

Aero Modeller

AUGUST 1976 30p

U.S.A. & Canada \$1.25

INCORPORATING
MODEL AIRCRAFT



HOBBY MAGAZINE

Isaac's Spitfire • 3-View Drawings
Exclusive! '36 Wakefield Trophy Report
FockeWulf 190-C/L Stunt Plans



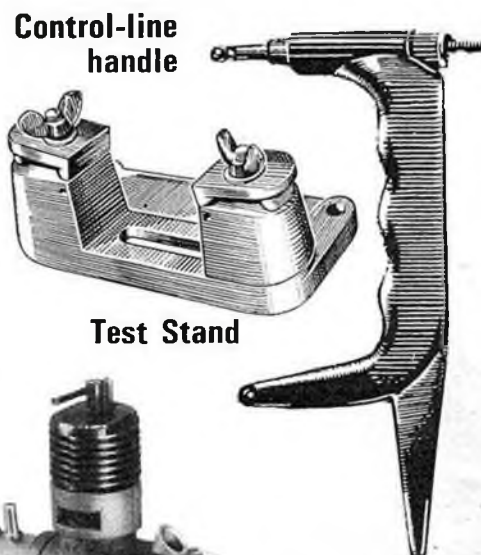
QUICKSTART



DART
.5 c.c.

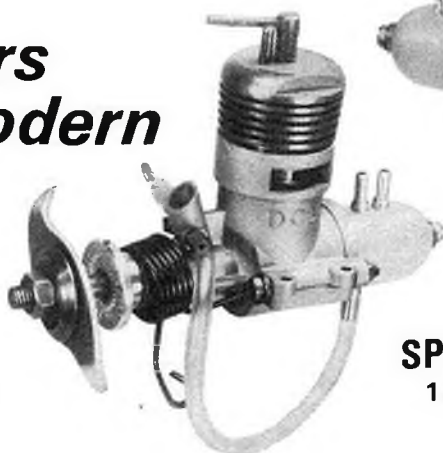


WASP
.8 c.c.

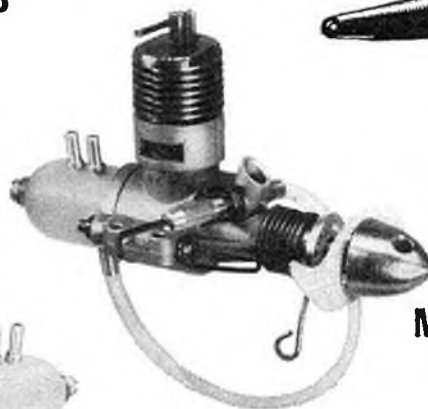


Control-line handle
Test Stand

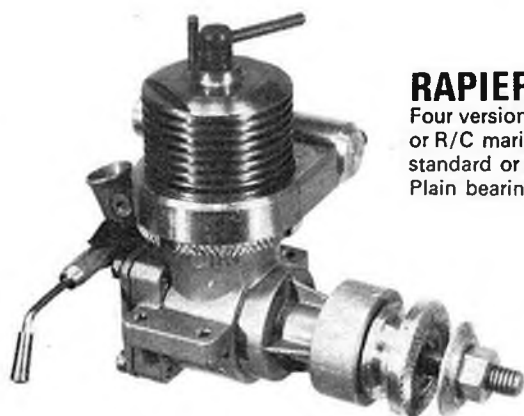
***The Motors
for the Modern
Modeller!***
**Quality
Reliability
Economy**



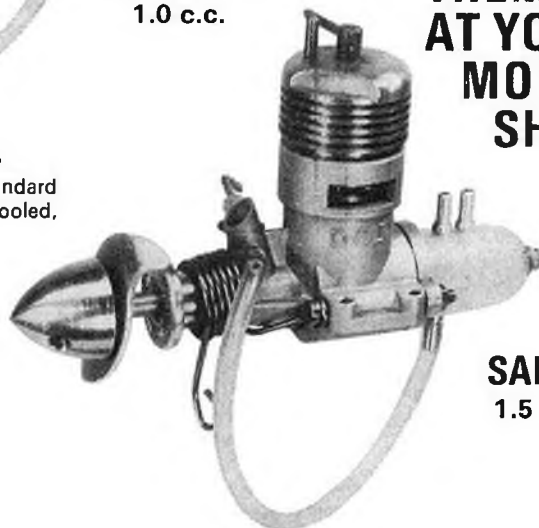
SPITFIRE
1.0 c.c.



MERLIN
.75 c.c.



RAPIER 2.5 c.c.
Four versions—Aero standard
or R/C marine, water-cooled,
standard or R/C.
Plain bearing only.



SABRE
1.5 c.c.

**SEE
THEM
AT YOUR
MODEL
SHOP**

You can't beat a diesel

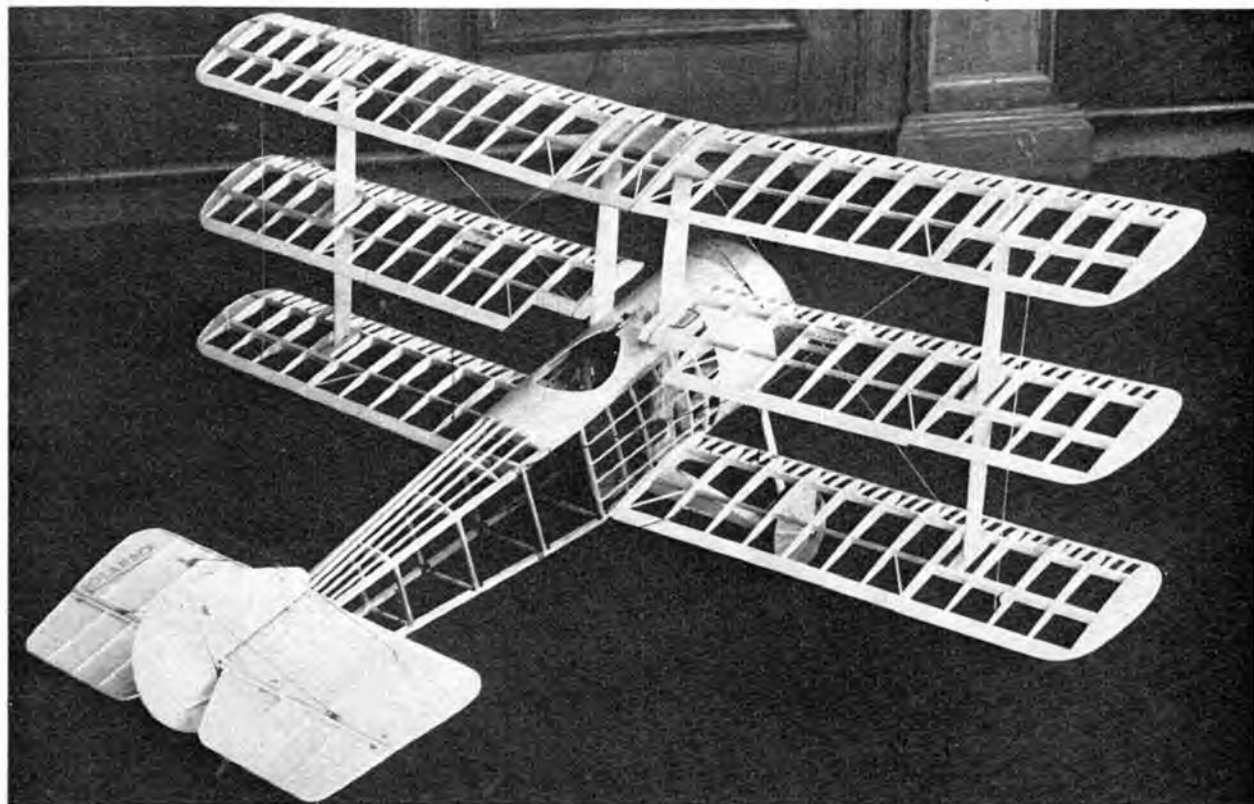
No spares-backing
worries—if you have
a Quickstart you can be
sure of full and continuous
use of your engine

***Quality
engineered
for lasting
performance***

DAVIES-CHARLTON LTD.

HILLS MEADOW
DOUGLAS, Isle of Man

SOLARBO



A superb one-ninth scale model by M. Coker of Guildford. And the type of model where Balsa* is the only airframe material you could consider using. Ribs and riblets; fuselage stringers; all show up in an authentic manner when covered (and if you are really fussy about detail, doped on rib tapes are easy to add).

Mr Coker has also used a clever method of reproducing the thin section tail surfaces with rib detail. They are cut from quarter-grain sheet for stiffness and rigidity, with 'ribs' and 'outline' spars added top and bottom. A small weight penalty, perhaps, but an effective way of producing warp-resistant tail surfaces with a realistic scale appearance when covered.

**Good Balsa, that is. The best you can buy. Which for top model builders, like Mr Coker, means Solarbo Balsa. The 'Solarbo' name appears on the tailplane as proof!*

SOLARBO
LIMITED

COMMERCE WAY • LANCING • SUSSEX • BN15 8TE • ENGLAND

**WHERE GOOD Balsa
COMES FROM**

Buy and Fly the Best...

VERON

Following in the footsteps of the famous!

BIG IMPALA

74" Span. 1880 mm.

RADIO HILLSIDE SOARER

The 3-in-1 optional services Soarer
For Rudder/Elevator with standard dihedral or
Rudder/Elevator/Ailerons with reduced dihedral
Area 648 sq.ins. : Wing Loading 8.8 ozs./sq.ft.

**KIT HAS A.B.S. PLASTIC FORMERS
WING AND TAIL RIBS**

BIG IMPALA WING KIT AVAILABLE!

Full Set A.B.S. Plastic Ribs, Shaped Leading & Trailing
Edges, Sheet, Tip Blocks, Ply Gussets etc.

A CLASSICALLY 'STRETCHED' VERSION
OF THE NOW WORLD RENOWNED

52in. SPAN Impala

SEE YOUR LOCAL
DEALER FOR LATEST
KIT PRICES!

Or with Auxiliary Motor on nose
(removable nose-block in the kit)
(motor mount not included)
For Motors up to 1.8cc (1.1 c.ins.) or Electric

DISTRIBUTED BY VERON : FROM YOUR DEALER

Aero Modeller

INCORPORATING
MODEL AIRCRAFT

August 1976

Volume XLI No. 487

CONTENTS

HANGAR DOORS	435
'FOCKE WULF 190'	436
NOISE ANNOYS	438
READERS' LETTERS	439
FLYING SCALE COLUMN	440
THE FREE FLIGHT SCENE	443
AIRCRAFT DESCRIBED - Isaacs Spitfire Mk1	447
TOPICAL TWISTS	450
1936 WAKEFIELD TROPHY	451
BETWEEN THE LINES	454
GOLDEN WINGS CLUB	459
ENGINE TEST - Ross 60 Twin	460
KITES AT OLD WARDEN	463
DOUBLE DUTCH	464
CLUB NEWS	467
CONTEST CALENDAR	468



HOBBY MAGAZINE



ALSO MODEL BOATS . RADIO CONTROL
MODELS & ELECTRONICS . MODEL ENGINEER
MODEL RAILWAYS . SCALE MODELS . WOOD-
WORKER . MILITARY MODELLING . GEMCRAFT
BATTLE and PUZZLES DIGEST

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 at a price in excess of the recommended maximum price 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 Post Office for transmission by Canadian Post. American inquiries regarding subscriptions, news stand sales and advertising should be sent to AERO MODELLER, Eastern News Distributors Inc., 111 Eighth Avenue, 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, Hertfordshire HP1 1EE (subscription queries Tel: 0442-51740). Direct subscription rate £5.00 per annum, including index, \$14.00 (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 10th 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

Advertising Director

GOSPATRIC HOME

Advertisement Manager

M. GRAY

Comment

When the British team for the World Scale Championships departed for mid-Sweden, they could hardly have anticipated such a bright return on 27th June.

For what amounted to almost a 'private enterprise' operation by utterly dedicated enthusiasts, turned out to be a world-beating successful operation.

The highly prized *Eddie Keil Memorial Trophy* is back once more in its country of origin, won emphatically by Brian Taylor (2nd), David Vaughan (3rd) and Mick Reeves (6th). Congratulations to all concerned. We understand from first reports that first place eluded Brian Taylor only through a premature engine cut in the last vital round. Winner was Nelytz of Canada with his 80in. DHC-1 Chipmunk.

Top scorer in static scale was David Vaughan with his 'Wirraway'. Other highlights were a first yet USSR entry in R/C Scale with a ducted fan Aero-39 and in Control Line, the tremendous battle for first place between the ultimate winner J. Ostrowski of Poland with his famous Lockheed P-38 Lightning, and the Russian entry by Yougov of a Yak-18 (2nd) which even had an engine self-starter triggered by a scale starting handle!

Against such opposition our lone entry in Control Line, Vic Willson was placed an honourable 11th. Full details next month.

on the cover

Bob Cole peels the man-carrying scale Spitfire, designed and built by John Isaacs, away from its Hampshire airstrip. Dynamic study by Ken Worrell: see pages 477-9 in this issue, for full description and scale drawings of one of the most exciting home-built aircraft ever made in the UK.

next month

It's World Championships time again and the September issue brings full reports of both the Scale and Control Line meetings from Sweden and Holland respectively. Regular features and other interesting articles also appear in the September issue - on sale 20th August. Place your order now!

NEW...RIPMAX

electric power systems

BULLET 30

Size: 3.1" long
1.9" dia

super efficient 300-400 watt motor
capable of flying really large aircraft!

yes, it develops the
same power as a
"29" glow motor!
It will fly power
models up to 72" span (or
powered sailplanes up to 10-11ft
span) with 6-8 minutes motor run!
10,000 RPM on a 10 x 4 PROP!



motor weight 14 oz.

