bit flamey around the eyeballs when he spots the old flying machine – probably thinks it's some sort of horseless carriage. Matter of fact the only time it got airborne is when he gave it a swift jab with his rear hoof. New power system? I'll say. That compressed air engine would have got me the club altitude record had it taken the model with it when it blew up. It's back to the old elastic. Got it down to ten skeins this time, though. Twelve's no good, apart from using up six pairs of stays, by the time you've wound up the last one the first one has perished. At least I'll be able to give cook back one of her egg whisks – scrambled eggs will make a change from ditto models. Oh, yes. Old Scroggins will be down on the pasture with his steam-powered Antoinette. Even if it flew he wouldn't know it behind all that steam. And I know why he calls it Antoinette; one revolution and the head comes off. Club night. Bit of a shambles. "Make a model night" they called it. Each member was given two 6 ft. bamboo poles, half a bolt of sailcloth, 1 lb. grape shot and ½ gallon boiled size. Well, the old village hall was falling down anyway. What's that? You're going back to fretwork? Not a bad idea.'

## Flying for Fug

It is in the nature of statistical modern man that, instead of doing something about the filth that belches forth from our industrial chimneys, he sets out to measure it. Having tried to plot the pollution by suspending various forms of gadgetry into the appalling pall, he has found that trendy toy, the radio model, to be the most useful instrument.

One thing you can be sure of, though: even if the local population is in the last extremis of bronchial decline through the outpourings of the noxious effluent they won't complain about that, but the noise made by the model plane.



'He's lucky. One of the members bet him a fiver that it wouldn't fly.'

## Rice Off Ground

When it comes to slope soaring in the land of the Rising Sony, Japan, there is, apparently, plenty of model stuff to purchase but very little purchase on the rugged mountains. It is a question of high rise topography having too much top and very little else to upon. But not to worry; the way radio gliders are increasing in size – they now need two thermals: one for each wing – they'll be making molehills out of the mountains.

## Frill a Minute

The shortest distance from the workroom to the flying field – given an average sort of bank account – is a straight line on the model plan; and the more frilly that line becomes the more you have to sacrifice the carefree life to the weighty considerations of giving aid and sustenance to that arch enemy of the model flying: gravity.

But, perhaps I am thinking in old hat terms. I was brought up in the days when the prime objective of model flying was the grim business of basic levitation; whereas today the emphasis is very much on the thrill of the frills. You no longer seem to have to worry about that old 'simplicate and add lightness' injunction, but pile on the drop tanks, bomb racks etc., and compensate with a few extra revs up front.

Now, what allows the Scale model flyer to cope with all this dropsical deadweight is the modern magic of control, either wire or button, although the truly remarkable thing about a model plane, as opposed to any other form of flying machine, is that it can be made to climb, cruise, glide and land without any control at all. This peculiarity, and the challenge it presents, is what gives Scale free flight its particular zest, frills and all. And it's a tough life, where it is considered chicken to opt for the flyability advantages of the passable imitation rather than risk bomb racks, wire-spoked wheels and other flight despoiling embellishments in a dicey all or nothing bid for fame.

Much as I admire the nerve and expertise of the Scale Free Flyer, I am of that timid, preservation conscious school which believes that such things of beauty should be seen and not hurled.

# CLUB NEWS

---

WELL, IT'S BEEN a windy old season, with just that one glorious lull for our highly successful Nationals. But how do we cope with the battling breezes, generally. As far as free flight is concerned, I think we have learned, over the years, to make our models more robust without any significant increase in weight. A well-trimmed model will make out in almost any wind, but this certainly was not the case in the old rise-off-ground days when the incidence of crashery was very much higher than it is now. Yet, with all the progress, a strong wind is still a forbidding factor to contend with, and model box lids all too often remain discreetly closed.

But it's not the blowy winds that have the deflating effect on morale in that corner of England officiated over by the **South Eastern Area**, according to the July issue of the *S.E.A.D.O.G.*, it is the lack of anything much for the models to be blown across. Shortage of flying space has long been a chronic problem for flyers squeezed 'twixt Old Father Thames and breezy Brighton, but until a few years ago they did have not too distant Chobham Common as an outlet. Now that has been motorwayed out of existence the situation is pretty grim. Those obsolescent airfields which came to us as an unexpected legacy of the war, and upon which free flight has extended its now very demanding scope, are now being lost to us. We need lots of space, and it's hard to come by. One thing for sure; we cannot go back. Imagine holding a F/F contest on Wimbledon Common, or even in Hyde Park? However, the Area managed to fly off its 3rd Area F/F meeting in May. Entries were not high, but enough to make for a good competitive day out. From where to fly to what to fly with, and the question is raised in the newsletter of present-day rubber quality. It's the proliferation of sub-three-minute Wakefields that's got them worried. Or should they be that worried about performance with all that space problem on their hands? Personally, I think the modern stuff to be well up to standard – at least it doesn't break all that easily. And look at the performances people get out of Coupe d'Hiver with just six strands on a short loop. Perhaps the argument was scientifically settled by a chemist friend to whom the newsletter writer took a sample of stretchable for analysis. His verdict was that it contained 90 per cent pure rubber, making it a high quality product worthy of the most careful treatment. His tip is never to use castor oil – all right to oil the works of diesels and babies, but deadly to the quarter-strip. He suggests some silicon preparation, or, perhaps, pure glycerine.

Perhaps you do not need all that space for radio flying – although the more the merrier and the remoter the happier – you do need a lot of organisation, even for general flying arrangements, but it's a full-scale business venture involved if, like the **Sussex Radio Club**, you are mounting a Radio Control Airshow. Already a large and busy committee are thrashing out the multifarious details, headed by John Godfrey as

Airshow Manager. We wish it success. One thing about Radio flying which invites my envy is the way you can virtually ignore that bane of the free flyer; the blustery breeze, but on the occasion of the Sevenoaks Charity Rally, held in the beautiful grounds of the Valence School for Handicapped Children, the flyers were thankful for a gloriously calm day, for the operational area was not over large and well screened by 100 foot high trees. The first contest, 'spins' was exciting and spectacular, with models disappearing into cloudbase on 30-second motor runs, and then spinning down like mad to within heart-stopping distance of the ground before pulling out. Equally spectacular, but with added grace and rhythm, was yet another masterful display by the now famous Sussex *Skymasters* team. It looks as if formation flying will be the expected thing at the Radio shows of the future. Silent, but not lacking in speed and excitement, was the Longman Trophy for Slope Soaring Pylon held in early July. Whereas in most other sports machines are stripped down to get that extra bit of speed, you have to pile on the lead weight to give the slope soarers that gravital impetus around the hilly circuit.

The club motto of the **Tyldesley Model F.C.** is *Maximus Stickus*. Not being a Latin scholar the implication of this particular tag escapes me, but I feel sure that it is not, as it might seem, the anti-thesis of *Digital Extractus*. But where is Tyldesley? As far as I can gather, somewhere between Wigan Pier and the Manchester Rain Belt. Weather must be tough up there, for the club specialises in four-engined craft. In fact, the club can boast of being the first one in the country to run a four-engined flying school. The well-produced club mag carries a spectacular shot of a Concorde (the less expensive model type) doing a realistic snout take-off. Seems, though, the C.G. proved to be a bit too far to the rear, and whereas you can get a ballast shift on the full-size version by sloshing the fuel about the ship, it's not all that easy to effect with three ten-ounce tanks. Result was a full-blown stall at 60 ft. Survival report not given. The magazine lists a whole series of displays given by the club, mostly for charity, but from one, at least, the club hopes to raise the necessary funds for a new runway, 300 yards long by 100 yards wide. That's a lot of runway – bigger than many club fields.

From reports in *High Flyin*, the **Anglia M.F.C.** Radio fans appear to prefer to do their own thing rather than be involved in the competitive side of the aerial business. This has got their Comp Sec. worried, and feeling not a little neglected. He rightly points out that competition flying makes for accurate flying, which means complete mastery of your model. It is also, I feel, a way of getting model flyers together, and an incentive to raise your standards to those of the experts. Membership is high in the club; held at 100 in spite of a constant stream of applications. There is, however, a hint that the splendid flying facilities offered could be more intensively used. I usually drop in on the field on a Saturday, but spend more time dodging the cows than the radio models. What I have seen, though, is an increase in Radio Gliding in the club, and a few very sleek soarers are now to be seen gracing the rural scene.

Martin Floyd describes himself as the Secretary/Organiser and General Dogbody of the **Bristol Grammar School M.A.C.'s** Midsummer Fair display back in June. The club does not boast – at least not as yet – a prodigious membership: just eight to be exact, and even one of these dabbles heretically in

model trains. A credit to their industry, therefore, that they mustered no less than 46 models on display, although it must be said that over half were of the plastic kit variety. Flyable models there, too, though, but the Grammar space available was not all that comprehensive, and with no insurance available either, the model action had to be limited to taxying displays. At one point this threatened to get above 'O-level' when the throttle of the radio model stuck open, but the old playing fields spirit came to the rescue with some excellent crowd saving fielding. All in all, the club's efforts were well received, and no doubt more people will be tempted to give up those vices, like homework, for a spot of model building.

We often see those gleaming radio models paraded elegantly on the take-off strips, but if they are to retain their pristine condition rather than to provide extra work for the Wombles, they should have been properly and painstakingly prepared, according to advice given in the *Heart of England Aeromodellers' Circuit*. Good preparation is necessary for any model, but with radio you have a lot of fragile eggs in one expensive basket, and, as aircraft have that nasty all-or-nothing-approach to their role in the scheme of things, you just need one minor thing out of order. Like a binding pushrod, to finish up with the heap of the week. This, of course, is where clubs like the *Hearts* serve a vital purpose other than a useful social one; you can learn from experts at first hand. Emphasis on good preparation is strongly made in the newsletter, and so is the requirement of the radio modeller of a little theoretical knowhow, and the intangible mysteries that lurk around the C.G., are being explained in a series of easy-to-follow articles. Talk here of what may be the solution to all those noise pollution problems: electric power. Motors are a bit pricey at the moment, and, as yet, have no variable speed control, apart from blipping, but could well be the motive force of the future.