12 pole motor with copper-carbon brushes, heavy-duty commutator and OILITE self-aligning bearings. Shaft adaptor ($\frac{1}{8}$ " dia) takes standard "29" size power props.

Powered by two RIPMAX HI AMP NICKEL CADMIUM FLIGHT BATTERIES. Batteries and motor fully protected by in-flight fuse. Total installed weight 46 ounces.

Almost any 54-72" span free flight power model can readily be adapted to powering by the BULLET 30. Radio control models up to 60" span, too.

ADVANTAGES

- No engine starting problems - just switch on and go! No starting skill, no starter or separate battery required!
- Smooth SILENT FLIGHT - well below the legal noise level which enables you to operate from sites where normal powered models are banned!
- CLEAN! No liquid fuels to mess about with, or clean off models after use! Models do not require fuelproofing, either!
- ECONOMIC OPERATION because once you have bought the system your Battery Pack can be recharged time and time again from your car battery. Operational time costs you nothing for 'fuel'!
- LOW MAINTENANCE COSTS since there are no expensive glowplugs to burn out and the system is fully fuse-protected. Only brushes need replacing when they eventually wear right down.
- VIBRATION is almost non-existent, so servo mounting can be more rigid, simplifying installation and giving a more positive linkage for exact control response.

'15' POWER CYCLONE 15

This smaller motor is powered by a single 9.6 volt RIPMAX HI AMP NICKEL CADMIUM FLIGHT BATTERY which reduces the INSTALLED WEIGHT OF THE COMPLETE SYSTEM TO ONLY 21 OUNCES.

equivalent to a '15' glow motor!
11,000 RPM on a 7 x 4 prop!



$\frac{1}{2}$ " adaptor takes standard "15" props

$2\frac{1}{2}$ " x 1.4" dia
motor weight 5.3 oz

The CYCLONE 15 will fly typical power models up to 60in. span - or the largest powered sailplane you are ever likely to build! Power-on duration is 5-6 minutes on a single charge, from a single Ripmax Hi Amp Nickel Cadmium Flight Battery. Battery and motor are fully protected by in-flight fuse. Cyclone 15 is also suitable for powering R/C models with lightweight construction up to 54in. span.



Each system consists of the appropriate MOTOR fitted with INTERFERENCE SUPPRESSION Shaft Adaptor and Allen key motor fuse holder and flight fuse, heavy duty toggle switch, all prewired to heavy-duty leads and connector; battery pack, connector; charging lead with fuse holder, charging fuse connector and crocodile clips. Spares and other accessories are also available (see right).

BULLET 30 SYSTEM £44.50
CYCLONE 15 SYSTEM £22.50

RECHARGING IS EASY!

Direct from a 12 volt car battery, on the flying field! Charging time approx 30 minutes. Battery is fuse protected during charging.

SEPARATE ITEMS AND SPARES

Cyclone 15 Motor (suppressed)	£3.95
Cyclone 15 Shaft Adaptor	55p
8-Cell HI AMP Nicad for Cyclone	£16.60
Bullet 30 Motor (suppressed)	£9.95
Bullet 30 Shaft Adaptor	55p
2 x 8-Cell HI AMP Nicad for Bullet	£33.20
Single Cells (1.2v, 1.2 Ah.)	each £1.95
8-Cell Charger/Discharger	£16.90
2 x 8-Cell Charger/Discharger	£20.90
Heavy Duty Micro Switch	£1.15
5 Amp Charging Fuse	each 36p
15 Amp Flight Motor Fuse	each 12p
In-Line Fuse Holder	each 28p
2-Pin Plug 32p	2-pin Socket, 32p
4-Pin Plug 42p	4-Pin Socket 42p
Heavy Duty Toggle Switch	each 55p

MABUCHI A1

recommended power for
lightweight models
up to 36" wingspan

Weight (complete with two RECHARGEABLE SUPER CELLS) is only 2½ ounces! Motor run up to 40 seconds on a single charge. Motor unit incorporates battery case and clips onto simple motor mount for simple, easy installation. Complete with $\frac{1}{4}$ " dia. plastic prop. A1 AEROMOTOR UNIT

£2.70
A1 FLIGHT BATTERIES £1.70

AEROMOTOR CHARGER £3.95
(works off dry batteries, recharges in 60 seconds!)



*** SEE THEM AT YOUR MODEL SHOP ***

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

Now! The one you asked us to make ...

The New MacGregor Digimac I

complete with servo, requiring only batteries to operate

One Channel proportional bargain at only

£29.95

Yes, it's here. The Digimac One you've been waiting for. The youngest of the MacGregor proportional radio controls. The cheapest of the range. Cheap that is at the low, low price of £29.95, but not in quality. It's still got the MacGregor name to live up to for reliability and rugged construction, with the finest of after sales servicing on tap.

Built and developed wholly in the UK, specifically for those new into radio control. It gives you a lot more guidance for a lot less money.

Remember that the Digimac One, like all the MacGregor proportional combos, can be converted to take up to six channels. With a Digimac One, you've really begun!



**MacGregor
Radio
Control**

Canal Estate, Langley, Berks SL3 6EQ

Available from your local stockist.

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

Who makes the world's finest internal combustion engine?

Rolls Royce? Mercedes? General Motors?
No. Cox do, for your model aircraft.

A Cox engine is made to tolerances of less than 20 millionths of an inch. A Cox engine runs faster - almost 8 times faster than full size reciprocating aircraft engines.

And no other engine wins as often as Cox engines. Year after year, Cox engines have been proven at the US annual National Model Aircraft championships.

So choose a Cox for your model. There are 17 different engines, from .327cc up to 2.499cc, in 3 distinct groups. See Cox engines and planes at Hamleys or your local model and toy shop.

Once you've chosen your Cox, you'll know you've got the world's finest internal combustion engine to power your model.

The Reed Valve Series. For general use in both control line and free flight.

The Medallion Series. Ideal for sport or radio control flying.

The Tee Dee Series. The most powerful engine in its class. Designed for competition.

Tee Dee .010 No. 1300

(From the Tee Dee Series)

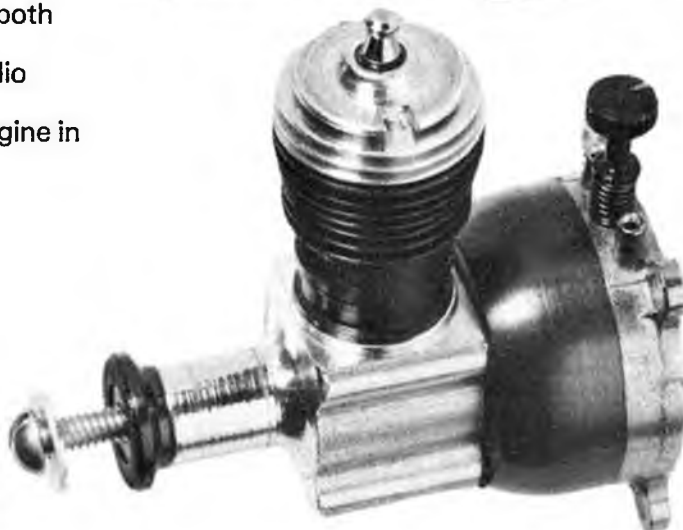


**Medallion
.049 No. 2400**
(From the Medallion Series)



Pee Wee .020 No. 1000

(From the Reed Valve Series)



HALES

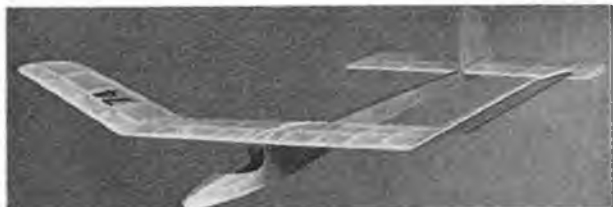


P.O. Box 33, Hinckley, Leics.

from



GLIDERS...



MERLIN
33" span

Built-up wing and tail for light weight and high performance. All sheet fuselage, clear canopy. Kit includes everything (except cement). A superb tow-line trainer! Overall length 21". Price £1.85



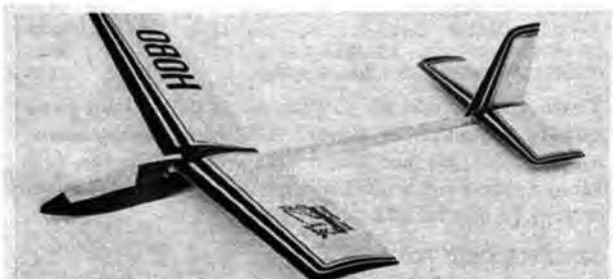
PETREL
43" span

Stable and really pretty in flight - with a fine soaring performance. Die-cut ribs, pre-cut fuselage parts, etc. Model conforms to the A1 contest spec - an ideal club design! Overall length 27". Price £2.95



MISTRAL
55" span

Continental-style open class high performance towline glider with built-up wing and tail, sheet fuselage construction (all parts die-cut). Features D/T tail and auto-rudder. Price £3.95



CAMBRIA KITS ARE DISTRIBUTED BY RIPMAX

C/L KITS

Your choice of **FOUR** different profile-scale models (only two shown). All 28" span and designed to match .09 glow motors or 1.5cc diesels. And the kits are all **VERY COMPLETE**.



price £4.95 each

HURRICANE
FW 190
SPITFIRE
ME 109



Kit contents include shaped sheet balsa fuselage and tail parts; moulded balsa cowlings (adding strength and realism!); plus die-cut wing ribs, shaped ply parts, shaped wire parts; bellcrank, horn, wheels, acetate sheet for canopy; covering material . . . and even scale-type transfer markings. The only 'extras' you need are adhesives, colour finish - and a spare .09 or 1.5cc engine! In addition to the **HURRICANE** and **FW190** illustrated there is also a **SPITFIRE** and **ME 109**.

SCOUT
21" span

Sleek, speedy - control line model. Designed specially as a trainer or sports model for .75-1cc engines. Preshaped parts, hardware, wheels and spinner included. No soldering reqd. Price £4.30



Superbly engineered kits - every one of them! Really easy to build - and performance guaranteed! Prefabricated parts. Fully detailed plan and instructions. Britain's top-selling kits!!

28" HOB0

All-balsa construction with preshaped parts. Five die-cut sheets (four colour printed) - and the kit is complete even down to noseweight. Cambered wing for high performance as a beginner's glider. Only cement needed to complete your model. Price £1.85



HOB0 also adapts readily to **MABUCHI** AT **ELECTRIC POWER** (see photo above). Simply trim nacelle to fit motor unit close to wing.

SEE THEM ALL AT YOUR MODEL SHOP

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

WOLSTENHOLME

MODELS

45/47 WHALLEY ROAD,
ACCRINGTON, LANCs.

Telephone: (STD) 0254-37771

Payment by ACCESS, BARCLAYCARD, PAY-BOND, etc. — Just ring your card number

BALSA PRICE LIST AS FROM APRIL 1st

	R.R.S.P.	20% Disc.	Price
1/8" x 1/8" x 36" x 10	£0.40	£0.32	
1/8" x 1/8" x 36" x 10	£0.60	£0.48	
1/8" x 1/8" x 36" x 10	£0.80	£0.64	
1/8" x 1/8" x 36" x 10	£1.70	£1.36	
1" x 1" x 36" each	£0.50	£0.45	
2" x 2" x 36" each	£1.51	£1.21	
2" x 3" x 36" each	£2.30	£1.84	
3" x 3" x 36" each	£3.21	£2.48	
3" x 4" x 36" each	£4.18	£3.35	
1" x 3" x 36" x 10	£2.00	£1.60	
1" x 4" x 36" x 10	£3.10	£2.48	
1" x 3" x 36" x 10	£2.20	£1.76	
1" x 4" x 36" x 10	£3.50	£2.80	
1" x 3" x 36" x 10	£2.60	£2.08	
1" x 4" x 36" x 10	£4.10	£3.38	
1" x 3" x 36" x 10	£2.90	£2.32	
1" x 4" x 36" x 10	£4.50	£3.60	
1" x 3" x 36" x 10	£3.50	£2.80	
1" x 4" x 36" x 10	£4.90	£3.92	
1" x 3" x 36" x 10	£2.00	£1.60	
1" x 4" x 36" x 5	£2.90	£2.32	
1" x 3" x 36" x 5	£2.60	£2.08	
1" x 4" x 36" x 5	£3.90	£3.12	
1" x 3" x 36" x 5	£3.25	£2.60	
1" x 4" x 36" x 5	£4.70	£3.76	

Postage Instructions:
Orders up to £15.00, please add 0.50p.
Orders up to £29.00, please add 0.75p.
Orders over £30.00, carriage free.