Back to the old juice type - juice power - and some, on the *Three Kings* Croydon Patch, according to *Court Circular*. It must be the spirit of those old Heracles that gives rise to the outbreak of multi-engined models. On one glorious day, Derek Bird was tempted to give his Model of the Month, *Grumman Mo-Hawk* its head. And this was the operative term, since, with a non-working throttle, it was an all-out performance, marred only by a somewhat lumpish

landing. This was followed by Geoff Burkett's *Lancaster Giganticus*. It was hoped that with throttles removed for extra power, it would rise to the occasion, but persisted in hedge hopping. No shortage of power, though, in Geoff's other model, a Fokker Triplane. It zoomed off to essay a series of manoeuvres not even attempted by the Baron in his prime. Trust the damage was only slight.

In the S.M.A.E.'s newsletter *Model Flying* there is a plea for a National Free Flight Airfield. It might be useful, but for those of us who want something a bit more local, the use of some of those large airfields where nothing much goes on at the weekends would come in more useful. A National F/F field would not get the use to warrant the exclusive take-over of a large portion of tiny England - you cannot hold a Nationals every weekend. Nor could you get the lay mind to differentiate between controlled and non-controlled flying - any area set apart for model flying would have to be available for the hobby as a whole, that would only be fair. Anyway, if free flyers are worried about protecting, or extending, their space interests they should, perhaps, give some thought to the noise made by their large, unsilenced engines.

By the time you read this the *San Valeers M.A.C.* will have held their 25th 'Silver' Anniversary event at Taft, California, according to *Satellite*. The two-day event covers some 23 different contests, all free flight. No less than 107 trophies will have been awarded to contest, sweepstake and team winners. A sumptuous feast of model flying.

Another free flight group in the same part of the world is the *San Diego Orbiters*. Guess what their problem is? Right first time: flying space. Urban development - houses, roads and such - has reduced their Chapparal Field to mini-model proportions. The club is now looking to Lake Elsinore for its major flying interests.

Something else we do not see these days, but revived by the *Australian Southern Cross M.A.C.*, with great success, is a Rubber Power Scale Event. Reported in *Free Flight Down Under*, the contest attracted a nice variegated entry of attractive models, reminiscent of a pre-war event. Winner was a large, extra light Moth Minor with an A.B.A. Robin second.

More reports would be welcome.

**Clubman**

## Contest Calendar.....

September 29th	<b>SOUTH BRISTOL GALA.</b> F/F: Open R/G/P., Chuck and Vintage Precision. C/L: Co. F.A.I. and Class 'B' T/R. R/C: Thermal Soaring - pre-entry (40p) to J. Mayes, Northville Road, Bristol BS7 0R4 R.N.A.Y. Wroughton, Wilts.
October 5-6th	<b>F/F WORLD CHAMPS 2nd TEAM TRIALS.</b> S.M.A.E. ALL SCALE MEET. R/C (F.A.I.) C/L and F/F at R.A.F. Little Rissington, Glos.
October 6th	<b>S.M.A.E. ALL SCALE MEET. R/C (F.A.I.).</b> C/L & F/F at R.A.F. Little Rissington, Glos.
October 13th	<b>S.M.A.E. 7th AREA CENTRALISED.</b> Team Rubber, F.A.I. Glider, 1/4A power - Area venues.
October 13th	<b>NORTHERN AREA GOODYEAR MARATHON.</b> One hour C/L Goodyear race, S.M.A.E. members only at R.A.F. Driffild, Yorks.
October 20th	<b>ELLIOT ONE HOUR C/L ENDURO.</b> Goodyear, F.A.I. and 'A' rat - 20 pit stops. Venue: Elliot Bros., Airport Works, Rochester, Kent

October 20th	<b>WOLVES F/F GALA.</b> Open R/G/P, Combined Mini (1/4A - 7 sec. motor, A/1 C. d'H.). S.M.A.E. members only. Venue: Chetwynd.
October 20th	<b>WHARFEDALE '15th RUFFORTH 1000'.</b> Class 'B' team race, S.M.A.E. only. Details: J. C. Horton, 10 Lawn Lane, Burley in Wharfedale, Ilkley, W. Yorks LS29 7ET.
October 20th	<b>OPEN MAGNET MEET</b> with special novice prize. Full details from P. Fynn, 33 Canute Place, Knutsford, Cheshire. Tel: Knutsford 52948. Venue: Nr. Leek Staffs.
October 20th	<b>ST. ALBANS R/C THERMAL SOARING MEET.</b> Venue: Nomansland, Wheathamsted for 10.30 a.m. Entries to B. Rapier, 5 Aldwych Road, Harpenden, Herts, quote frequency and enclose 40p pre-entry.
October 27th	<b>NORTHERN AREA F.A.I. RALLY.</b> F.A.I. R/G/P in rounds, S.M.A.E. members only at R.A.F. Topcliffe, Yorks.
October 27th	<b>LONDON GALA</b> at R.A.F. Wyton Nr Huntingdon, Hunts. C/L F.A.I. 'B', Goodyear team race, Speed, stunt, scale, R/C Class II scale. Entry on day.
October 27th	<b>WHITEFIELD GALA.</b> F/F: Open R/G/P, Chuck Glider. C/L: Combat. Venue: R.A.F. Chetwynd, Salop. S.M.A.E. members only. Trophies and plaques to winners - previous winners please return your trophies in time!



# WORLD-WIDE MAIL ORDER SERVICE S. H. GRAINGER & CO.

108 CALDMORE ROAD, WALSALL, ENGLAND WS1 3RB

One mile from M6 Motorway - Exit No. 9.

Telephone: Walsall 23382



## RADIO CONTROL

Futaba  
MacGregor  
Skyleader  
Graupner  
O.S. Propo  
Sprangbrook  
Swan  
Flight Link  
Remcon Kits

## ENGINES

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

## KITS

RipMax  
KeilKraft  
Graupner  
Topflite  
Sterling  
Goldberg  
Schuco  
Aviette  
True Line

## BOAT KITS

S.H.G. Marine  
Aerokits  
Graupner  
Billings  
Norstar  
Veron  
Micro D.B.  
Model Avionics  
E.D., etc.

## ACCESSORIES

Micro Mold  
X-Acto  
Kavan  
DEACS  
Electric Motors  
Chargers  
Boat Fittings  
Tanks  
Wheels

## MATERIALS

Balsa Wood  
Marine Ply  
Fibre-glass  
Solarfilm  
Nylon  
Paints  
Adhesives  
Rubbing Strip  
Buoyancy Foam

Mail Order Catalogue 25p - Barclaycard - Access - Paybonds



## C.A.P. 7-56 inch span SPITFIRE MK IX R/C for 40-61 power

(Model built and flown by Bill Hadley, Somerset.  
Photograph by Courtesy D. Frier, Somerset.)

ITEMS AVAILABLE FOR THIS C.A.P. MODEL  
Pre-cut kit, £21.49. Plan, £1.62. Canopy (included in kit), 76p plus 11p post. Glass-fibre fuselage, £10.80 plus £1.08 carr. Glass-fibre cowl, £2.05 plus 22p post. (Above not necessary if fuselage ordered.) A.B.S. Spinner, 65p plus 11p post. Upper wing and fuselage roundels, plus P.V.F. lettering, £1.08 plus 11p post. Comet retracts to suit, £9.33. Please note we do not supply the four-blade propeller as illustrated.

PLEASE SEND TEN PENCE POSTAL ORDER OR SIX PENCE POSTAL ORDER & S.A.E. FOR OUR LATEST GREEN COVER ILLUSTRATED LIST  
ALL PRICES INCLUDE V.A.T. & ARE CORRECT AT TIME OF GOING TO PRESS - IMPORTANT: PLANS ARE SOLD SEPARATE FROM KITS

**COMPLETE-A-PAC WEST HIGH STREET, EARLSTON, BERWICKSHIRE, SCOTLAND**

## MAKE IT!

*continued on page 540*

the  $\frac{3}{4}$  in. ply is  $\frac{1}{2}$  in. ply or block-board, and  $\frac{1}{4}$  in. or  $\frac{1}{2}$  in. hard-board for the sides and top.

Cut out all the components to the dimensions formulae shown. Be very careful calculating your sizes, otherwise the box will not fit together and material is wasted. Make sure every item is cut square - a good D-I-Y shop may even cut the whole lot out for you very cheaply, especially if you have bought the material from the shop.

Start the construction by gluing and screwing the 'T' shaped end-plates (1) to the outside of the base (6). Use No. 6 countersunk screws about 1 in. long and a white 'cold' glue. Next fit in the centre-piece (3) by the same method. During the rest of the assembly screws can be replaced by nails as the basic strength of the box is contained in the components made of  $\frac{3}{4}$  in. material. I know the purists will throw up their hands, but my boxes do not fall apart! They will also notice the complete absence of fitted joints. Attach the two bottom side pieces (4) and top piece (4). Build

up the two lids making sure the end-pieces are inside. Cut the dowel or broom handle to exact length and make the handle holes. Slide in the handle and drill and peg it in position with a long nail or screw. The best type of hinges are strip or piano hinges, but others will do. Fit them to the outside of the box using nuts and bolts with nice big washers on the inside. Make, or buy, some catches for the lids and fit them using nuts and bolts again.

Rub the whole thing down with sandpaper and round off the sharp corners and edges. Paint the box with undercoat. If this raises the grain, rub it down again and apply another coat of undercoat. Finish the box by painting it in a fuel-proof paint such as polyurethane.

Assemble the equipment into the box and hold them in with brackets or 'Terry' clips. Now draw round the outline of the removable items and paint their 'shadows' in a contrasting colour (polyurethane again).

In the drawing you will see that model supports can be added and

changed to suit your aircraft. On the outside of mine I have a control line reel which holds three sets and has proved very handy. The charging circuit I described in Part 2 can also be built in.

With this box, well made and well fitted out you are on the way to becoming the smooth operator everyone admires. All that is left is to build models that are in keeping with the image. Now that is difficult!

TABLE 1

### TOOL BOX CONTENTS

Starter Battery  
Starter Leads  
Fuel  
Fuel Can  
Priming Syringe  
Control Line Handle  
Control Lines  
Spare Glow Plugs  
Plug Spanner  
Head Spanner  
Fuel Tubing  
Spare Props  
Prop-nut Spanner  
Tommy Bar  
Spare Spray Bar and Needle  
Screw Drivers  
BA Spanners  
Pliers  
Tin of Nuts, Bolts and Pins  
Balsa Knife  
Balsa Wood (packing)  
Glue  
Rubber Bands  
Sellotape

# CLASSIFIED ADVERTISEMENTS

All classified Advertisements must be pre-paid.

PRESS DATE for November issue, 1974, 20th September, 1974.

Private and Trade rate 5p per word (minimum 60p). Box Numbers 25p extra, Display box rate £2.50 per single column inch.

Box replies to be sent care of Advertising Department, P.O. Box 35, Bridge Street, Hemel Hempstead, Herts, England HP1 1EE. Copy received after first post on 20th September will be held over until the next issue, unless cancelled in writing before 15th of the following month. There are no reimbursements for cancellations.

## ELECTRIC R.T.P.

A wide range of specialist supplies available by return of post. Stocks include a selection of 12-volt D.C. motors (including geared and extended shaft models) supplied complete with matched prop.

Pole contact head as kit of parts or assembled and wired, plans, kits, cable, gear kits, ball races, oilite bearings, etc.

5p in stamps please for information sheet and full descriptive price and stock list.

**HARRY BUTLER (Models)**  
Colchester Road, St. Osyth,  
Essex, CO16 8HB.

Tel: 0255 820504

Trade inquiries invited

## FOR SALE

Miniature lead acid 2v accumulators, 1.4" x 1.1" x .44", 3 for £1.50 including p & p. Garfields, 269 Rye Lane, London SE15. TUV  
Two MVVS D7 team race diesels. Front induction, rear exhaust silencers, boxed, or separate, £10 each. OS19RC silencer £4. Must sell soon. Offers invited. Tel. 01-668 2517 Croydon. T  
Brand new Merco 35 stunter. Harvey, 45 Grange Road, Longford, Coventry. Tel. 0203-86784. T

## TRADE

Superb horse-drawn vehicle plans. Beautifully scaled to suit pottery shires size A, 5 3/4"-6 1/4", B, 6 1/2"-7 1/2", C, 7 1/2"-8 1/2" in. high to saddle top. Superb farm tip-cart. Size A £1.85, B £1.95, C £2.05, all plus p & p. Barrel-top Gypsy caravan. Size A £3.15, B £3.30, C £3.45, all plus 10p p & p. All fully detailed with instructions. Colour photo 35p plus S.A.E. State which. Miniature horse brasses, 13mm. dia. brass, set of 10 - 75p plus S.A.E. Barrie Volsey Plans, 4 Huxley Place, Meir Hay Estate, Longton, Staffs. Trade enquiries invited. TUVWXY  
Cox TD 049's, only a few left, £8 post free. Pylon brand control line 7 strand cables, ready to use on storage reels, .012" x 52' 3" x 2 for T/R and .015" x 60' x 2 for stunt and Rat race complete with looped ends and connectors, £1.50 per set. K. A. Day, 10 Berkeley Close, Hillhead, Hants. T

Plans enlarged or reduced and additional copies may be sent for details from Causser & Co., 216 Goldhawk Road, London W12. Tel. 01-749 3441. T/C.

Superb ballpen, pencils, combs, diaries, brushes, Goldstamped with club or personal name. Raise funds quickly and easily. Samples/details from Northern Novelties, Bradford BD1 3HE. G-Q.

## HANG GLIDER HANDBOOK

32 Fully illustrated pages.  
Valuable information for novice and expert. 99p

THE CUSTOM KITES built to suit the individual. Aircraft quality. Holder of all British records.

Send stamp to:

**BREEN HANG GLIDERS,**  
128 Meadow Way, Theale,  
Reading, Berks. Tel. 0734/302648

## the national AIR RACERS

in 3-VIEWS 1929-1949  
£2.00 postage included

3-Views galore - all of the great classic Thompson, Bendix, Grava and Good-year air racers are shown in magnificently detailed drawings - AND THERE IS MORE - Voluminous notes give the full story of each racer - pilots - race results construction and performance data - colour schemes and markings - everything the race enthusiast, modeller, and historian could desire. The Golden Era is re-created on large, crisply-printed 8 1/2 x 11 pages covering over 90 aircraft.

**BEAUMONT  
AVIATION LITERATURE**  
656 Holloway Road,  
London N19 3PD.

## WANTED

Wanted, single channel radio control set. Offers to 35 Harley Crescent, Catterick Garrison, Yorkshire.

Wanted, any type of unusual engines, radials, opposed, inline two and four stroke, also single four stroke (Gannet). Best prices paid. Box No. 928, (Italy), Aeromodeller Office, P.O. Box 35, Hemel Hempstead, Herts HP1 1EE.

Wanted, obsolete engines, literature, kits, accessories. Thomas Chua, Box 1025, Kotaklnabalu, Malaysia. S-D

Wanted. To borrow, buy, trace as you wish - the Plans for Fairy Faeula 52-inch Cabin rubber 1939 Kite design by Model Aircraft Supplies, New Kent Road, London. Box No. 931 (Herts), Aeromodeller Office, P.O. Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE. T

## PLACES OF INTEREST

Historic aeroplanes of the Royal Air Force (Lancaster, Hurricane, Spitfire, Meteor and Vampire) and the Shuttleworth Collection should provide your aerial nostalgia at the Old Warden Aerodrome, off the A1 near Biggleswade, Beds., on Sunday 29th September. Also early road vehicles from the Transport Trust. Entry car and driver £1, other adult 50p, child 25p. Come early! T

## FUEL TANKS

For control line models, available in two sizes, both wedge type:-

1/4 A Stunt tank 20p + 10p p. & p.  
Small Stunt tank 25p + 10p p. & p.

Available from:

**WALLINGFORD MODEL CENTRE**  
23 High Street, Wallingford, Oxon  
Tel: Wallingford 2027

## BOOKS

For sale. Aircraft of the Fighting Powers 1940. 1942, 1943, £3.50 each. 236 postcards pre 1947 planes and ships £6.50, 32 ATC gazettes and Aircraft Recognition 1943-1945 £4.50 O.N.O. Posnansky, 19 Mulberry Close, Cambridge. T

American magazines by annual subscription, 'Flying Models' £3.50, 'Model Airplane News' £5.50, 'American Aircraft Modeler' £8.40. Send stamp for complete list. Willen, (Dept. 1), Howard House, Howard Road, London E11 3PL. Tel. 01-555 7776. T/C  
Aeromodeller back issues mart, vast stocks of back issues held in stock. Beaumont, 656 Holloway Road, London N19 3PD. ALT/TC.

## GENERAL

Penfriends available, home and abroad. S.A.E. to Pen Society, (T77), Chorley, Lancs. TU

## SMALL SCALE SERVICE

Peck Peanut Scale Kits, Nesmith Cougar, Anderson BA4B, Miles M18, Piper J3 Cub, Pietenpol Air Camper and Drune Turbulent - all £1.25 each.  
Tern Aero Tiger Moth, Ryan St. and Porterfield Collegiate - all £1.50 each.  
Special offer all postage paid during October. Full details of all kits and accessories for a s.a.e. These plus Bill Hannan Plans Cat. For 20p P/O (post paid) All Williams items and wheels Half Price to Clear. New Peck Peanut Kits, Mustang and Zero. Watch for release dates.

Box No. 929, Aeromodeller Office, P.O. Box 35, Hemel Hempstead, Herts. HP1 1EE.

## 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, 25p.

**POPULAR FLYING ASSOCIATION,**  
Terminal Building, Shoreham Airport,  
Shoreham-by-Sea, Sussex, England.  
Shoreham-by-Sea 61616

Make new friends! The exciting reliable way. All areas, all ages. Write S.I.M. Computer Dating (AMD) 109 Queens Road, Reading, OT.

## GOLDEN AGE PLANS

Classic flying scale rubber designs from Magazines and kits of the thirties reproduced exact size in fine line black print on large sheets. Lockheads, Bellances, Cessnas, Curtiss, Corben, Martin, Fairchild, Piper, etc. Plus Hawker Hart, Supermarine S6B, SE5, Fokker DR1, Camel, GeeBee, etc. Send addressed envelope and include two international reply coupons for illustrated list and prices to

**Golden Age Reproductions**  
P.O. BOX 13, BRAINTREE, MASS.  
02184, U.S.A.

## EXTRA LIGHTWEIGHT D/T FUSE

2 yds 25p post paid, or send SAE for free sample

Trade inquiries welcome

**GORDON MNF. CO.,**  
24 London Road, Manchester 1,  
061-236 1739.

## CORNISH GLIDING AND FLYING CLUB

Gliding Courses in modern fleet from May - B.G.A. Fully Rated Instructors - fine soaring - lovely coastal airfield - ideal for a different family holiday.