Above rates apply in U.K. only

ENGINES

D.C. Sabre	£7.20
D.C. Spitfire	£6.78
P.A.W. 2.49 DS	£7.60
P.A.W. 19 DS	£8.20
Fox 15 Stunt	£7.07
Cox Medallion 049	£8.75
Cox Tee Dee 049	£10.75
Webra Glo Star 20	£15.35

PUBLICATIONS

K.K. Handbook	£0.50
Plans Handbook 1	£0.30
Plans Handbook 2	£0.30
Plans Handbook 4	£0.30
Ripmax Catalogue	£0.95
Graupner Catalogue	£0.75
R.M. Soaring Book	£2.25

WE
STOCK
PROFILE
PUBLICATIONS

KITS

K.K. RUBBER DRIVEN MODELS

Competitor	£1.50
Gipsy	£3.13
Ajax	£1.47
Achilles	£1.10
Ace	£1.40
Senator	£1.30
Robin	£1.51

K.K. CONTROL LINE MODELS

Champ	£2.30
Gazelle	£2.73
Firefly	£2.75
Demon	£4.95
Ranger	£3.32
Talon	£4.25
Marquis	£5.46
Mercury Cobra	£4.72
Marvin	£2.13
Texas	£2.06
Team Racer	£2.60
Wasp	£1.95
Jun. Monitor	£3.65

K.K. GLIDERS

Chief	£4.78
Topper	£2.39
Conquest	£1.52
Soarer Baby	£1.54
Dolphin	£1.32
Mercury Grebe	£2.60
Marauder	£2.75
Swan	£2.20
Martin	£1.71
Three Footer	£2.30

LINDOE RUBBER MODELS

Piper Cherokee Cruiser	£2.55
M.E. 109E	£1.56
Cessna Skyhawk	£2.55
Piper Comanche	£1.20

JOLLY ROGER GLIDERS

Long John Silver	£1.65
Morgan	£1.56
PEGASUS Warlord	£4.31

DECO MODELS - Sho Gun

K.S.B. Timers - 30 sec.	£2.95
K.S.B. Timer - 20 sec.	£3.15

**MINIMUM POST
& PACKING ON
ALL KITS—50p**

Late-night Opening

Fridays till 7.30pm. Closed all day Wednesday. Mail Order a pleasure. Post free over £30. Prices are correct at time of going to press.

CHADPalm

KITS WORTH BUILDING

STUKA - Scale - 34in. Span, Free Flight	£11.50
STUKA - Scale - 34in. Span, Control Line	£12.00
SE 5A - Scale - 27in. Span, Free Flight/RC	£13.75
SPITFIRE★★ - Semi Scale - 53½in. Span, C.L.	£14.95
TAURI★★ - 57in. Span - Multi Channel RC	£17.95
CESSNA 172★★ - Scale - 72in. Span RC	£21.00
TAURI★★ - 57in. Span - with Styrene Wings	£19.95
GYPSY Moth★★ - Scale - 60in. Span RC	£23.95

THESE KITS ARE WELL PROVEN DESIGNS AND INCLUDE:

- ★ AeroModeller Plans Service Plan
- ★ Instructions
- ★ All cut out sheet parts printed on good quality self-adhesive paper
- ★★ All precut Balsa and Plywood Parts
- ★ Complete with Wheels, Spinner, Fuel Tank
- ★ Ample Balsa, Ply and Tissue, Preformed Undercarriage, steerable nose gear and canopy if applicable
- ★★ PVA Adhesive

Available from your Local Model Shop or from:

CHADPalm LTD P.O. Box 4, BACUP, LANCs

SCALE MODELS

The following
AEROMODELLER
PLANS are
available in KIT FORM

FIESELER STORCH - Scale - 46½in. Span F/F R/C	£9.75
HAWKER HURRICANE - Scale - 40in. Span Free Flight	£9.50
ALBATROS DV - Scale - 44in. Span Free Flight	£9.75
CESSNA SKYHAWK - Scale - 46½in. Span F/F, R/C	£9.95
CESSNA 172 H - Scale - 57in. Span, F/F, R/C	£10.50
FOKKER DR.1 TRIPLANE - Scale - 40½in. Span, F/F	£9.95
AVRO LANCASTER - Scale - 52in. Span, Control Line	£9.95
DH MOSQUITO - Scale - 40in. Span, Control Line	£9.25
FOKKER D VII - Scale - 29in. Span, Free Flight	£9.25

These kits include all cut out parts printed on good quality self-adhesive paper, APS plan, instructions, ample Balsa, ply and tissue etc., wheels, spinner, fuel tank, preformed undercarriages, etc., PVA adhesive, canopy (if applicable).

AVAILABLE ONLY FROM

CHADPalm LTD P.O. Box 4, BACUP, LANCs

Prices are inclusive of VAT and Postage. Please make cheque/PO payable to Chadpalm Ltd.

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

INTRODUCING

An outstanding new
two channel
Radio Control system



SANWA

Mini Propo

£49 95
including V.A.T.

For the absolute
beginner this
outfit is available
with one servo
only at £35.75

SPECIFICATIONS:

TRANSMITTER—MODEL SP26T

- 1 Power—12v., from 8 pencils
- 2 Power consumption—130mA
- 3 Effective range—500m on ground, 1,000m in air
(Subject to atmospheric conditions)
- 4 Stick-position interchangeable
- 5 Rear panel is metal screened
- 6 Interchangeable crystal facility
- 7 Dimensions—4.68 (h) x 2.28 (w) x 1.65 (d) in.
- 8 Nett weight—350g.

RECEIVER—MODEL SP26R

- 1 Power—6v., from 4 pencils
- 2 Sensitivity—2uV/m
- 3 Output—pulse + 3.5v.
- 4 Dimensions—0.81 (h) x 2.28 (w) x 1.65 (d) in.
- 5 Nett weight—40g.

SERVOS MODELS—SM321 AND SM322

- 1 Rotating direction—SM321 - clockwise
SM322 - anti-clockwise
- 2 Torque—1Kg/cm.
- 3 Speed—0.5 sec/60°
- 4 Output shaft has 23 splines for easy neutral positioning
- 5 Rubber cushions provided on lugs for vibration absorption
- 6 Hole pitch—1.19 (l) x 0.35 (w) in.
- 7 Dimensions—1.10 (h) x 1.20 (w) x 0.75 (d) in.
- 8 Nett weight 30g.

DIRECT SPEED CONTROLLER— MODELS SM331 AND SM332

- 1 Load capacity—SM331 - 5 - 8v. 2A.
SM332 - 9 - 13v. 2A
- 2 Dimensions—0.81 (h) x 2.28 (w) x 1.65 (d) in.
- 3 Nett weight—40g.

THREE VERSIONS AVAILABLE

- 2F 2M complete with two servos
- 2F 2Y complete with one servo
and one speed controller
- 2F 2MW complete with two speed
controllers



For further details contact your
IRVINE-SANWA dealer, or send
SAE for technical brochure

Distributed and serviced by

irvine engines

UNIT 8, ALSTON WORKS, ALSTON ROAD,
HIGH BARNET, HERTS. Tel: 01-440 0923



PEANUT SCALE

**EACH KIT MAKES
2 MODELS!**

Rubber-powered flying scale. Balsa and tissue construction, easy to build and fun to fly! Designed by 'Peanut' experts. All materials required are in the kit, except cement and dope. Fly indoors or outdoors. Remarkably realistic in appearance and all great flyers.

* The new PEANUT models are just part of the full range of STERLING aircraft kits. They are all described and illustrated in the RIPMAX MODELLERS HANDBOOK—or you can go along and examine them all at your local model shop.



Parts printed on fine quality specially selected low-density balsa wood, sanded to micrometer tolerance. Strip balsa. Coloured Tissue. Scale Decals. Wheels. Propellers. Fittings. Contest grade rubber motors. Detailed scale plastic parts. Plus well illustrated plans with step-by-step instructions.



KIT P1 SE5A and FOKKER D-8
KIT P2 MONOCOUE AND CITABRIA
KIT P3 WACO S.R.E. and INTERSTATE CADET

Each kit builds two models Price £2.65

RUBBER MOTOR WINDER

Ideal for Peanuts and other small models! Nylon construction with 5:1 ratio. Suitable for up to 6 strands of +. Price £1.95



SEE THEM ALL AT YOUR MODEL SHOP

C.A.P. KITS ARE NOW BETTER VALUE THAN EVER

WHY? Balsa wood has recently increased by 20% approximately, with no extra to pay on your C.A.P. kit. This represents a saving of between £2.20 – £6.00 depending on the kit.



C.A.P. No. 13 FAIREY SWORDFISH

60½" Span R/C Model for 35-61 Power.

ITEMS AVAILABLE:

PLAN £2.16 + .22p Postage

PRE CUT KIT £36.94

GLASS FIBRE COWLING £2.92 + .60p Postage, 14 x 5 Propeller .87p + .12p Postage

PRE SHAPED WIRE PARTS £3.24 + .35p Postage

PRE SHAPED WING RIBS £4.32 + .35p Postage.

KIT CONTENTS: All parts cut to shape, Glass Fibre Cowlings, Lt/Wt Nylon Covering, R/C Fittings, Pre-Shaped Wires, plus ample Balsa Sheet and strip for construction work.

Please send .18p Postal Order for our current blue cover illustrated lists — Prices include VAT and are correct at time of going to press.

NOTE: Plans sold separately from kits.

COMPLETE-A-PAC

Tel: 089-684-334

West High St., Earlston, Berwickshire, Scotland.

St Leonards MODEL SUPPLIES



ATOM 12 Hand Launched Glider	.63p
ATOM 18 Hand Launched Glider	.91p
ARIES 36 inch Towline Glider	£1.85p
ARIEL 36 inch Quickbuild Towline Glider	£1.95p
ASTEROID 48 inch A1 Towline Glider	£2.95p
SATELLITE 48 inch A1 Towline Glider	£2.55p
NOVA 78 inch A2 Towline Sailplane	£6.15p
B.B.C. T.V. HAWK 14 inch Beginners Rubber	.60p
PLUTO 24 inch Rubber Powered	£2.05p
PERFORMER 36 inch Rubber Duration	£2.85p
METEOR 34 inch Cabin Power up to .8cc	£2.60p
SPITFIRE 18 inch C/L Trainer up to 1cc	£2.95p
LITTLE LADY 26 inch C/L Stunt 1/1-5cc	£4.50p
LUCKY LADY 32 inch C/L Stunt 1-5/2-5cc	£5.70p
EXCALIBUR 34 inch C/L F.A.I. Combat	£4.30p
LIVELY LADY 45 inch C/L Stunt 2-5/5cc	£11.00p

See R.C.M. & E. for our 8 Radio model kits.

FROM ALL THE BEST MODEL SHOPS

ST. LEONARDS MODEL SUPPLIES

St. Leonards House, Ashtree Close, Worlingham,
Nr. Beccles, Suffolk. (Tel: Beccles 713786)



MICHAEL'S MODELS 646-648 HIGH ROAD, N. FINCHLEY,
LONDON, N12 0NL Phone: 01-445 6531

SECOND HAND ENGINES

COX 15 med ...	£9.50	K.B. 155 with Perry ...	£20.20
PAW 2-49 tuned ...	£7.50	K.B. 35 Stallion Stunt ...	£8.00
PAW 19 ...	£5.50	O.S. 20 + sil stunt ...	£7.50
Rossi 15F piped ...	£35.00	Fox 35 + sil stunt ...	£7.20
Fox 15 stunt ...	£3.50	Fox 36X Combat Special ...	£14.50
Enya 19 + sil ...	£8.00	O.S. 40 stunt RR ...	£15.95
Super Tigre 20/15 D ...	£12.95	K.B. 35 stunt ...	£5.50
Super Tigre 15 RVD ...	£17.50	Super Tigre G60 RV ABC ...	£29.95
Super Tigre G15 F.I. ...	£16.00	K.B. 40 S ...	£36.00
Super Tigre G20/199 ...	£9.95		

Postage 25p per engine

Send SAE for Control Line List or Engine List.

**MAIL ORDER A PLEASURE.
EXPORT ORDERS WELCOMED.**

All inquiries must be accompanied by SAE.

Phone Barclaycard, Access No. for same day service.

RACING SPORT & VINTAGE
ENGINES

Racing, Sport & Vintage Engines

MVVS D7 COMBAT 2.5cc DIESEL ENGINE £18.25

POSTAGE: EUROPE 92p; UK 25p

BRITISH MADE

MVVS CON RODS £1.95

POSTAGE 7p

NEW ENGINES

E.D. Racer 2-46cc ...	£10.15	Fox 36X Combat Special ...	£19.21
E.D. Super Racer 2-46cc ...	£11.49	Webra 2-49D ...	£13.92
E.D. Super Fury 1-46cc ...	£8.55	Webra Record 1-49D ...	£12.74
Rossi 15 RVD ...	£43.50	OTM-8 Diesel ...	£4.95
Rossi 15 Combat diesel ...	£39.50	Mk17 1-49 D ...	£6.80
MVVS D7 diesel ...	£18.25	Shokol 2-49 D ...	£5.95
Rossi 15 Normale glow ...	£36.50	PAW 1-49 DS diesel ...	£7.02
Rossi 15 Normale R/V glow ...	£39.50	PAW 2-49 Tuned ...	£10.20
Super Tigre G15 R/V diesel ...	£26.44	COX -049 TD ...	£12.50
Super Tigre G15/19 glow ...	£21.43	COX -051 TD ...	£12.50
Super Tigre G20/15 diesel ...	£17.30	COX BLACK WIDOW -049 ...	£8.45
Super Tigre G15 Goodyear ...	£21.43	COX -09 TD ...	£13.95
PAW 2-49 diesel ...	£7.56	COX MED -15 ...	£16.95
PAW 19 DS diesel ...	£8.10	Super Tigre 21/40 F.I. ...	£25.11
Mabuchi aero motor kit ...	£7.25	Indian Mills -75 ...	£7.95
Zom 2-49 diesel ...	£13.85		
Remco 29 spark ignition ...	£40.50		

Postage 25p per motor

We buy all types of engines for cash. Send for best quotation by return. Phone for new & secondhand stock position
Barclaycard, Access Phone No. for same day service

MICRO-MOLD

Make Britain's Premier Range of R/C Accessories including many items useful to all aeromodellers

The CIPPOLA .09 engines

15,000
r.p.m. on
Standard
Fuel.



Quality
Built
Motors
made by
experts

High power output from these compact, well-made motors.

.09 Standard version includes Silencer and 1 1/2v plug. Price £7.40

.09 R/C version with efficient strangler throttle. Includes muffler and 1 1/2v plug. Price £8.10
G.F. Nylon 7 x 3 1/2 props £0.30
Hot Racing Plugs £0.82
1 1/2v Standard Plugs £0.33

The above prices include V.A.T. at 8%.
For brochures on the above engines please send SAE to the distributors.

The CIPPOLA .09
- Ideal for
powering
CHASER II or
D.B. GRINGO

D.B. Models GRINGO

FOR FREE FLIGHT OR
LIGHTWEIGHT
1-2 CHANNEL
RADIO CONTROL



Kit price
£6.09

47" span for 1 cc to 1.5 cc (or .09 c.i.) engines. Designed for free-flight but equally suitable for one or two function lightweight R/C. The kit includes pre-cut balsa and ply fuselage parts, pre-cut balsa wing and tailplane ribs and parts. Ample supply of strip and sheet wood, preformed wire u/c, wheels, cabin glazing, transfers, clear plan plus building and flying instructions.

CHASER II

Span 37 1/2"
Another ARF



A quick build model with ready made wing halves in expanded styrene, ABS fuselage halves with integral fin and moulded tailplane. Kit includes u/c, wheels, tank, hinges, horns etc., etc. Ideal for 1-2 Ch. propo or S/C systems and .049 to .09 c.i. glo engines or equivalent diesels.
Simple to build - easy to fly.

Price £8.99

NOTE NEW ADDRESS

MICRO-MOLD

Station Road, East Preston, W. Sussex, BN16 3AG.

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

NEW

**TOP QUALITY
RADIO CONTROL
for as little as £45!***

**for aircraft
requiring
1- or 2-control
functions**

The TRANSMITTER is space age styled, featuring two self-centring variable-axis control sticks (stick units are also rotatable through 90 degrees). It is supplied either with a standard receiver as the FD2M/A Combo; or with the 'Brick' Receiver with integral servos as the easy-to-install FD2M/B Combo.

Designed for Dry Cell Operation, all Combos are complete with Battery Box, Switch Harness and one pair of Crystals. Five other pairs of crystals are available on the standard frequencies.

*Price of FD 2M/A Combo plus one FD22M servo.

SPECIAL FEATURES

- 1 Fully variable stick units both with independent trim controls
- 2 Easy access interchangeable crystal holder
- 3 Custom moulded case designed for comfort and precision control
- 4 Accurate Battery Condition Indicator
- 5 Protected ON/OFF switch
- 6 Chrome full length telescopic aerial

RIPMAX FUTABA Medallion



STANDARD RECEIVER and SERVOS

The Standard Receiver has an easily changed plug-in crystal, and sockets for plugging-in ANY RIPMAX-FUTABA SERVO(s). The NEW FD22M MEDALLION MINI SERVO is specially recommended for maximum economy! The FD21M LINEAR SERVO is also suitable. Receiver Harness incorporates a battery box taking four HP7 batteries

SIZES

Transmitter: 5½in. x 6½in. x 2in.
Standard Rx: 2½in. x 1½in. x 2in.
'Brick' Rx: 1½in. x 1½in. x 3½in.

WEIGHTS

Transmitter 18.7oz
Standard Receiver 1.8oz
'Brick' Receiver 5.3oz

PRICES

FD2M/A Combo £33.50
FD2M/B 'Brick' Combo £54.00
FD22M Mini Servo £11.50
FD21M Linear Servo £16.50

Separate Receivers

FD52M/A Standard £19.00
FD52M/B 'Brick' £39.00

Send large SAE to RIPMAX, RIPMAX CORNER, GREEN ST, ENFIELD, MX. now for a FREE COLOUR LEAFLET on RIPMAX-FUTABA RADIO.

MEDALLION 2-CHANNEL 'BRICK'

This unique, compact RECEIVER and 2-SERVO MODULE is the latest addition to the RIPMAX-FUTABA programme, providing a quick-change, easy-to-fit installation for any models. No separate servos to install. Just mount the 'Brick' with 4 screws and switch on!



NOW AT YOUR LOCAL MODEL SHOP

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

Heard at the HANGAR DOORS

NATIONALS, NATIONALS, NATIONALS. The 1976 British National Championships will be held at RAF Little Rissington on the weekend of 14-15th August. RAF Little Rissington is situated approximately 8 miles NNW of Burford, Gloucestershire – see map below. Access to the airfield is from either the A429 Cirencester/Stow-on-the-Wold road or the A424 Burford/Stow-on-the-Wold road. The entrance to the Championship site

will be situated on the western side of the airfield. The site will be open from 9am Thursday 12th to 12 noon Monday 16th. Any persons requiring access outside this period because of extenuating circumstances should apply, in writing, to the Nationals Organiser, 3 Bowrons Avenue, Wembley, Middlesex HA0 4QF.

Competition entry forms are currently being circulated to all SMAE members, but if for some reason you

have not received your issue of *Model Flying*, or need further forms, then write – enclosing SAE – to E. Roycroft at 37 Harlech Towers, Park Road East, Acton, London W3. Completed forms must be returned by 17th July.

Camping? Fees for adult individuals are £3 if pre-booked, £6 on site and for families (parents, plus children under 16 years) £4 when pre-booked, £8 for on-site arrivals. Unaccompanied juniors (10-16 years of age on 1st January 1976) will be charged £1. Penalty for camping without a permit will be £10, or ejection. Applications with pre-booking fees made out to RAFMAA/SMAE Nationals account must be sent to arrive not later than 7th August at Nationals Organiser, 3 Bowrons Avenue, Wembley, Middlesex HA0 4QF.

The camp control will be operational 24 hours per day for the period of the Championships. Details of local arrangements for groceries and milk will be available at the control. There will be a creche facility for young children operating on Saturday and Sunday from 9am to 12 noon and 1 to 4 pm daily under the supervision of a SRN. There will be a charge of 40p for each period and this facility is limited to children between the ages of 2 to 5 years. It would be helpful if parents would indicate, when applying for permits, if they wish to use this facility.

* * *

Radio Controlled thermal soaring will be held at a separate venue – Slade Farm, which is near Little Rissington. Here the Saturday and Sunday programmes are identical – each will include three rounds of duration flying interspersed with two rounds of scale glider flying.

REMINDER The SMAE/RAFMAA free flight two-day FAI Open International to be held at RAF Sculthorpe, Norfolk on 24th/25th July promises to be an excellent contest and has attracted overseas competitors. Prizes, donated by the modelling trade, will be presented at the close of the competition.

TIME KEEPER volunteers are wanted for the World Championships for Indoor Models at Cardington, 29th/30th August. Requirements are that volunteers must be experienced time-keepers, able to report for duty at 9.30 am on both days.

Accommodation is not offered, but a fixed, nominal allowance expense will be paid and all time-keepers receive daily lunch, plus a free ticket to the Celebration Banquet and prize-giving. Offers to SMAE Secretary, 2 Salisbury Avenue, Cheltenham, Glos.

BRITISH NATIONALS PROGRAMME

SATURDAY, 14th AUGUST

Free Flight

FAI (in order FIC, FIB, FIA – 30 min. rounds)
Round 1 06.00–07.30hr
Round 2 07.30–09.00hr
Round 3 09.00–10.30hr
Round 4 10.30–12.00hr
Open Glider, Coupe d'Hiver, Hand Launched Glider, ½A Power, Tail-less, Frog Junior.
Women's Cup 12.00–19.00hr
Fly-offs for Open events from 19.30hr

Control Line

FAI Team Race Round 1 12.00–16.00hr
Class B Round 1 09.00–13.00hr
Round 2 15.00–19.00hr
½A Team Race Round 1 17.00–20.00hr
Goodyear Round 1 08.00–12.00hr
Round 2 16.00–20.00hr
Aerobatics
1 & 2 Round 1 09.00–20.00hr
Carrier Round 1 09.00–17.00hr
Junior/Novice
Stunt Round 1 08.00–13.00hr
Round 2 14.30–20.00hr
Combat Round 1 08.00–20.00hr
Speed Round 1 09.00–14.30hr
Round 2 14.30–20.00hr

Radio Control

Aerobatics 08.00–11.00hr
13.00–16.00hr
Helicopter 11.00–13.00hr

Scale

Free Flight from 18.00 or 07.00hr Sunday
Control Line 10.00 or 10.00hr Sunday
Radio Control 08.00–18.00hr

SUNDAY, 15th AUGUST

Free Flight

Open Rubber, Open Power, A/1, Vintage and Women's Cup 06.00–10.00hr
14.30–18.00hr
14.30–18.00hr
FAI (in order FIC, FIB, FIA – 30min rounds)
Round 5 10.00–11.30hr
Round 6 11.30–13.00hr
Round 7 13.00–14.30hr
18.30hr
All fly-offs 18.30hr

Control Line

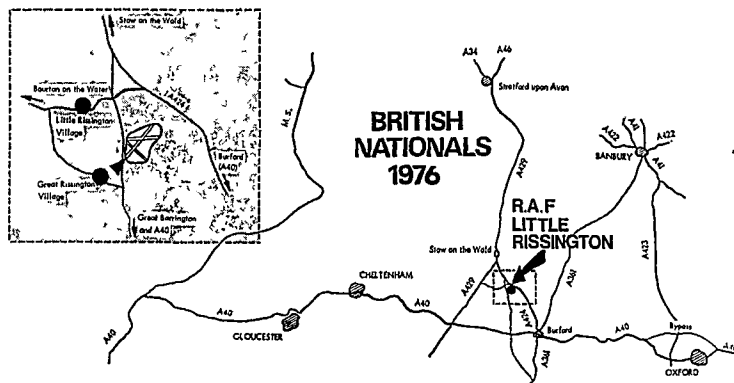
FAI Team Race Round 2 08.00–12.00hr
Semi 1 14.15–15.00hr
Semi 2 16.30–17.15hr
Final 18.30hr
Class B Semi 15.45–1.630hr
Final 18.00hr
½A Team Race Round 2 10.30–13.30hr
Semi 15.00–15.45hr
Final 17.40hr
Goodyear Semi 13.30–14.15hr
Final 17.20hr
Carrier Round 2 09.00–13.00hr
Stunt Round 3 09.00–12.30hr
Round 4 13.30–17.00hr
Combat Round 1 09.00–17.00hr
Final 18.20hr
Speed Round 1 09.00–16.00hr

Radio Control

Aerobatics 13.00–16.00hr
Helicopter 08.00–10.00hr
Pylon 10.00–13.00hr
16.00–19.00hr

Scale

Free Flight Possibly from 07.00hr
Control line Possibly from 10.00hr
Radio Control 09.00–18.00hr





Another attractive fully aerobatic design from Claus Maikis
— a semi-scale

FOCKE WULF 190

WHEN I SAW Dave Day's *Iroquois* way back in June 1963 *AeroModeller*, I knew that I just *had* to build a radial cowl model one day. That 'day' came three years ago, when my *Domino* design was just finished – and there was still a long winter in front.

There are some designers who claim that their stunt aircraft are built to exact scale dimensions, or at least as near as possible. What is the purpose of this? If the model lacks in performance – and it almost certainly will – the stunt judge will not give him any bonus points for his geometry. After all, we are flying aerobatics. My *Focke Wulf 190* is not a scale model; I just intended to retain the overall shape of the full size. As with a caricature, concentration on the most specific detail – and sometimes even over-emphasis – will help expression more than the exact replica. The onlooker simply ought to get the impression of a *Focke Wulf 190*. I did not want to deviate from typical 'stunt dimensions' other than to use a relatively short nose and even that was compensated for by renouncing the usual shaft extension. The nose seems to be rather 'chubby', but after checking, it has very little more frontal area than, for example, the *Nobler*. Also there is hardly any more wood in the construction, so the increase in drag and weight will be negligible. The wing has a 15 per cent airfoil at the root and nearly 20 per cent thickness at the tip, both at 28 per cent chord. Thus, the airplane can be flown quite slowly, if you prefer.

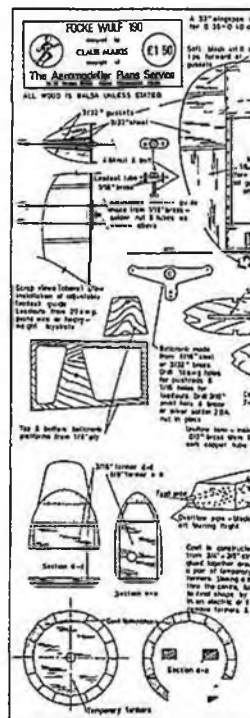
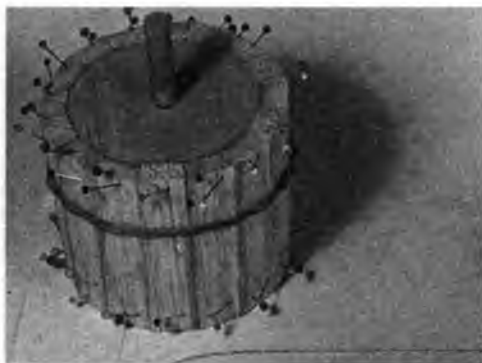
Engine is my old reliable OS Max H 40 P. I made a new venturi with a 6.5mm bore, while the spraybar is from a Taifun Bison engine. This spraybar has threads on both

ends and thus can be accurately fixed with the admission hole in the middle of the venturi. This hole is very small which certainly helps carburetion, while the thread is very fine, making for a non-critical needle. The knob of the needle is replaced by an angled piece of wire, which is much easier to operate and to check. My last venturis were made of nylon, because it is easier to obtain and faster to work on. I mention all this, because many 'big' engines today are only available with an R/C throttle, and I do not like to run my engines with a throttle fixed in the 'open' position.