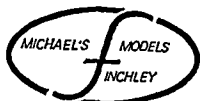
Details with pleasure from:  
The Course Secretary

The Cornish Gliding and Flying Club  
Trevellas Airfield, Perranporth,  
Cornwall. Phone: Devonan 862518

## Take a holiday gliding course with the YORKSHIRE GLIDING CLUB

Full residential Clubhouse with Licensed bar - full-time professional instructors - wave and hill soaring - modern fleet of gliders and tug aircraft - winch and aerotow launches - Falke motor Glider.

For brochure write to: The Secretary,  
Yorkshire Gliding Club, Sutton Bank,  
Thirsk, Yorks. Tel. Sutton (Thirsk) 237



## MICHAEL'S MODELS

646-648 HIGH ROAD,  
N. FINCHLEY,  
LONDON N12 0NL

### SUPER TIGRE ENGINES IN STOCK

G20/15 DIESEL ... ..	£12.35	G21/40 F.I. ... ..	£16.47
G15 F.I. GOODYEAR	£15.71	G60 R ... ..	£38.05
G15 R.V. DIESEL ... ..	£19.52	X15 SPEED ... ..	£25.97
G15/19 F.I. GLOW ... ..	£15.71	X15 PIPE ... ..	£4.08

P.A.W. 19 DS AND 1.49 ALSO IN STOCK. POSTAGE 12p

North London Stockist for Les Applications Rationnelles Drills

Paybonds accepted, Access Card and Barclaycard welcome

EASY PARKING CLOSED ALL DAY MONDAY

MAIL ORDER A PLEASURE PHONE 01-445 6531

All inquiries must be accompanied by s.a.e.

## Who is BINDING?

Authorised agent for standard style binding of Aeromodeller and other Model & Allied Publications' Journals, to whom all loose copies of issues should be sent, is:

Beaumont Aviation Literature.

656 Holloway Road,  
London N19 3PD

Charge per volume (including index plus post and packing)  
Aero Modeller, Model Boats, Model Railways, Military Modelling, Scale Models, Model Engineer - £3.00.

## Cash on Delivery Service

It is known throughout the modelling world that we have the best stocks in the country but even we sometimes fail to deliver the goods for various reasons - for example: Two modellers sending for the same item at the same time and we only find one in stock. To make things easy all round why not make use of the Post Office with C.O.D. service

1. If we have the item you require you will receive this by return.
2. If we are expecting further stocks we will inform you that your order will be delivered in approximately 7 days.
3. We will know if your requirements are not available and will inform you accordingly suggesting an alternative.

PAY THE POSTMAN C.O.D. -

IT MAKES GOOD SENSE

Newsletters and all lists sent for 20p in stamps

**ROLAND SCOTT LTD.**

28 East Lincs Road, Swinton, Worsley.

Phone: 061-790 6707

## \* Nationals Winner!

Try our competition proven design, the only kit with genuine indoor wood.

Semi-Scale		
Glenn-Henderson ... ..	£1.60	
Ryan M3 ... ..	£1.60	
Taylorcraft ... ..	£1.85	
Stinson Voyager ... ..	£1.85	
Pilatus Porter PC-6 ... ..	£1.85	
True Flying Scale		
Farman Mosquito ... ..	£1.85	
Pietenpol's Air-Camper ... ..	£2.05	
Waco Biplane ... ..	£2.05	
Peanut Scale		
Piper Vagabond ... ..	£1.50	
Waco Biplane ... ..	£1.60	
Itch ... ..	£1.50	
Stinson 125 ... ..	£1.50	
*Piper Club ... ..	£1.50	

All above post free.

Indoor Duration  
Amazing quality Balsa (from .008") - Pirelli, wire, bearings, Microfilm, starter kits, etc. All you need, including expert advice if required.

Send 10p P.O. and large S.A.E. for priced catalogue.

## MICRO-X Indoor Supplies

4 Hastings Close, Bray  
Berkshire

## SCHOLAR

Ready to fly R/C Aircraft designed specifically as a first plane. Scholar comes complete with wheels, u-cart, engine mount, horns, cables, tank and already Solar-filmed. Engine size 19-35. Please state engine to be used. Flying lessons available.

Visit

B. T. WILLIAMS MODEL SHOP,

39a Alcester Road,  
Studley, Warwickshire.

For further details ring  
Studley 2298

## R. S & V ENGINES

buy all types of engines for cash. Send for best quotation by return. Send S.A.E. for our list.

646-648 HIGH ROAD, N. FINCHLEY,  
LONDON N12 0NL  
Tel: 01-445 6531

Barclaycard Paybonds accepted  
Closed all day Monday Easy Parking

## SWANSEA

## SWANSEA

See Shop Guide

Then see the Shop!

## SCALE MODEL MAKERS

A leading firm of professional model makers, have a number of vacancies for men who can make large solid scale aircraft models or other subjects including industrial prototypes, to a high standard of appearance and detail. Experience in finishing and lettering not essential, but skill in wood carving, fibre glass mouldings and built up metal airframes for covering in nylon is required. £1.15 per hour basic rate for skilled men plus bonus and many extras. Workshop in West London.

Apply with details of qualifications to -  
Box No. 390, Aeromodeller Office,  
P.O. Box 35, Hemel Hempstead,  
Herts, HP1 1EE.

## F.A.I. TEAM RACE (and speed) FANS!

Glassfibre props now available!

For team race:

Drazek Special type	£1.00
Deep-cuff, 7 1/2 in. pitch	£1.50

For F.A.I. speed:

Super Record type	90p
-------------------	-----

Available from Jan v.d. Kroon,

Molenbossen 414, Venlo, Holland.

And note: Due to new machinery equipment 'Helmich Products' specialist T/R items can now be supplied within 3 weeks! New products soon to follow - details from

## HENRY HELMICH

Kaartmakersing 121, Eindhoven, Holland  
(new address)

## BOBS MODELS (Batley) JUST IN FROM THE STATES

Profile Stunters by Midwest, Magician 35, P.40 Warhawk, ME 109 £7.75, King Cobra 15, ME 109 £4.75.

Plus kits by Dumas, Topflite, Goldberg, etc. Pegasus Warlord £3.00, Prover A1 glider £2.28. And from Japan, Enya 29 BB specials £12.50, Japan Model Supply no kink silicone fuel tubing. The best available 20 in. 35p plus all three types of K.S.B. timers.

Taylor plugs 44p, circular bellcranks by Hi Johnson 1 1/2 in. 60p. 1 1/2 in. 65p. 3 in. stunt type 75p. Fuels from £1.41 per gallon. Callers only.

Easy parking Closed 1 p.m. Tues.  
4 OXFORD ST., MT. PLEASANT,  
BATLEY, YORKS.  
Tel. Batley 473072

# SHOP GUIDE

## ABINGDON

Tel: 1927

### F. KNIGHT & SON

44 BATH STREET, ABINGDON, OXON.

Radio by: Sprengbrook, Skyleader, Futaba. Kits by: RipMax, Graupner, Kamco, KeilKraft, Veron, C.A.P. plans and kits.

H.P. arranged Mail Order P.&P. Free

## ACCRINGTON

Tel: 32108

### WOLSTENHOLME HANDICRAFTS

40 ABBEY STREET,  
ACCRINGTON BB5 1EB

Complete range of radio control models and accessories.

## ADDLESTONE

Tel: 45440  
Weybridge

### ADDLESTONE MODELS LTD.

6 & 8 HIGH STREET,  
ADDLESTONE, SURREY

All leading makes of Kits, Engines, R/C Gear and Accessories  
Second-hand R/C Gear  
Paybonds accepted  
Late night Friday 6.30 p.m.

## AUSTRALIA

Tel: 347 8029

### RIVERSIDE HOBBY CENTRE

16 LITTLE LATROBE STREET,  
MELBOURNE 3000

Radio Control Equipment, Kits, Engines, Accessories, M.A.P. Plans, Books  
FAST MAIL ORDER SERVICE

## AUSTRALIA

Tel: 497087

### SEMAPHORE HOBBY CENTRE

44 HART STREET,  
SEMAPHORE SOUTH, S.A. 5019  
M.A.P. Plans, Books, Kits, Engines, Accessories, etc.  
Radio Control Equipment

## AUSTRALIA

Tel: (02) 533 3517

### SILVERTONE ELECTRONICS

UNIT 6 No. 2 SCHOFIELD STREET,  
RIVERWOOD, N.S.W. 2210

Manufacturers of Silvertone R/C equipment, including the Silvertone Mark VII proportional system, Silvertone Keyboard Frequency control, Silvertone Fallsafe package. We also stock a complete range of R/C accessories.  
Mail Order

## AYLESBURY

Tel: 85752

### TAYLOR

### & McKENNA

46 FRIARS SQUARE

## BARNESLEY

Tel: 6222

### DON VALLEY SPORTS

28 DONCASTER ROAD, BARNESLEY

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

## BATLEY

Tel: 473072

### BOB'S MODELS (BATLEY)

(Bob Ashby)

4 OXFORD STREET,

MT. PLEASANT, BATLEY, YORKS.

Near Batley R.L. Rugby ground

The North's latest model shop

Mail order a pleasure. Export orders welcome. Easy Parking. Closed Tues. 1 p.m. Late evening Friday until 7 p.m.

## 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: 021-422 1000

### HOBBY SPOT

280 HAGLEY ROAD WEST, QUINTON

Plastruct Centre  
Comprehensive stock of kits, engines and accessories for C/L and F/F  
Paybonds - Access - Barclaycard

## BIRMINGHAM

Tel: 021-444 2369

### KINGS HEATH MODELS

(Pearce's Newsagents)

8 YORK ROAD, KINGS HEATH  
BIRMINGHAM 14

KeilKraft, Kits, Engines, Balsa wood, Paints, Airfix, etc.

## BIRMINGHAM

Tel: 021-554 5569

### THE MODEL MECCA

204-206 WITTON ROAD,  
BIRMINGHAM B6 6LB

Kits, engines, accessories, R/C gear.  
Balsa wood etc.

## BIRMINGHAM

Tel: 021-327 0872

### POWELL'S MODEL CENTRE

769 ALUM ROCK ROAD, WARD END,  
BIRMINGHAM 8

Personal attention of G. & F. Powell

## BIRMINGHAM

Tel: 021-427 1653

### THORNTON'S

Model Specialists  
10-12 ALBERT WALK, HARBORNE,  
BIRMINGHAM

Veron, Keil, RipMax, Graupner Kits,  
Radio Control Equipment, Boat Kits,  
Model Railways, Racing Cars, etc.

## BIRMINGHAM

### TURNERS MODELDRONE

NEWSAGENTS

24 TEVIOT GROVE, KINGS NORTON

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

## BRADFORD

Tel: 26186

### MODELDRONE

182 MANNINGHAM LANE,  
BRADFORD 8

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

## BRIDGWATER

Tel: 3632

### R. M. TOYS & MODELS

(Formerly Jack Palmer)

36 ST. JOHN STREET

New to Bridgwater and the West. All types of kits, engines, accessories and Radio Control Equipment.  
All the main manufacturers of plastic kits.

## BRIGHTON

Tel: Brighton 418225

### HARRY BROOKS

15A VICTORIA ROAD  
PORTSLADE, SUSSEX

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

## BRISTOL

Tel: 557764

### JIM BENNETT MODELS

351 CHURCH ROAD, ST. GEORGE,  
BRISTOL 5

The only Radio Control specialist in Bristol Kits by Veron, Keil, RipMax, Concord, etc. We buy, sell, and part-exchange engines, airframes, boats, radio control, etc. Paybonds accepted

## BRISTOL

### YATE HOBBIES CENTRE

44 Station Road, Yate, Bristol.  
(opposite Jackson Electronics),  
KeilKraft, Veron, RipMax, Airfix, Tamiya, Rovex, Peco and Hinchliffe.  
Also Balsa wood, Solarfilm etc.

## BROMLEY

Tel: 01-460 0818

### AVICRAFT LTD.

6 Chatterton Road, Bromley, Kent  
Scale Models our speciality. kits, engines, Profile Publications, adhesives and finishes, radio control best stocks of balsa obtainable, second-hand R/C and engines bought, sold and part exchanged. Foam wings arranged, tools, e.g. Dremel, spares for engines and radio equipment, in fact Almost Everything for the Modeller  
Early closing day Wednesday

## BURTON-ON-TRENT

Tel: 0283 64240

### J. & N. MODELS

22 DERBY STREET, BURTON-ON-TRENT  
Largest model stockist within 25 miles.  
Kits and Accessories for Aircraft, Boats and Railways, R/C equipment, Books, Plastic Kits  
Easy parking - Paybonds Agents

**CAMBERLEY** Tel: 27362**MODEL WORLD  
(CAMBERLEY) LTD.**

Mike Young & Nev Coombs, proprietors  
76 HIGH STREET, CAMBERLEY, SURREY  
Comprehensive stock of Kits, Engines,  
Radio Control Equipment, Spares, etc.

**CASTLEFORD** Tel: Castleford 57619**ARTS, CRAFTS & MODELS**  
4 CASTLEWAY, CASTLEFORD,  
YORKSHIRE WF10 1HL

Artists' materials, handicraft materials.  
Comprehensive range of Marine and  
Aircraft kits for radio or free-running

**CARDIFF** Tel: 29065**BUD MORGAN**  
22-22A CASTLE ARCADE  
CARDIFF CF1 2BW

K.K. Mercury, Veron kits, etc. RipMax,  
Futaba, McGregor, Simprop, Skylander,  
Radio Control equipment, Merco, O.S.  
and all makes of engines, Paybond,  
Barclaycard and Access cards accepted

**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.

**DERBY** Tel: 62771**SUPER MODELS**

3 CHAPEL SIDE, SPONDON, DERBY  
(3 miles E. of Derby, off main Derby/  
Nottingham road)

Leading makes of kits, engines, R/C  
equipment and accessories. Mail order  
and easy parking.

**DONCASTER** Tel: 54303**BENTLEY MODEL SHOP**  
80 HIGH STREET, BENTLEY, DONCASTER  
EVERYTHING FOR THE MODELLER

Late night opening - Friday till 8 p.m.  
Sunday 10 a.m. till 12 noon  
Early closing Thursday 1 p.m.

**DONCASTER** Tel: 62524**B. CUTTRISS & SONS**  
MODELS AND HANDICRAFTS  
40 DUKE STREET

Call and see our Shop

**EXETER** Tel: 76935**EXETER  
RADIO CONTROL  
MODELS**

35 SOUTH STREET, EXETER  
EX1 1ED

**EXETER** Tel: Exeter 76133**MECHANIC'S BOOKSHOP**  
FORD'S OF QUEEN STREET

Aircraft Books  
and  
magazines.

**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  
service. We are here to serve 'YOU'

**GATESHEAD** Tel: Dunston 605545  
Whickham 887218**THE WOOD SHOP**

(Models & Hobbies)  
2 TOWER COURT, DUNSTON,  
GATESHEAD, CO. DURHAM

Veron, K.K., Graupner, RipMax, Micro-  
Mold, Fibreglass fuselages & Ronytubes. Fox  
engines, R/C equipment & accessories. Free  
advice & flying tuition. Ask for Bill Gordon.

**GLASGOW** Tel: 041-332 1041**CROCKET LTD.**

136 WEST NILE STREET

Aircraft, Boats, R/C equipment  
Good selection available  
Open six days - Terms available

**GLASGOW** 041-632 8326**RIDDELL BROS.**

61 MOUNT ANNAN DRIVE  
(Facing Mount Florida School)  
GLASGOW S4

Main entrance Hampden Football Ground  
VERON, KEIL, BILLINGS, AIRFIX,  
RIPMAX  
Accessories, Balsa, etc.

**GRIMSBY** Tel: 0472 2574**EVINGTONS**

5 ALEXANDRA ROAD, GRIMSBY

Large stocks of Radio Control equip-  
ment, engines, kits, etc. Hire purchase,  
Paybonds and Access accepted. Your  
spare equipment sold

Closed Thursday Car Park 39 yards

**GRIMSBY** Tel: 632**HOME HANDICRAFTS**

75 CARTERGATE, GRIMSBY

Radio control, aircraft and boat kits,  
engines and modelling accessories.  
Large stocks Balsa Wood, Wide range  
handicraft materials. Easy parking.

**GUILDFORD** Tel: Guildford  
(0483) 61331**G. D. H. MODEL CENTRE**  
SWAN LANE, GUILDFORD, SURREY

The fastest-growing model shop in  
West Surrey. Radio control models, con-  
struction kits, diesel and glow engines,  
model railways, wargame figures and  
accessories. All the top makes.

**HATFIELD** Tel: 63404**RICHARD LLEWELLYN**  
DESIGN & HOBBIES

5 Manor Parade, Hatfield Garden  
Village, (Adjacent North of Airfield).  
Leading makes, Aircraft and Boats,  
R/C and engines. EASY PARKING.

**HAVERFORDWEST** Tel: 3176**MODEL CRAFT**

15 CARTLETT, HAVERFORDWEST

Holiday in Pembrokeshire and visit  
MODEL CRAFT. We're near the station  
and open six days a week.

**HEMEL HEMPSTEAD**

Tel: 53691

**TAYLOR  
& McKENNA**  
203 MARLOWES**HEREFORD** Tel: 4162**FRED PERKINS**

48c COMMERCIAL ROAD, HEREFORD

Aircraft, boat kits, engines, R/C equip-  
ment and all your modelling require-  
ments. Secondhand engines and R/C  
equipment. Paybonds. H.P. Agreements.

**HINCKLEY** Tel: 0455 30952**PUNCTILIO  
MODEL SPOT**

6 WATERLOO ROAD,  
HINCKLEY, LEICS.

Adjacent to bus station and car park.  
Only modelling goods stocked.

**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

**HONG KONG** Cable: 5625  
Tel: 3-684184**WINNING**

MODEL & HOBBY SUPPLIES  
2A AUSTIN AVENUE, TSIMSHATSUI,  
KOWLOON

R/C Aircraft, Boats, Cars, Motorbikes,  
Tanks, Helicopters, Gyrocopters, Rockets,  
etc. WINNING parts, Win-U Model Kits.  
Prompt Mail Order Service. Introduction  
Leaflet 20p. Air Postage Paid

**HORSHAM**

Tel: 61533

**MODEL CORNER**

30 NORTH STREET, HORSHAM, SUSSEX

Comprehensive range of kits,  
Veron, Keil, etc. P. & P. extra  
Overseas inquiries invited

**IPSWICH**

Tel: 51195

**BOWMANS OF IPSWICH**

37/39 UPPER ORWELL STREET IP4 1HL

The RIPMAX Model and Radio Centre  
Aircraft — Boats — Cars — Accessories  
All leading makes  
World Wide Mail Order Service

**IPSWICH**

Tel: 57106

**R. & D. MODELS LTD.**25 NORWICH ROAD, IPSWICH,  
SUFFOLK IP1 2NG

For radio - kits - engines - aircraft -  
boats - cars - and specialist items  
THE MODELLERS' MODEL SHOP  
Prompt mail order service. H.P. Barclay-  
card, Access and Paybonds.