The 10 x 6 three bladed Tornado propeller looks best with this aircraft – alas I was not satisfied with the performance! A normal 10 x 6 two blader seems better, while I had best results with an 11 x 5in. propeller. If your engine can cope with the bigger prop, it should be preferred, but it has to be selected and reworked carefully (pitch and airfoil) in order not to overload the engine. Muffler is the original OS Max type. Though it absorbs quite a lot of power, it produces a somewhat metallic, biting sound. Enlarging the tailpipe diameter made no

FULL SIZE COPIES OF THIS 1/8th SCALE REPRODUCTION ARE AVAILABLE AS PLAN NO. CL 1291, PRICE £1.65 (INCLUSIVE OF VAT AND POSTAGE) FROM AEROMODELLER PLANS SERVICE, PO BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE.

Two stages in the preparation of the radial cowl. Glue strips of soft balsa together around the three temporary formers, as drawn on the plan and shown below left – using pins and rubber bands to hold them in place. Adhesive should be one that sands easily and cleanly – such as balsa cement, or some 'white glues'. When dry, connect to electric power tool via the beech dowel, and 'turn' to circular section using glass paper glued to a sanding block. Remove temporary formers and smooth inside surface of cowl.



difference to the power, but increased the noise, so this is not recommended. The present Max 40 is more powerful, but I have experienced trouble in starting when the engine is hot, and if the engine cuts shortly after starting, this might cost you an 'attempt'. Of course, I would not have any doubts in using a Super Tigre 40, Enya 40 or HP 40 engines too.

Since so many construction articles have appeared on stunt airplanes, I will not bore the reader, but just give a few hints where necessary. There is nothing new in building the wing. The plan shows the shape of the two wing supports (two each) which I use. The adjustable lead outs require a little extra work, but I would highly recommend them. I am not such an expert pilot to really gain advantage in shifting the guide according to weather, but for basic trimming of the airplane, it is a most useful fixture.

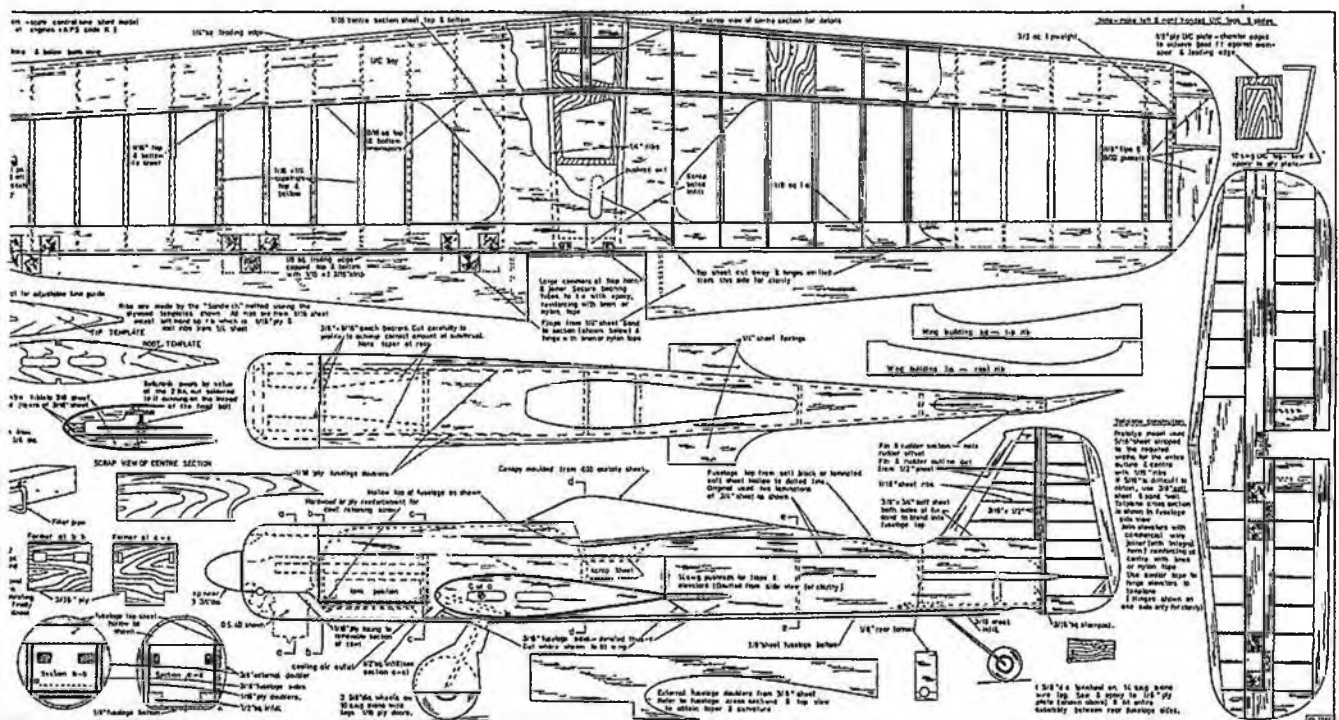
The fuselage section demanded some changes in construction. Start by cutting some soft pieces to the shape shown in Section X. Make three formers as shown there, gluing together two of them crosswise, and fix them to a 10mm beech dowel, about two inches longer than the cowl. The rear former may be tack glued only, since it is removed later. Using a glue which can be sanded easily, add the trapezoid pieces carefully around the former and hold them in place with pins and rubber bands as shown in the photograph. When thoroughly dry, place the whole unit on an electric drill and sand carefully with a suitable sanding block. Use a sharp knife to carve the front shape. Now remove from the drill, cut through the front formers, remove formers with dowel, and smooth inside of cowl.

Fuselage construction is straightforward except for the outward fuselage doublers — shape them roughly before adding to the sides. Also note the filler blocks in section C-C. Try to keep the tail as light as possible. The cowl is glued to the front end, the lower part is cut off and trimmed to take the removable part of the engine cowl. The edge is surrounded by a ply frame as a facing and takes the hardwood retaining block with cooling duct, which also serves as a stiffener/tank compartment floor. Forming a

canopy has been described many times before, but I would like to add this: be careful when pulling the hot plastic sheet over the mould. Areas which have been stretched too much will decrease in thickness and might later warp. A muffler cut-out is not shown on the plan, as this depends on the brand used and can differ considerably. As the removable cowl is not very rigid, it should be completely covered with glass cloth and epoxy. Wing fillets are shaped with micro balloons; the lightest filler I have found.

My finishing method is quick; apply one coat of thinned sanding sealer to the wooden airframe, then after drying, rub down really smoothly with 320 grade wet/dry paper. Add one coat of the sanding sealer with white pigment. Rub down. Cover open areas with heavyweight tissue, remaining airframe with lightweight tissue. Rub down with 400 grade paper. Now apply two coats of thinned clear dope on 'open' areas, followed by two coats of white

continued on page 458



NOISE ANNOYS

OVER THE past seven months, the subject of a 'Code of Practice' under the Control of Pollution Act 1974 (Part III - Noise) has been intensively debated by officials of the SMAE and Model Hobby Trade Federation.

The purpose of such a Code is to provide a guidance for aeromodellers, and authorities governing flying space. It is not legally enforceable; but could be used as a reference by any Court in the event of any noise nuisance proceedings under Sections 58 or 59 of the Control of Pollution Act 1974. The Code is expected to receive the approval of the Secretary of State with effect from 1st May 1977 and the Department of the Environment hopes that the Statutory Instrument containing that approval may be laid before Parliament in the course of 1976.

Both the SMAE and the MHTF have submitted Draft Codes to the DoE.

The DoE draft issued on 21st May to thirty 'umbrella' organisations for comment by 30th June is as follows:

CODE OF PRACTICE FOR THE MINIMISATION OF NOISE FROM MODEL AIRCRAFT — FIRST DRAFT

OF THE many types of model aircraft several, such as gliders, and those which are rubber or electric motor-powered make next to no noise whatsoever. By definition we are not concerned with them here, and the expression 'model aircraft' hereafter in this code should be taken to include only those which, being powered by internal combustion engines, do give rise to significant noise.

The sport of flying power-driven model aircraft provides enjoyment for many. It also creates a considerable amount of noise which, while technically unavoidable, is no part of that enjoyment for anyone. Everyone who wants to enjoy the sport should be expected also to show due consideration for all others who are within earshot of the noise that it creates.

A relatively small minimum area is required for the flying of model aircraft, and a great many sites are in regular use. These range from commons and parkland, where the use is relatively informal, through to private sites which have been bought, rented or otherwise acquired (sometimes in agreement with the Ministry of Defence) by groups of flyers who have formed themselves into clubs. In the latter case much tighter and more effective control is possible over the type and manner of flying, and it may on occasions be appropriate to require, in areas where this had not already been done, those flyers should organise themselves into a club to arrange their activities responsibly. Such clubs should then be given every encouragement to concentrate their activities on sites which are acceptable to the greater number of people.

There are three major types of power-driven model aircraft - radio-controlled, control line and free-flight. All three types may without unreasonable operating penalties be fitted with an efficient muffler to the engine or engine exhaust port, and against the fact that the flying-time of free-flight models is necessarily much the shortest must be set the fact that several flyers may be grouped together. The flights which they make may be frequent, and though they necessarily have to make use of large and therefore commonly remote sites the need to fly from the upwind and may still bring them within relative proximity of the nearest communities. It is therefore appropriate to require that with one exception (see next paragraph) all power-driven model aircraft flown in all circumstances should be fitted with a muffler to reduce engine noise to the maximum extent that is reasonably practicable. In current technical circumstances that extent means a maximum noise emission in any direction of 80dB(A) at 7 metres, with the engine running at maximum speed.

The one exception in which unmuffled flying may in present circumstances be permitted concerns international competitions whose rules forbid the use of mufflers as of all other such attachments. Such flying involves only very small numbers of team-members selected by the Society of Model Aeronautical Engineers to take part, and it may be reasonable to permit them, for the sole



purposes of training, to fly unmuffled models provided they do so where the point of launch is not within 1 km of the nearest occupied dwelling or other noise-sensitive building. Should however the rules for international competitions change so as to admit muffled aircraft, this exception will no longer apply.

Even when fitted with a muffler, a model aircraft is still relatively noisy and should not therefore be flown anywhere at all close to an occupied dwelling or other noise-sensitive development. The minimum distance in which it will be appropriate for model aircraft to be flown may depend on the type of model. Control-line models are obviously restricted in range by the length of the line, and the powered thrust of a model in free-flight is almost entirely vertically upward. It will therefore be appropriate to permit the launch of control-line and free-flight models, suitably muffled, at a distance of 300 metres from occupied dwellings, schools, hospitals etc. Radio-controlled models on the other hand have a greater range and come in larger engine-sizes, and avoidance of radio interference is best ensured if flyers group together in widely separate localities in which the entire span of suitable frequencies is available to them. The point of launch of radio-controlled model aircraft, suitably muffled, should not approach within 500 metres of any occupied dwelling, school, hospital or other noise-sensitive development.

The hours during which model aircraft are flown have an important bearing on the extent to which the noise which they cause amounts to a nuisance to others in the vicinity. The type of model here is however not important since it may be the fact of the noise itself and not the extent to which it is periodic or continuous, that gives rise to annoyance. Generally, model aircraft should not be flown at the times of day when people have a particular right to peace and quiet in and around their homes. Those times will depend to some extent on the proximity of flying. Thus it may be reasonable to require that all flying where the point of launch is within 500 metres of an occupied dwelling (including a hospital) be confined to between 10 am and 6 pm or lighting-up time, whichever is the earlier. At between 500-1,000 metres of an occupied dwelling however flying might be permitted between 9 am and 8 pm or lighting-up time, and at beyond 1,000 metres between 9 am and 9 pm or lighting-up time, in both cases whichever is the earlier.

The brunt of the problem occurs in many localities at weekends when many people are in or about their homes and when the competition between model aircraft-flying and pastimes where people like to be quiet is at its most severe. It may be appropriate, particularly in areas which are within reasonable distance of more than one flying-site, to require that one site be used on a Saturday only and another on a Sunday only.

The Code has stressed the need for flyers to take all reasonable steps not to cause conflict with people relaxing in other ways, and has accordingly stipulated minimum distances to separate flying activity from noise sensitive areas. Hospitals, dwellings and the places near towns where people go for exercise are however not the only areas that matter here, but any National Park or place of

renowned beauty should be entirely avoided, however remote it may be, simply because in such a place unbroken peace is at a premium. This ought not to be a serious problem since flyers will presumably always want to foregather reasonably close to large towns, but it should be a consideration always borne carefully in mind.

From time to time major flying events are held which may attract to them many hundreds of participants. It is and should be normal for these events to be held on private sites which are at least 1km from the nearest occupied dwelling or other noise-sensitive development. Flying should be confined to between 9 am and 9 pm or lighting-up time, whichever is the earlier, and the organisers should be expected to advertise the event beforehand in the local press so that those who are likely to be inconvenienced by the noise and can arrange to be elsewhere on the day in question may have adequate time to do so.

* * *

The SMAE's Code, prepared by the date agreed with the DoE, was sent on 16th June as part of the SMAE's formal reply to the DoE's draft Code.

The Society's Code of Practice covers many of the same principles as the DoE draft but the former contains recommendations for site conditions and specified distances which suggest that the Society has given greater consideration to these matters than have either the MHTF or the DoE.