**KING'S LYNN**

Tel: 63164

**BARNEY'S MODEL SHOP**SOUTH EVERARD STREET,  
KING'S LYNN, NORFOLK

For all your modelling requirements.  
Kits, Radio Control, Engines, Fuels and  
big range of accessories.

**KINGSTON**

Tel: 01-546 4488

**MICK CHARLES MODELS**World R/C Scale Champion 1970/71  
180 LONDON ROAD,  
KINGSTON-UPON-THAMES, SURREY

All leading makes stocked.  
Personal service. Mail Order.  
Open: 9-6.30. Friday till 9 p.m. Sat. till  
7.30 p.m. Wed. Close 1 p.m.

**LEEDS**

Tel: 646117

**FLYING MODELS**

R. E. SHERWOOD,  
88 CROSSGATES ROAD, LEEDS 15  
Easy parking, M.A.P. plans, Books. Every-  
thing from cup washers to comprehensive  
kits by Keil, Veron, Pegasus, Mercury, Top-  
flite, etc. Balsa & Spruce sheets and strip.  
New and used engines, special fuels, etc.  
Personal, Friendly Service, Mail Orders.  
Access. Barclaycard, Paybonds.

**LEEDS**

Tel: 27891

**THE MODEL SHOP**38 MERRION STREET  
(Nr. Tower Cinema)

Model aircraft - boats - cars - railways,  
all makes engine. 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

**LINCOLN**

Tel: 25907

**MODEL CENTRE**

24 NEWLAND

THE ENTHUSIAST'S SHOP

Big Stocks of Kits, Engines, Balsa,  
Accessories, R/C Gear, etc.  
MAIL ORDER

**LIVERPOOL**

Tel: 051-709 8039

**STAN CATCHPOLE'S  
MODEL WORLD**

85 BOLD STREET, LIVERPOOL L1 4HZ

Specialist in Radio Control for boats  
and aircraft. Wide range of plastic kits.

**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  
Closed all day Monday  
1 min. from Camden Town Tube Station.  
Northern Line.  
LONDON'S LEADING MODEL SHOP

**LONDON**

Tel: 01-959 2877

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

MILL HILL CIRCUS, LONDON N.W.7

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

**LONDON**

Tel: 01-850 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.

**LONDON**

Tel: 01-472 2471

**A. G. HERMITE**

(MODEL SUPPLIES)

633 BARKING ROAD, WEST HAM, E.13

Aircraft - Boat - Car - Plastic Kits & R/C  
Saturdays 9 a.m. to 6 p.m.  
Postal Service

**LONDON**

Tel: 01-788 6497

**J. & D.'s HOBBIES**118A UPPER RICHMOND ROAD,  
PUTNEY SW15

(Nr. East Putney Tube)

All wargaming accessories, Airfix, Mini-  
tanks, Tamiya, Bellona, etc. If not in  
stock will special order at no extra  
cost. Open Friday till 7 p.m.  
THE SHOP WITH THE BIG SMILE

**LONDON**

Tel: 01-902 4823

**WALLY KILMISTER LTD.**6-7 NEED PARADE,  
WEMBLEY TRIANGLE, MIDDLESEX

Veron, Keil, RipMax, Aircraft kits,  
engines, balsa, spruce, accessories,  
Triang, Minित्रix, Scalextric.  
Closed all day Wednesday

**LONDON**

Tel: 01-852 2637

**LEWISHAM MODEL CENTRE**

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

A good selection of KeilKraft, Veron,  
Graupner, TopFlite, 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 Barclaycards accepted  
Friday closing 7 p.m.

**LONDON**

Tel: 01-445 6531

**MICHAEL'S MODELS**

646-8 HIGH ROAD, N. FINCHLEY, N.12

Comprehensive stock of KeilKraft, Mer-  
cury & Veron kits. Good selection of  
engines and a full range of accessories  
and woods. Specialists in second-hand  
engines.

MAIL ORDER A PLEASURE

Closed all day Monday Easy parking

**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, 10 a.m. to 6 p.m.  
Late night Fri. 7.30 p.m. Closed all day Thur.  
Postal Service. Parking Facilities

**LONDON**

Tel: 01-542 3062

**MODEL AND TOOL  
SUPPLIES**604 KINGSTON ROAD,  
RAYNES PARK, S.W.20

Aircraft and Boat Kits, engines and  
R/C equipment. All leading makes.

**LONDON**

Tel: 01-607 4272

**HENRY J. NICHOLLS  
& SON LTD.**

308 HOLLOWAY ROAD N7 6NP

One of the World's great model shops.  
Established 1946. We stock only the  
best for R/C, C/L and Free-Flight  
enthusiasts. MAIL ORDER.

**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: 01-228 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: 01-935 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

**LUTON**

Tel: 23182

**AEROMODELS (LUTON)**20 GORDON STREET,  
LUTON, BEDSModel Aircraft, Cars, Railways and  
Boats for the beginner and expert.**MACCLESFIELD**

Tel: 21473

**WHEELS & WATER MODELS**

Park Mill, Hobson Street, Macclesfield

Aircraft and boat kits by the world's  
leading manufacturers. Radio control  
equipment for beginners to experts.

Paybonds, Access, Barclaycards.

MAIL ORDER SERVICE

**MAIDSTONE**

Tel: 51719

**J. F. CARTER & SONS LTD.**(THE MODEL SHOP)  
19-23 UPPER STONE STREET,  
MAIDSTONE, KENTComplete range of modelling equipment  
and accessories, including R/C.

MAIL ORDER

**MANCHESTER**

Tel: 061-794 4084

**LISTERS MODEL SUPPLIES**285 East Lancashire Road (A580),  
Swinton, Lancs.Kits, accessories, materials, R/C engines, for  
model boats, planes, railways, etc. 2 min.  
from M61, M62, M63 motorways. NO park-  
ing problems. Open Sunday 10.30 to 1.00.  
Close all day Wednesday.**MANCHESTER**

Tel: 061-794 1949 061-793 8078

**ROLAND SCOTT LTD.**28 EAST LANCs ROAD,  
WORSLEY, MANCHESTER

Britains Largest R/C Dealer.

Use this magazine as our catalogue.

Second hand lists and leaflets for 20p.

The 'Radio Active' company.

**MIDDLESBROUGH****MODELDROME**265 LINTHORPE ROAD,  
MIDDLESBROUGH, TEESIDE

Tel: Saltwells 3212

Radio Control Equipment, Aircraft and

Boat Kits and all Modelling Accessories

Mail Order by Return

**MINEHEAD**

Tel: Minehead 3423

**Minehead Sports & Toys**

(A. &amp; J. Holman)

45 &amp; 55 THE AVENUE, MINEHEAD

Model stockists, Aircraft, Boats, most  
leading makes, Kits, Engines and  
model accessories, Radio for the  
beginner and the expert.**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  
Est. 1937Full range of model supplies.  
Swan, Horizon, Futaba.**NOTTINGHAM**

Tel: 50273

**GEE DEE LIMITED**40 GOOSE GATE,  
NOTTINGHAMEverything for the aeromodeller at  
Nottingham's leading shop

H.P. terms available

Mail Order - Great Britain only

**NOTTINGHAM**

Tel: 281903

**PEGASUS MODELS**171 BRAMCOTE LANE,  
WOLLATON  
NOTTINGHAM

Closed Wednesday

**OLDHAM****THE HOBBY LOBBY**10 WATERLOO STREET, OLDHAM  
(Off Yorkshire Street)Aircraft and Boat Kits, Engines, Model  
Accessories, Radio Control Model Rail-  
way. Everything for the Modeller.**OXFORD**

Tel: 42407

**HOWES MODEL SHOP**

9-10 BROAD STREET, OXFORD

RipMax, KellKraft, Veron, Graupner,  
Aerokits, Billing, Enya, Veco, O.S.,  
H.P., Micro-Mold, Cox, glow fuel,  
R/C gear Mail Order by return  
Paybonds accepted**PLYMOUTH**

Tel: (0752) 21851

**PLYMOUTH MODEL CENTRE**11 OLD TOWN STREET,  
PLYMOUTH PL1 1DA

The 100% Modeller's Shop

Veron, RipMax, KellKraft, Cox, Graupner,  
etc., engines, radio, kits, accessories. We  
are the shop for all that is good in model-  
ling. Call in for advice or try our Mail  
Order Service. C.O.D. up to £50.  
Barclaycard welcome**POOLE**

Tel: 3300

**SETCHFIELDS**

21-25 HIGH STREET

For all Models including Rio and  
Solido**PORTSMOUTH**

Tel: 25049

**RAY BROWN MODELS**10 Kingston Road, Portsmouth, Hants.  
Be served by an active modeller at the best  
stocked model shop in town. Beginners  
especially catered for, experts more than  
welcome. Large stocks Balsa, all materials  
and accessories. Leading makes kits, engines,  
radio. Instant no deposit credit, Barclaycard,  
Access, Paybonds, (Mail order by return).  
(Parking outside).**POTTERS BAR  
HERTS.**

Tel: 59355

**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**

Tel: 0734 477122

**CHILTERN SPORTS  
SUPPLIES**16 CHURCH STREET, CAVERSHAM,  
READINGThe North Reading sports and hobbies  
centre. Always personal service and  
friendly advice.**READING**

Tel: Reading 51558

**READING  
MODEL SUPPLIES**5 CHATHAM STREET CAR PARK  
OXFORD ROAD, READING, BERKS.  
BERKSHIRE'S SPECIALIST MODEL  
SHOP FOR KITS, ACCESSORIES,  
ENGINES, RADIO EQUIPMENT  
Pay by Paybonds, Barclaycard & Access  
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**ROYSTON**