A lengthy letter of explanation and copies of the 6 page SMAE Code has been issued to the Press, and will have been distributed throughout all the administrative areas of the Society. For the benefit of aeromodellers who are not in the SMAE, or traders outside the MHTF and who outnumber those organisations by considerable factors here are some of the many factors covered by the SMAE Code:

1. Mufflers are proposed as the main method of reducing noise nuisance, but exceptions are sought for 'models for which the use of noise mufflers would impose severe operating penalties',
 - e.g. (a) 'mufflers are not appropriate to a few competitive classes of control line models . . . it may therefore be necessary to allow non-muffled models to operate on a controlled basis'
- The following distances are suggested:
- No power-driven control-line model (even with muffler) shall be flown closer than 150 metres from occupied dwellings;
 - If the total capacity of the muffled engines operating simultaneously at a site exceeds 3.5cc then the above minimum distances shall be increased to 250 metres;
 - If no muffler is employed then the above minimum distances shall be increased to 250 metres and 400 metres respectively.
- (b) 'it is uncommon for Free Flight models to cause noise nuisance'

The proposed restrictions are therefore:

- All power-driven F/F models shall be launched well away from occupied dwellings and in no circumstances within 150 metres of such dwellings.
 - All power-driven F/F models shall use either a muffler or a device limiting the airborne engine run to a maximum of 20 seconds.
2. 'All ground running of engines shall be kept to a minimum but in any case no more than 1 minute. Efforts will be made to use natural or artificial obstacles to shield ground running noise in the direction(s) of nearest occupied dwellings.'
 3. 'Several existing engine-powered model-flying sites (many of long-standing) may be found to transgress the quantitative limits defined in this Code e.g. a site may have been provided by a local authority for many years without problems and yet be found to be closer to homes than the defined minimum limits. This must be regarded as inevitable whatever set of such criteria is decided upon.
- It is not the intention of this Code of Practice that such sites shall immediately be declared as unsuitable for use. This would totally be unreasonable, particularly as considerable expense may have been incurred, local authority agreements may have been obtained and noise complaints may have been absent.'
4. Additionally, the SMAE Code recommends 'Involvement of SMAE officials in all local discussions on site restrictions'. Also a special section on organised meetings is included.
 5. It does *not* include any suggested db(A) levels.

* * *

A full copy of the SMAE Code can be provided on receipt of a 9 x 4 envelope, SAE, from our Editorial Offices. Though this issue appears after the 30th June date by which comments were requested from the DoE on their Draft, the Department has agreed that we can submit collected comments on behalf of those outside the SMAE or MHTF. Those who have views to express should submit them via the editor by July 23rd.

The terms of the DoE draft (also the similar MHTF Code) are stringent and the specifications arbitrary. If adopted, they could eliminate many model flying sites including airfields which are normally used for what the Draft refers to as 'major flying events'. Check your own site. Are you operating at over 500m from the nearest occupied dwelling? Is your engine muffled to be quieter than a Moped? Is your Area or Club Rally at a site at least 1km from the nearest occupied dwelling?

Idealistic though such conditions may be, they are not reasonable for establishment on a National level, hence our concern that the SMAE Code be given full consideration. It is a matter of consolation that on 21st June, the MHTF stated they would 'support provisions for unsilenced flying of models where international competitiveness is prejudiced, providing such exemption is limited to those affected and does not place flying sites in jeopardy'.

READERS' LETTERS

Dear Sir,

With reference to the 'Girl Talk' and 'Equal Pay' columns written by *Pylonius* in the May issue, may I put forward a few remarks of my own?

Yes, the liberated (or otherwise) male modeller of today is aware of the opposite sex. And if he were a little more tolerant he would find that many females would be only too happy to help him, but the prevalent attitude of the male modeller would (and does) deter any but the most insistent female.

Example - Male modeller to female:
"I'll do that love" accompanied by a look of "you cannot possibly know anything about engines".

In my case it makes me angry enough to give a sharp retort and even emboldens me (all 5ft. 2in. of me) to push my way through! This knowledge that *Pylonius* writes at length about, far from being detrimental can only help our sport (I feel *Pylonius* ought to know better than to call our sport a 'hobby'). I think 'his innocent like' ought to read 'his ignorant like' and the hope of

dedicated aeromodellers is there: catch the girls young too. Plenty of them attend contests with their parents. May I ask how many "bouts of hysterics", apart perhaps from his own wife's, has *Pylonius* witnessed?

Converted lofts and garden sheds are the only sensible way for aeromodellers to work. How long would equipment last in the lounge subjected to the clumsy patter of tiny feet and inquisitive little hands?

On his 'Equal Pay' column: Ladies do not join movements out of a defeatist attitude. No indeed! For the first fifteen years they are usually busy producing the next generation of modellers! By then, they are so behind in technical knowledge that it is difficult to be at the centre of things. Even so, a crash (sorry!) course can sometimes be arranged - as in my own case.

The M/s may want the Ladies sign changed to Laddies, but the Mrs and Misses certainly do not.

Pylonius may well be right (for a change) when he states that the male-sized 1976 club fee should send the M/s scuttling

back to the knitting circle, but it will certainly not deter the dedicated wife or girlfriend, or even mistress.

Indeed, I feel it will weed out the useless, resulting in quality and isn't that what we need, be it male, female, or neuter?
Oakham, Leicestershire. Mrs Jo Halman

Dear Sir,

I invented the following technique for tissue or nylon covering models; or I think I did because nobody else I have mentioned it to has used it or heard of it!

Dampen the tissue/nylon in the usual way and shake off the free water. Lay out the material on a tea towel or bath towel spread on a table. Lay a second towel on top of it and roll the whole sandwich up into a long sausage. Pat the sausage gently along its length and unroll it. The material will be ready to apply, almost dry to the touch but retaining enough moisture to shrink tight and not enough to warp the airframe. In a warm atmosphere the material will be dry enough to dope in ten minutes or less.

Deeping St James,
Peterborough

C. L. J. Leaney

FLYING SCALE COLUMN

by Eric Coates



AT LONG LAST a much awaited British CO₂ motor is in production! Ever since I first saw Doug McHard with one of the early *Brown Junior* units some four years ago, I have urged some British manufacturer to produce one of these ideal power units for small scale models. The advantages of this form of propulsion over rubber and sub-miniature internal combustion engines are many, and have been expounded in this Column over the years.

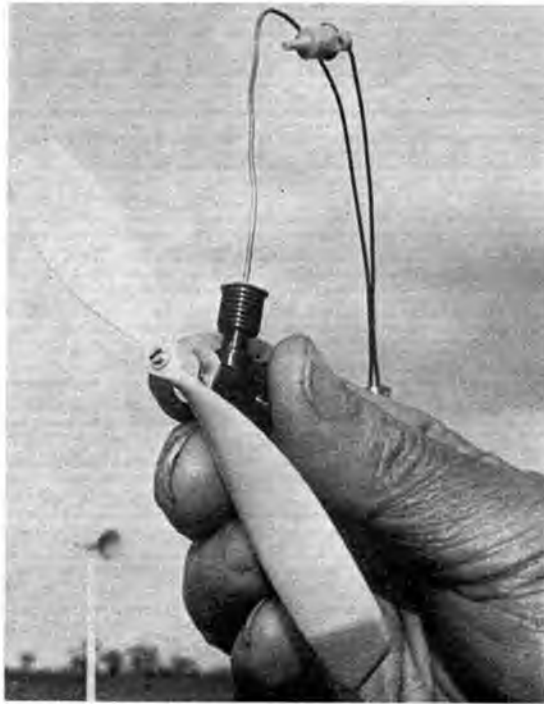
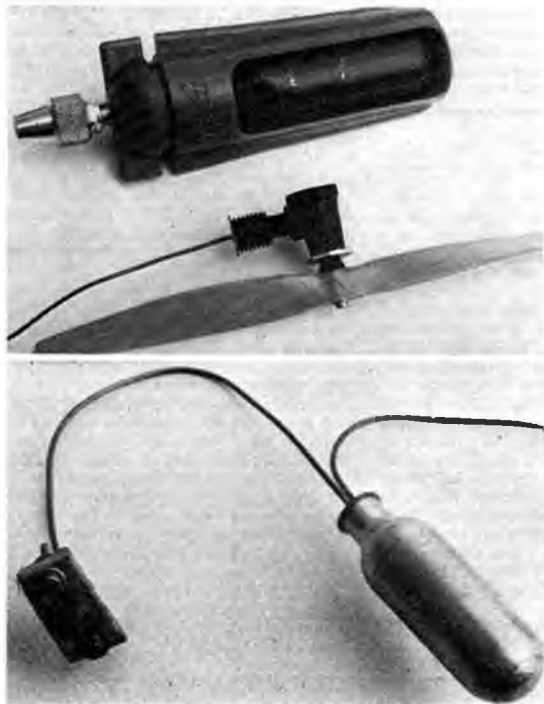
The manufacturer of the new engine is not one familiar to the modelling world, being Ticket Equipment Ltd of Cirencester. The engine, called the *Telco*, must inevitably be compared with its Brown predecessor, so this is exactly what I did.

The first reaction on opening up the triangular package is that it looks bigger and bolder than the Brown; both impressions being created by the plastic crankcase compared to the machined alloy of the Brown. In fact the external dimensions of the two engines are almost identical – it is the massive mounting lugs on the *Telco* which

give the impression of size. Being plastic they are naturally thicker than the alloy ones of the Brown.

The major difference between the two engines is the method of speed control. Both engines admit the CO₂ gas by means of a poppet valve, mounted in the cylinder head, opened by the crown of the piston at top dead centre. Speed is proportional to the amount of gas admitted at each stroke and this is governed by the amount of interference between the piston crown and the valve poppet. The greater the interference, the longer the valve remains open, and the more volume of gas admitted. Brown engines alter the piston/poppet interference by screwing the entire cylinder into the crankcase, and this caused problems in the early engines because it twisted the gas inlet pipe, leading to fractures. This problem was overcome in the later models, as I described in the March 1976 edition of this Column, by redesigning the head to allow the pipe to coil round it several times before feeding into the valve.

Heading picture shows the author's (uncowled) Hurricane, now fitted with a Telco CO₂ motor – the tank is hidden within the nose while the filler is just visible in front of centre section leading edge. Below right gives an impression of the small size of the new Telco CO₂ motor, while below left the same unit is seen with its charging gun and at bottom left is the tank complete with filler valve bolted to balsa block for installation in the Hurricane.



The designer of the *Telco* engine approached the problem in an entirely different manner. The crankshaft is mounted in an eccentric bearing, then rotation of the bearing raises or lowers the centre line of the crankshaft, so varying the piston/poppet interference. The crankshaft bearing is rotated by means of a knurled aluminium flange situated immediately behind the prop driver. A couple of flats are filed on this flange to accommodate a pressed steel key, supplied with the engine, for speed control purposes. Speed control, therefore, is very similar to the advance and retard mechanism on vintage spark ignition motors. I am afraid that I found the key virtually useless; the flange and the key are so thin (about 20swg) that registration especially with the motor running is almost impossible. A pair of needle nosed pliers are a much more effective instrument.

The engine comes ready 'plumbed' to a spun aluminium tank, of the familiar torpedo shape, and a filling valve. This latter item is also moulded in plastics and is a distinct improvement on the previous brass and aluminium of earlier CO₂ units. A couple of mounting lugs are incorporated, allowing it to be fastened to the fuselage of the model. A packet of four 12BA bolts, to secure the engine and the filling valve are thoughtfully supplied. To complete the comprehensive package one also receives a charger gun and one sparklet bulb. The 5½in. dia. plastic propeller is already mounted on the engine, via a 12BA screw, so one can literally have the motor running within one minute of opening the attractive triangular package, without hunting round for anything extra! Think; these mounting bolts could also serve as spare prop shafts. I consider the charging gun to be a much better designed item than any predecessor. Produced in high strength orange colour plastic, it is much more compact and easier to insert the cartridges than its American rival.

The delivery valve is in turned dural with a nylon liner. I found it engaged much more sweetly on its mating charging valve than is the case with the Brown. I have, in fact, two Brown guns, with the idea of conserving cartridges, but one is now virtually useless due to the almost interference fit between its liner and charging valve. The two charging systems by the way are not compatible. You need a Brown Gun for a Brown engine and a *Telco* Gun for a *Telco* engine.

A quick test run indicated that the engine had plenty of power when running flat out but duration seemed a bit short; the speed control was rather stiff and adjustment very critical. I decided that only airborne testing, however, would indicate the true performance of the motor. The next decision, therefore, was to decide which model to put it in. The choice lay between three semi-retired small rubber powered models – a Tern Porterfield Collegiate, a Comet Aeronca K and my Hurricane IIc. I decided that at 26in. span the Aeronca was a bit big, the Porterfield was probably the most suitable and easiest to trim, but the Hurricane was by far the most interesting machine and the biggest challenge, so I decided to have a go with that. As a rubber model the Hurricane weighed some 2oz with the necessary ballast, but when the CO₂ motor was fitted, with the tank up in the nose, considerable ballast could be removed so that the overall weight was reduced to 1½oz with the CG still in the same position. This is the great advantage of CO₂ power for small scale models – one can actually finish up with a lighter flying model!

Now for the flying. Providence was with me for, a couple of days after the conversion was completed, the scale man's dream came to pass – a flat calm June evening, with the temperature in the high sixties, so that the CO₂ gas expands well. I took along my Brown powered Curtiss Robin to compare performances of the two motors. Now a true comparison could not really be made as the Robin



Ron Truelove of the Aylesbury MFC topped the C/L scale honours at Old Warden with his Handley Page Hampden which features many 'working' functions – including a retracting undercarriage that was designed by himself. The first ever flight of the 75in. span 9lb giant brought it success and when a few trimming alterations have been made, it should prove a very reliable performer. Wing tips neatly bolt in place to ease the transport problem.