Tel: 0763 43270

**H. C. GREEN**

25 HIGH STREET, ROYSTON, HERTS

Everything for the modeller. Horizon,  
RipMax, Micro-Mold, Veron, Kail, etc.**SHEFFIELD**

Tel: 581197

**SHEFFIELD HOBBIES CENTRE**

141 LONDON ROAD, SHEFFIELD

Main agent for Sprengbrock, Swan, Futaba,  
Waitron, MacGregor, etc. Service facilities  
for all makes equipment. Vast range of kits,  
engines, accessories for planes, boats, cars.  
A veritable Aladdin's Cave of modelling  
treasures. 24 hrs. Mail Order service.  
Credit facilities. Closed all day Thursday.**SOLIHULL**

Tel: 021-744 3374

**SHIRLEY MODEL SUPPLIES**62 STRATFORD ROAD,  
SHIRLEYTriang, 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., SOUTHAMPTONSpecialist in  
BOATS - CARS - AIRCRAFT  
RADIO CONTROL EQUIPMENT

**STAFFORD**

Tel: 3420

**JOHN W. BAGNALL LTD.**

Salter Street, Stafford, Established 1936  
Large stocks of radio, kits, engines and accessories. Special cash prices for radio. Access, Barclaycard and Paybonds welcome. By return mail order. Closed all day Wednesday. Public car park at rear of shop.

**STAMFORD**

Tel: 4524

**SPORTS & HOBBIES**

4 ALL SAINTS STREET, STAMFORD, Lincs.

Stockists for: Keil, RipMax, Micro-Mold, Veron Kits & accessories. Comprehensive range of engines and radio control equipment. Model railway and angling supplies. Mail Order Service

**STOKE ON TRENT**

Tel: 0782 85856

**Pleasure Treasures Ltd.**

4 SWAN SQUARE, STOKE ON TRENT ST6 3EA

VERON :: RIPMAX :: KEIL, Etc.

**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

**SWANLEY**

Tel: Swanley 7457

**H. & J. ELECTRONICS**

39 HIGH STREET, SWANLEY, KENT

Large stocks of kits for aircraft - boats - cars. The F.L.C. Radio Control specialists.

Credit facilities - Paybonds.  
Easy parking

**SWANSEA**

Tel: 52877

**SWANSEA MODELS & HOBBIES**

11 Shoppers Walk, Oxford Street, Swansea  
Huge stocks of kits, materials and accessories, the best engines and radio control. Sheet balsa up to 4 ft. x 6 in. F/F and C/L accessories, CAP plans, Solarfilm, Kwikcote, nylon - everything to make the model plus all the help that we can give. Access, Barclaycard, Paybonds. Closed Thursday, open till 6 p.m. Fri. and Sat. Prompt mail order. SAE with inquiries please.

**SWINDON**

Tel: 26878

**SWINDON MODEL CENTRE**

2 CIVIC CENTRE, THEATRE WAY, SWINDON

Wide selection of engines, kits, accessories and plastics.  
All leading names.

**TORBAY**

Tel: Paignton 59281

**MANSEL'S**

61 PALACE AVENUE PAIGNTON

Devon's best stocked shop for both Scale and Competition Modellers. Rip-Max, KeilKraft, Veron, etc., etc.  
All building materials.

**TORQUAY**

Tel: 27764

**TORBAY MODEL SUPPLIES**

59 VICTORIA ROAD, ELLACOMBE, TORQUAY

Kits by Keil and Veron, engines, radio control accessories.

**TRURO****COUNTY MODELS**

THE CREATION CENTRE, BACK QUAY, TRURO

Cornwall's model centre, large range of aircraft, boats, engines and accessories.  
Mail Order

**WALSALL**

Tel: 23984

**AEROMODELS (WALSALL)**

123 Wolverhampton Street, Walsall, Staffs.

Plastic kit specialists and flying kits by Keil, Veron, etc. Boats, engines and all accessories.

**WARRINGTON**

Tel: 37511

**HART'S MODEL SHOP**

110 BUTTERMARKE STREET, WARRINGTON

All makes and types of plastic kits. Mail order. Free car park opposite. Hours: 9 a.m. to 6 p.m. Half-day Thursday.

**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.

**WICKFORD**

Tel: 2621

**WICKFORD MODEL EXCHANGE**

ST. PETER TERRACE, LONDON ROAD, WICKFORD, ESSEX

Agents for Keil, Mercury, Gullflows, O.S., Davis Charlton and all leading makes. Personal attention, easy parking. Open 9 a.m. to 7 p.m. Monday, Thursday, Friday and Saturday, 10 a.m. to 1 p.m. Sunday. Closed all day Tuesday and Wednesday.

**WORCESTER**

Tel: 0905-26697

**R.G.L. MODEL SHOP**

(R. G. Lewis Ltd.)

6 FOREGATE STREET

Specialist in  
BOATS - CARS - AIRCRAFT  
RADIO CONTROL EQUIPMENT

**WORKSOP**

Tel: 2855

**MODEL CENTRE**

RYTON STREET

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

**WORTHING**

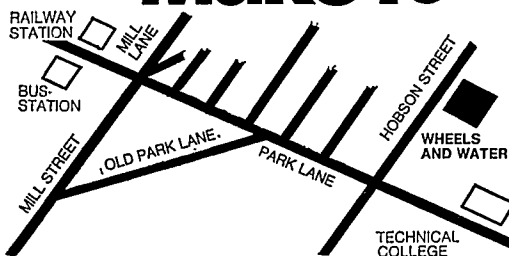
Tel: 206121

**KITS 'N' CRAFTS**

19 SOUTH FARM ROAD, WORTHING

Hasegawa, Revell, Guillow's Gunter, and other leading makes.  
Provident checks and vouchers welcome

# Make it - Macclesfield



Aircraft and boat kits by the world's leading manufacturers.  
Range of radio control equipment for beginners to experts.  
Pay by cash, pay bonds, Access and Barclaycard.  
Also part exchange and H.P. from 10% deposit.

**Mail Order Service**

Open Mon-Sat 9 a.m. - 5.30 p.m. Closed Sunday

**Wheels & Water Models**

Park Mill, Hobson Street, Macclesfield.

Telephone: 21473.



**SPECIAL  
OFFER**

**Graupner**  
**Modelling**  
**Modélisme**  
**Modellismo**

**GRAUPNER CATALOGUE**

192 pages (size 10½ in. x 9½ in.) – with FULL COLOUR ILLUSTRATIONS of the complete range of Graupner GLIDERS, SAILPLANES, POWER AIRCRAFT and other kits. Specifications, matching engine and prop sizes, etc. PLUS details and COLOUR ILLUSTRATIONS of the complete Graupner range of accessories – and FREE 'FSP' LEAFLET of new releases. SPECIAL OFFER PRICE 50p (well below cost). AT YOUR LOCAL MODEL SHOP – or send 50p P.O. or cheque to RIPMAX LTD., RIPMAX CORNER, GREEN ST, ENFIELD for a copy to be mailed direct to you.

**50p**

**If you're too young for a motorbike,  
try one of these.**

Every member of the ATC has a chance to fly.  
Even if he's too young for a motorbike!  
So if you like aircraft, if you like adventure, the  
ATC has a lot for you.

As well as flying, there is now the  
opportunity to take part in para-  
chute jumping, sailing, water-skiing,  
aqua-diving, mountain climbing, shooting and  
camping both at home and abroad.

So if you're between 13–17 and would like a little  
more adventure in your spare time, fill in the coupon  
and we'll send you the details.

Applicants for all ATC squadrons must be  
between 13–17 and resident in the U.K.



**ATC**

To: Sqn. Ldr. George Eccles (521 EA1)  
H.Q. Air Cadets, RAF Brampton,  
Huntingdon PE18 8QL.

Name \_\_\_\_\_

Address \_\_\_\_\_

Age \_\_\_\_\_

**FREE LEAFLET!** Please send  
me your free  
leaflet 'This is the Air Training Corps'



KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

# HotSpot

THERMATIC GLOPLUG

distributed by  
**RipMax**

with the patented **SOFT IRON ELEMENT CORE** for temperature control

- EASY STARTING
- RELIABLE IDLE
- MAXIMUM POWER
- EXTENDED LIFE

1.5 to 2 VOLTS

LONG REACH  
OR  
SHORT REACH

**4.2P**

**AT YOUR MODEL SHOP**

**look!**  
**low prices**

## DIESEL and GLOPLUG AERO ENGINES

DC Wasp 0.8cc	...	£2.93
DC Merlin 0.76cc	...	£3.96
DC Spitfire 1cc	...	£4.70
DC Sabre 1.5cc	...	£5.00
Enya 19 R/C	...	£8.73
DC Rapier	...	£9.08
Fox 15 R/C	...	£8.13
P.A.W. 1.49 DS	...	£5.50
S.T. G20/15D	...	£11.00
Veco 61	...	£25.41
ED Fury R/C	...	£6.36
Fox 25 R/C	...	£9.94
Fox 36	...	£8.13
Webra 61 R/C 10cc	...	£36.30
Many more Aero and Marine. New Zealand orders welcome. Send 7½p P.O. for Lists. Duty free — Export only.		

**THE MODEL SHOP (Guernsey)**

No. 1, Commercial Arcade, Guernsey, C.I.