Where's the engine? Proof positive of the advantages of electric drive where Alan Palfrey has hidden a Mabuchi RE36 in his 45in. 1910 Hanriot – flies well in calm conditions.

Pete Stammers (Sudbury MAC) chose a very unusual prototype for his C/L model flown at Old Warden – a SPAD A-4. Only 14 of the aircraft were ever produced and the model faithfully duplicates the fold down nose feature for access to the Fox 19 propeller. Hope that the gunner in the full size never attempted to pass a sweet to the pilot...





Looks real, doesn't it! This Henschel 126 (see above) was built to 1/8th scale by Mike Ennis - and proves that 'big is beautiful' when it comes to control line scale models. As the throttle on the Merco 61 is opened, the cooling gills surrounding the radial cowls also open - a very nice touch. A sliding cockpit is also fitted. At right is the unquestioned winner of the Shuttleworth Trophy at the Old Warden meeting - W. D. Dennis and his truly superb LVG CVI free fighter. Not only was the construction and attention to detail impeccable, but the flight performance was so realistic. Plans to appear in a future issue of *AeroModeller* . . .



is only 18in. span and weight 1oz, whereas the Hurricane is 20in. span and, as aforementioned, weight 1½oz. Alas the shortcomings of the *Telco* unit noted in the brief bench test were all too apparent in the test flying - in order to get the 'Hurri' to climb at all, the engine had to be at its maximum running setting. This is readily determined and will vary with the ambient air temperature. If the crankshaft bearing has rotated too far, using up soon occurred. With the high ambient temperature prevailing a generous power output could be achieved, but only for about five seconds. If the throttle was closed a longer run could be obtained, but the power was insufficient to fly. All this I found to be most disappointing. Swapping propellers - i.e. a Brown/Williams for a *Telco* did no good - if anything the *Telco* prop gave a better performance than the Williams on the Brown. In comparison I found I had to reduce the throttle setting considerably, on the Brown unit, from that I had been using on a previous colder day. In fact, I had difficulty in keeping the initial climb of the Robin below 30°. From one charge I was getting three flights of over one minute duration, with the engine still running slowly when landing, plus several more diminishing to about 20 secs before the cartridge was empty. Although swapping power units on the field is not possible, I felt that if I could have done so, the Brown would have 'eaten' the 'Hurri' on about two-thirds maximum power, and still given a couple of flights of 40 seconds or more per cartridge, plus the usual run downs.

Obviously something was seriously wrong with the *Telco* motor. Further bench testing the following night showed that the performance had deteriorated and was continuing to do so every run; the piston fit was non-existent and gas just poured past it. Not to put too fine a point on it, the motor was plain 'clapped'. With all the years of development that had gone into this motor I could not think this was a typical example. The manufacturer was therefore contacted and he immediately carried out an investigation; at the same time providing a further test sample. The investigation showed that the internal surface of the spun aluminium tanks was scaling, in some instances, allowing abrasive dust to enter the engines. The original sample must have been one of these - and I had to have it! Luckily no production samples had been released to the retail outlets so it was possible to take the necessary cleaning precautions before any production engine appears in the shops. *No one, therefore, should need to worry on this score.*

The second sample I received has now been fitted to the Hurricane and static tests look very encouraging. Powerful runs of 30-40 secs can be obtained repeatedly. Unfortunately, the weather in the South, at the period of writing (mid June) has moved into a windy cycle again and I have not been able to repeat the flight testing before the publication deadline. However, I am quite confident that the new engine will be more than enough to fly the Hurricane satisfactorily. In fact reports from other testers are most complimentary.

continued on page 462



Spreading the silent-flight gospel at the *AeroModeller* Scale Day held at Old Warden, was Alan Palfrey with a couple of electric powered free-flight designs. The 1910 Hanriot Monoplane has a Mabuchi 36 (used originally in slot cars, and now in electric rtp models) while the Bristol Bullet uses a Monogram unit, as was reviewed in our December '75 issue. Not only quiet, but the motor unit can be kept completely hidden away.

THE FREE FLIGHT SCENE

by Martin Dilly

The British team for the Indoor World Championships will consist of (l to r) Ron Green, John Blount and Laurie Barr, while Butch Hadland will be team manager.



AT THE APRIL CIAM Bureau meeting in Paris there were some clarifications as a result of the earlier CASI (overall FAI administrative committee) meeting. Briefly, the effect of this is that the indoor rule changes on steering and official minimum flight times are **not** now applicable until 1979; rules 3.1.5.e and 3.1.6., regarding line crosses, are effective, since it was held that they are relevant to safety. While this apparent reversal is unfortunate for indoor flyers, some sort of stability in rules is, I think, essential; certainly in the R/C categories where there is, of course, considerable finance involved, new proposals and classes and alterations are discussed each December and the volume of paperwork is enormous. To expect what often amounts to a complete re-write of whole sections of the Sporting Code every year as a result is clearly neither within the financial capabilities of the CIAM, nor is it fair to expect its voluntary officers to devote the time to do the complex paragraph juggling that is involved. Hence the four year moratorium on rule changes.

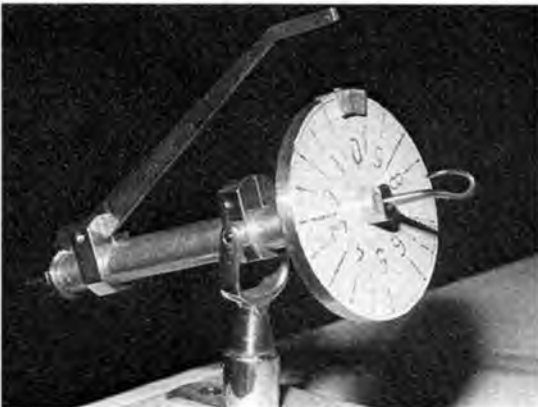
* * *

The new CIAM F/F technical committee, under the chairmanship of Canada's Peter Allnutt, consists of: Bryan Spooner (G.B.), Thomas Koster (Denmark), George Xenakis (U.S.A.), Esko Hamalainen (Finland), Pierre Chaussebourg (France), Jiri Kalina (Czechoslovakia). CIAM sub-committee membership is at the Chairman's invitation; this is the best way to ensure that actual flyers are involved. Each member is appointed by approval of his National Aero Club, but serves as an individual expert.

* * *

Preparations for the World Indoor Championships in August at Cardington are well under way, with entries received from 17 national teams, by far the largest entry ever. Jury for the Champs will consist of Peter Allnutt, Ian Keynes and Tony Aarts from the

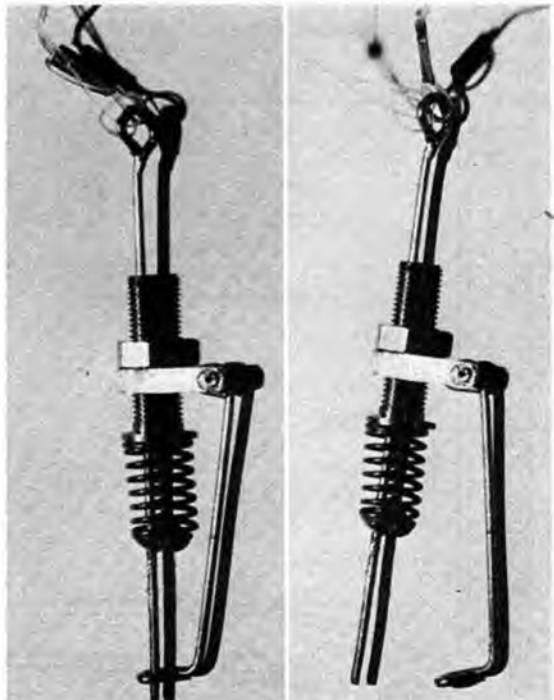
Below: superbly machined torque meter with gimballed support, made by Ryszard Czechowski and used by Laurie Barr at Cardington. At right is a lock-on tow ring by Pete Farrimond, in closed and open positions. Spring pre-load is adjustable.

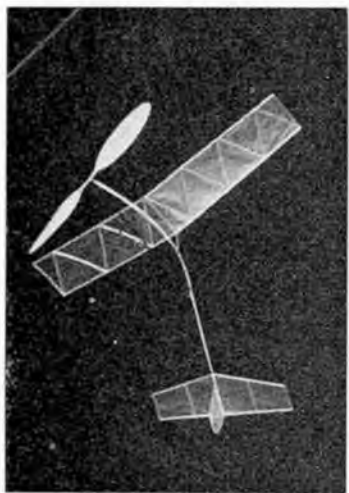


Netherlands, with Belgium's Albert Herzog as reserve. Indoor seems to be the one contest class that catches the imagination of the non-air-minded public easily; did you see the five minute spot on BBC-tv's *Nationwide* recently? Quite intelligently presented for a television programme, apart from references to 'indoor gliders' as microfilm models flew past with their propellers quite obviously attached and rotating. However it was dealt with as a serious activity, rather than the domain of a lunatic fringe, and John Blount and Laurie Barr came across well, winding motors, pouring film and fitting wing posts, while doing lucid 'voice-overs' as they worked.

* * *

Most worrying item from the CIAM Bureau meeting was the proposal, to be voted on at the December plenary meeting, that World Championships should in future go to a three year cycle, with the next F/F Champs in 1978. At present there is no offer to run the 1977 Champs, although (or perhaps because) Outdoor F/F is by far the most heavily attended of the World Championships, and internationally has more followers than any other branch of our sport. With all F/F categories taking place at the one venue the numbers involved, with usually 35 plus nations taking part, are

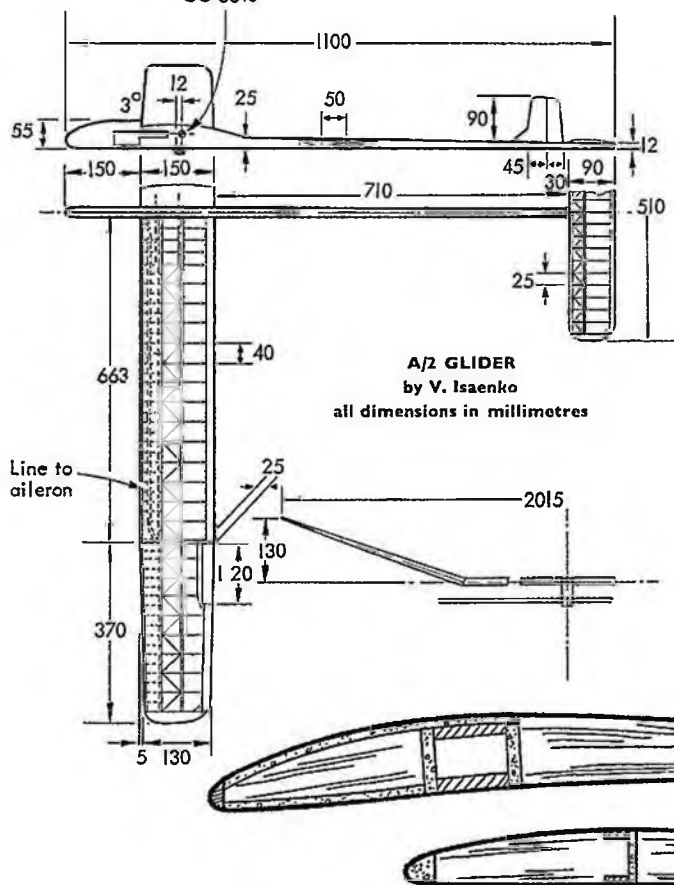




Excessive side-thrust caused when this Easy B's motor stick started to bend in flight at Cardington.

around 4-500, and the main problem is finding accommodation for them near a large enough site. In F/F we are lucky in that entry fees normally pay all the costs, with no dependence on public admission and its associated paraphernalia to make a weather-dependent circus out of a competitive event before the bills are paid. But if we were to run a World Champs here in Britain we would need to find some £20,000 to underwrite the costs in advance before the fees came in. Certainly there are a number of countries that have run far fewer Championships than the SMAE (from memory, 17 since 1948), and which have more government assistance than we do. I'd be glad of readers' comments, suggestions

CG 56%



and offers on this vital matter. As a final comment, items, presumably including offers to host Championships, must reach the CIAM President Sandy Pimenoff before 23rd September.

Donations of starboard A/2 wing panels for a low Reynolds number test programme in a Western Ontario wind tunnel will be gratefully received by Peter Allnutt, either when he visits the Indoor Champs at Cardington, or the 1976 Pierre Trebod event.

Correction time! Unfortunately the Gremlins invaded our artist's drawing board in the July issue, with the result that the front view of a power model in Figure 3 was incorrect. The spring retaining the two wing halves together should pass through the middle of the pylon, not exposed above as drawn. Apologies for indicating such a high-drag layout...

ISAENKO'S A/2

Valerij Isaenko from Kharkov is an A/2 flyer of wide experience, having flown in the Soviet team at several world championships; he was one of five to max out at the Socialist States Championships at Erfurt in East Germany last year and was a member of the 1975 winning team at Plovdiv. The following details are based on Ivan Hofejši's description in a recent issue of the Czech magazine *Modelář*, and are the result of several hours with a Czech dictionary...

Fuselage front part is 10mm thick lime, with holes carved into it for lightening and to house the mechanism; it is covered with 2.4mm lime sheet. The rear part consists of two pine strips top and bottom, tapered from 10 x 3 at the wing to 8 x 1mm at the tail; side sheets are 27 x 2.5mm balsa, tapering to 12 x 1 at the tail. Diagonal zig-zag spacers prevent buckling.