**NJM**

FOR RADIO CONTROL  
AIRCRAFT KITS & ACCESSORIES

	PRICES	INC. V.A.T. AT 8%
KAMCO KADET 56"	£13.50	R/C BY MACGREGOR
KAMCO KAVALIER 54"	£16.98	Single Channel from £15.65
RipMax Spitfire 63"	£22.59	Digimac 1 + 1, 2 servos £44.18
RipMax Hustler 63"	£16.55	Digimac 2, Tx, Rx, Batt. box £30.95
KK Scorpion 46"	£11.31	Digimac 3, Tx, Rx, Deacs £51.90
Sig. Cirrus 87"	£7.75	Digimac 4, Tx, Rx, Deacs £73.69
		Micro Servo MR12F £13.50

Special Offer  
Super Tigre G21/40 R/C, new, boxed, inc. silencer £19.00

Solarfilm  
Solid Colours 26" 64p yd.  
Metal-flake Silver, Gold 73p yd.

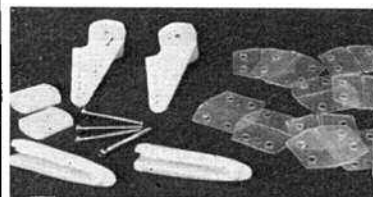
EASY CREDIT TERMS: PAYBONDS, BARCLAYCARD, ACCESS  
Second-hand equipment bought and part exchanged  
STAMPED ADDRESSED ENVELOPE WITH ALL INQUIRIES PLEASE  
**NORWOOD JUNCTION MODELS LTD.** Wed 1 p.m., Fri 9.30-7  
3 Orton Buildings, Portland Rd., London, S.E.25 Tel. 01-653 4943

## 'I.P.' HIGH-POWER NYLON PROPS!



Designed to give your engine more revs — more power!

7 x 4½ ...	16p	10 x 5 ...	43p
8 x 4½ ...	29p	11 x 6 ...	49p
9 x 4½ ...	36p	11 x 7½ ...	49p



## CENTRIC SPINNERS

	C	M
40mm (1½")	26p	6p
45mm (1¾")	35p	8p
52mm (2")	39p	92p
57mm (2¼")	41p	£1.00
62mm (2½")	49p	£1.10
70mm (2¾")	54p	£1.18
75mm (3")	59p	£1.24

C = coloured  
M = metalized

## 'I.P.' AND 'I.M.' AIRCRAFT ACCESSORIES

STEERABLE NOSEGEAR Lightweight	£1.10	Heavyweight	£1.20
WHEEL COLLETS 3mm, 3.5mm or 4mm (pkt 4)	...	...	16p
SIDE MOUNTED CAM LOCKS (packet 2)	...	...	42p
NYLON HORNS (pkt 2) 22p AILERON HORNS (screw adj)	...	...	58p
DIFFERENTIAL AILERONS complete Crank Kit	...	...	85p
PUSH ROD GRIP TUBE (18") Large or Small	...	...	34p
SEMI-HOODED PUSH ROD EXIT GUIDES (pkt 2)	...	...	16p
CABLE ANCHORS (6)	32p	SERVO-RAIL SUPPORTS	32p

**AT YOUR MODEL SHOP!**

## KEILKRAFT MERCURY KITS

GLIDERS	RUBBER POWER
SOARER BABY 36" 80p	SENATOR 32" 92p
CONQUEST 30" 92p	AJAX 30" 92p
CAPRICE 51" £1.94	EAGLET 24" 75p
PICADOR 24" £2.08	

CONTROL LINE	
PICADOR 24" £2.08	RADIAN 22" £2.05

POSTAGE: 10% of order up to £5, minimum 10p; over £5 post free (U.K.)

## JONES BROS. OF CHISWICK

56-62 TURNHAM GREEN TERRACE,  
CHISWICK W4 1QN  
CLOSED ALL DAY THURSDAY Tel: 01-994 0858

AVICRAFT LTD., 6 Chatterton Road, Bromley, Kent  
Tel. 01-460 0818

'Scientific' kits all for 020-049 Cox at £3.75 post 25p. Try one — various types — specify choice of biplane, profile, carved fuselage, low-wing, high wing, scale. K. K. Joker £1.42 post 18p or Goldberg ¼A Blazer £3.90 post 25p or for free-flight H-1 Thrust Viking CG £4.55 post 25p. Shoestring Stunter £6.50 post 25p, Voodoo £3.90 post 25p. Rotary bell crank, metal 30p post 5p, 4 10 swg wire clamps 30p post 5p. Fox filters large and small 39p post 15p, PAW NVA 44p post 5p. Wire bender £3.45 post 30p. Dremel moto tool £32.50, Dremel MotoSaw £39.95 post 75p both items, Dremel blades coarse and standard 59p for 5 post 5p. Badger 250 spray £5.56, 200 £20.41, spare ¼ oz. jars 22p post 6p. 20 oz. propel £1.10 post 25p. David plane £1.45 blades 13p. Strip your own balsa with our stripper at £1. post paid, uses any blade. X15 Glow with pipe £30.05 post 30p — try us for one. ST 15 RV Diesel 1974 production £18.02, Rossi 15 c/w pipe £36.25 speed. Rossi 1 2 and 3 heads 80p post 5p. Exacto Vacu Vico £1.50 post paid. New Kwik clamps — have two £1.48 each post 25p. Exacto keyhole saw 22p for 3 post 5p. Reprinted C/I Manual £1.50 post 15p. R/C Primer £1.50 post 15p. Single Channel R/C £1.50. The World of Model Aircraft by Guy Williams £3.95 post 20p. No. 1 Plans handbook 20p also 2, 3 and 4. All Map Books and Profiles S.A.E. list. Cox TD 051 and 049 £8.50 post 25p. Golden Bee £4.95 Baby Bee £3.95.

# Skill, patience and Humbrol modelling products

Quality, reliability and value for money make Humbrol modelling products brand leaders the world over. Ask for Humbrol by name . . . available from all leading Model and Toy shops.



**HUMBROL**

# KEILKRAFT

## FUELS

## CONTROLLINERS

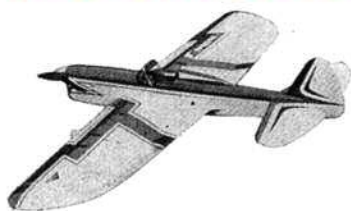
THE FINEST RANGE OF CONTROL LINE KITS AVAILABLE IN BRITAIN TODAY. FROM SIMPLE SHEET BALSA KITS—TO READY-TO-FLY PLASTIC MODELS.



NITRATED DIESEL  
METHANEX GLOW  
NITREX 15 GLOW  
ECONOMY GLOW

AVAILABLE IN SIZES

$\frac{1}{4}$  litre,  $\frac{1}{2}$  litre, 2 $\frac{1}{2}$  litre, 5 litre



**SPECTRE**

Largest of the KK Stunt models, designed for contest performance. Engines 2.5-3.5 c.c. Wingspan 40 $\frac{1}{2}$ " £5.11

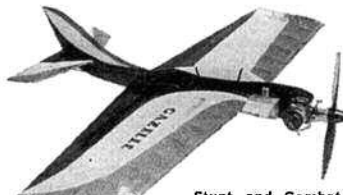
A handsome looking model to team race specification. Engines 2.5 c.c. Wingspan 30" £4.00

**DEMON**



**TALON**

Flying wing model capable of a good stunt performance. Engines 2.5-3.5 c.c. Wingspan 32" £3.35



**GAZELLE**

Stunt and Combat trainer with profile fuselage. Engines 1-1.5 c.c. Wingspan 28" £2.73



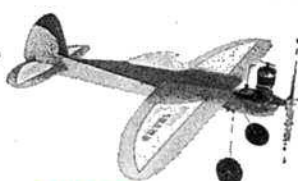
**SKYSTREAK 26**

A streamlined model with swept back wings. Engines .75-1 c.c. Wingspan 26" £1.71



**MARQUIS**

Semi scale model of most elegant lines, full stunt performance. Engines 1-1.5 c.c. Wingspan 30" £4.25



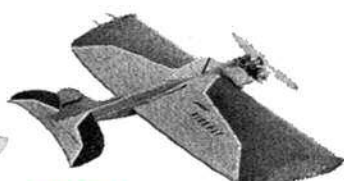
**CHAMP**

Beginners' profile control-line model 20" wingspan £1.82



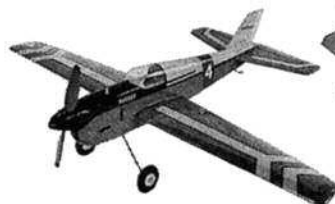
**FIREBIRD**

Large profile stunter with coupled flaps and elevator. Engines 2.5-3.5 c.c. Wingspan 32" £3.35



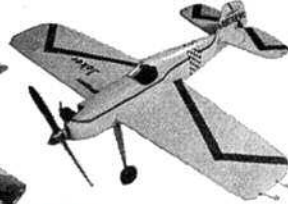
**FIREFLY**

Stunt model for small engines. Very simple to build. Engines 1 c.c. Wingspan 20" £2.19



**RANGER**

Racy looking model of all sheet construction. Engines 1-1.5 c.c. Wingspan 26" £2.31



**JOKER**

Semi scale stunt model for small engines. Built up construction. Engines .5 c.c. Wingspan 19 $\frac{1}{2}$ " £1.71



**R.A.F. HURRICANE**

Ready-to-fly tough plastic model. Power 0.49 Glow-motor, handle, lines, glow clip and lead. Wingspan 19 $\frac{1}{2}$ " £8.98



**PHANTOM**

Very rugged basic trainer, all sheet and block construction. Engines 1-1.5 c.c. Wingspan 21" £3.28

**PHANTOM MITE**

Smaller version of the famous Phantom. Many shaped parts. Engines 1 c.c. Wingspan 16" £1.82

Available at **KEILKRAFT** agents