Wing section is Benedek 6356/b, and a leading edge torsion box is used to resist twisting; leading edge is 2 x 5mm pine, top and bottom sheeting is 1.2mm balsa and trailing edge is very hard balsa 15mm wide. Top mainspar is pine, 10 x 2, tapering to 5 x 2 at the dihedral break and 3 x 2 at the tips. Lower mainspar is of the same width but, being in tension under flight loads, is only 1.5mm thick. The rear spars are 6mm wide, tapering to 3mm at the dihedral break and for the whole tip; thickness is 1.5 for the upper and 1mm for the lower spar. The different cross section for the upper and lower spars is because wood has a greater resistance to tension than to compression. Spar webs are of 1.5mm balsa.

Wing ribs are of 1mm lime sheet except at the root where they are 1mm ply. The aileron actuating line is channelled through the leading edge of the wing via straws; wing halves are attached on two wire dowels 2.5 and 3mm in diameter. At a distance of 3mm from the leading edge is a 0.6mm diameter turbulator thread. Wing area is 29.4dm² and weight is 128 grammes (4½ ounces). Covering is lightweight tissue.

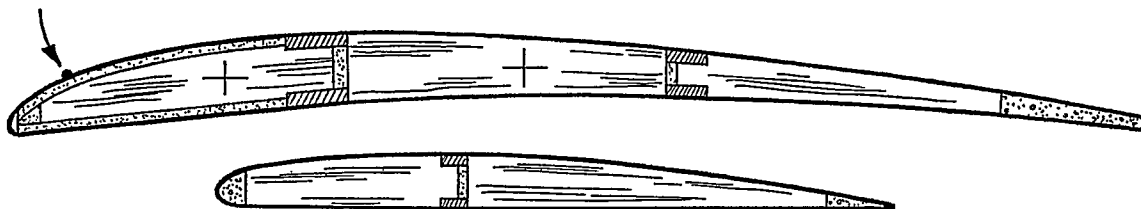
Tailplane has a 7% thick flat-bottomed airfoil with a rather blunt leading edge, made from 4 x 4 balsa; trailing edge is 8mm wide balsa. Mainspars are of pine, 3 x 1 at the centre tapering to 2 x 1mm at the tips. Area is 4.5dm² and weight is 9 grammes (⅓ ounce).

The circle towhook is fabricated from sheet dural and no machining facilities were used. The CG is at 56% wing chord; 80 grammes of ballast was needed on the original and the wing is built without warps. Isaenko believes that wash-in on the inside wing is a source of increased drag and, on a 'catapult launch' model like this, is undesirable if maximum height gain is to be obtained. A model without this wash-in may tend to go into a spiral dive and this tendency is counteracted by an aileron on the outside wing.

Release of the model starts the timer; after a pre-set time (1½ seconds in the calm, less in wind), the spring loaded trigger to the front of the timer disc disengages, pulling the line (which runs through a loop at the end of the trigger) and deflecting the aileron 30° upwards. After a further 5 seconds the trigger at the rear of the disc disengages, freeing the end of the line and allowing the aileron to return to neutral. The aileron is on the outer wing with respect to the turn and a spring returns it to neutral.

Phew, what a language! Where else but in Czech would you get a word consisting of six consecutive consonants, all pronounced? The impressive thing about Isaenko's aircraft is the great attention paid to reduction of weight at the extremities, in order to match strength to likely flight loads.

0.8 mm Dia. turbulator



TCHOP'S A/2

A drawing of Viktor Tchop's World Champion A/2 appeared recently in the Soviet magazine *Krilya Rodin'y*. Tchop, who is a 22 year old soldier from Odessa on the Black Sea, only 350 miles from Plovdiv, flew an aircraft of moderate aspect ratio (14.6:1). Benedek 6356 airfoil, apparently with a slight thickening of the top from the 60% chord station, and a D-box leading edge, like Isaenko's aircraft. Wing structure is generally similar, with the exception of the fact that main and rear spars are webbed only at the rear and front respectively, rather than being fully boxed. Wing weight is 130 grammes and tailplane weighs 11; both are covered with thin Japanese tissue, doped with one coat of nitrocellulose lacquer, and three coats of thinned varnish. Wing fixing is by two wire dowels which attach to the fuselage via threaded bushes to prevent swivelling and resultant wash-in or wash-out.

The hook drawing is not entirely clear, but the explanation translates as follows: "The hook consists of two plates (1 and 2), adjustable relative to each other. Between each other they are fixed with a controlling bolt 3, screw 4 and spring 5. On plate 1, which is fixed to the fuselage, is fitted the crank 6 and latch 7, made from 1mm wire.

The movement of the latch is limited by plate 8; on this latch is the timer stop line, from 0.06mm wire; its length is adjusted so when the hook is in the forward position with the latch open the timer is stopped. This allows the model to be towed straight for unlimited time even with the latch open. The radius of the circles during towing is less than in free flight.

With a dynamic launch, due to the increase in stretch of the tow-line, plate 2 moves down relative to plate 1, the latch 7 opens and the model goes into free flight. The model is trimmed in three distinct weather conditions and for each Tchop tries to achieve the maximum duration. First stage is for winds from 0-3 metres/sec, second from 3-6m/s and third from 6-10m/s. Tchop notes the trim settings for each wind speed."

I have not had time yet to work out the hook mechanism, but will make a cardboard mock-up from the drawing, which we reproduce here exactly as shown in *Krilya Rodin'y*. Tchop uses a wrist loop for towing, rather than a winch, and his line is 40lb nylon monofilament.

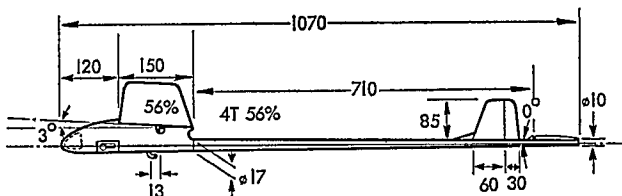
Fuselage of the aircraft uses a lime nose and a homemade glass-fibre boom tapering from 17mm to 10mm at the tail, with wall thickness tapering from 0.5mm to 0.4mm. In case you want to try using lime, try a model boat shop; prices make balsa look like chicken feed!

WHATEVER HAPPENED TO PIANO WIRE?

When you start experimenting with circle tow hooks you almost inevitably get involved in some spring winding, and when you try to use model shop 'piano wire' you find that often its properties are more like baling wire than spring steel music wire. Talking about this to Mike Billinton, who holds the current control-line Class 6 (.40cu.in.) C/L speed record (at a cool 184.8 mph) he mentioned that he gets his wire for monoline flying from, rather logically, a piano repair shop. Lo and behold, a visit to Fletcher & Newman, 39 Shelton Street, London WC2, revealed a vast range of German polished steel music wire in ounce coils, ranging from .008 to .024in. diameter at prices from 75p to 21p per coil, minimum order being £3. They have lists, available on receipt of a stamped addressed envelope.

BOING... BOING... BOING...

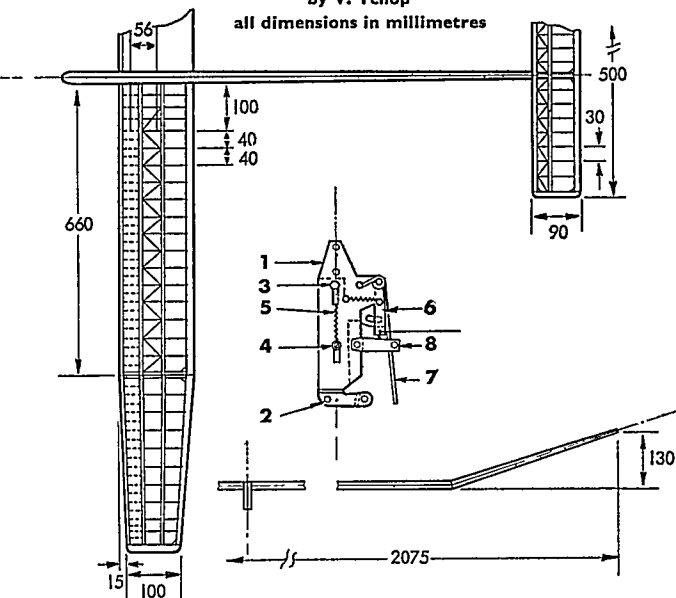
There is probably a professional spring winder out there somewhere who can tell us the right way to go about the job - and we'd like to hear from him - but, for what it's worth, this is how I make coil springs. Decide on the inside diameter you require and select a steel machine screw or drill of rather less than this to use as a mandrel. Bind one end of your music wire at right angles and tighten it and the mandrel into the chuck of a drill or lathe. The mass of an electric drill helps to provide some resistance against the pull as you start winding, but if you do use one make sure it is unplugged before you start, in case you squeeze the trigger and produce an electric flail. Then, keeping the wire under quite high tension by pulling



A/2 GLIDER

by V. Tchop

all dimensions in millimetres



it steadily at right angles to the mandrel, turn the drill chuck by hand until you have a few more turns than you actually need wound onto the mandrel. This allows for the uncoiling tendency as the tension is taken off the wire.

If the aim is to produce a tension spring, then fine - after undoing the chuck and bending the free ends into suitable loops you've got one. Compression springs can be made either by pulling this spring out evenly until it is the right length, or better, by winding it using a spacer wire of, say, plastic insulated electric hook-up wire, which is fed onto the mandrel with the steel wire, so as to separate each coil evenly. To finish the spring close up the extreme end coils by reducing their pitch and grind the ends to give flattish 'faces'; this prevents the spring from creeping round and getting its spikey loose ends jammed in awkward places.

As a guide to circle-towing-spring-winders, *Krilya Rodin'y* gives the dimensions of the spring on Ekhtenkov's 1973 World Champs winning model as follows: wire diameter - 0.5mm; overall length - 17mm; internal diameter - 3.6mm; coil pitch - 2mm.

MAXAID MK 2 CIRCLE TOW UNIT

Reg Latimer and Elton Drew tell us that a Mark 2 version of this unit is now available. Main change is the removal of the tube extension for setting the glide turn latch, which protruded beneath the unit and was vulnerable to damage on the first version. Mk.1s can be modified easily enough, but ensure that the unit is well taped to prevent the entry of filings, and wash it clean in petrol or carbon tetrachloride after the work is ended.

Benedek 6356/b

Station	0	1-25	2-5	5	10	20	30	40	50	60	70	80	90	100
Upper	0-7	2-2	3-1	4-4	6-5	8-6	9-2	9-0	8-2	7-1	5-8	4-1	2-2	0-2
Lower	0-7	0	0-2	0-4	1-1	2-5	3-3	3-5	3-7	3-5	3-0	2-2	1-2	0

The swivelling ring of the Mk.1 is replaced with an articulated, non-swivelling link; this, and the addition of a high strength swivel below the spring in the towline, means that the hook and the stiff nylon timer and circle latch lines remain 'fixed' with respect to the model, eliminating a possible cause of premature release.

Price of the new Mk.2 Maxaid unit, with useful hints on circle tow technique, is now £4.00, including post and packing, or £3.80 'on the field'. North American readers can obtain Maxaid items from: N.F.F.S. Supply, 202 Linda Avenue, Piedmont, California 94611, USA or P. J. Allnutt, R.R.2, Orangeville, Ontario, Canada.

CARBON STEEL RAZOR BLADES

Two readers wrote with information about carbon steel blades. John Russell can supply *Blue Gillette* blades at 16p for five, plus postage; he also has scalpel blades and handles. John's address is: Ballard & Co Ltd, 17 Market Place, Faringdon, Oxon SN7 7HR.

The other letter came from Fred Deudney, whom I remember from the days when we used to fly at Fairlop in the early 1950s. He runs Devonair; Lower Moorhayes, Culmpton, Devon, and has *Pal* blades at the following costs: 10 blades 16p inc. P & P; 20 at 25p inc. and 100 at £1.00.

Malcolm Wood also turned up some interesting information about where a lot of the carbon blades have gone; there is apparently a Harley Street surgical instrument showroom that sells a special snapping jig and a blade handle that employs slivers of *Blue Gillette* blades for corneal grafting operations. Yours for about £16.

BENEDEK 6356/b

Having detailed two of the best A/2s in the world this month, both using this airfoil this seems like a good time to provide the ordinates, and these are thus drawn out above.

EAST ANGLIAN AREA (SMAE) GALA - 16th May, RAF Wyton by Lez Brambley

The use of RAF Wyton for our Area National Gala could, given favourable circumstances, have made the Gala a huge success. However, due to circumstances being beyond our control, a large proportion of those who attended went home somewhat disappointed (and, perhaps, a little disgruntled). Unfortunately a fresh SE wind blew diagonally across the Y-shaped airfield, giving only a reasonable downwind range. This in itself made many competitors reluctant to enter and fly, a situation that did not improve on our being notified by the RAF authorities that, due to the operational nature of the airfield, our flying had to take place from the area north of the main runway. Despite the tremendous efforts of our Area Delegate (Nick Zotov) the RAF remained inflexible, with the result that we had about 300 yards of airfield (say 60 seconds flight time) before reaching open country and its consequent crops. Fortunately, our F/F fraternity are, in the main, a very level headed bunch and I spoke to one or two chaps who had encountered downwind landowners, finding the latter quite helpful and not at all

hostile towards our activity.

Organisation of the event was left to members of Norwich MAC and indeed the club coped comfortably with the small numbers taking part. **Open Rubber**, in fact, attracted only three entries - a situation unprecedented with so much talent present. Of those three, Chris Batty (Bristol & W) was the sole flyer to max out, John Carter (Falcons) dipping out by 11 seconds on one flight. Russ Peers (Falcons), entering late in the day, made up the trio, but declined to continue after a flight of 2:24.

The most popular event, as always, was **Open Glider**, with 14 entries, but the wind strength acted as a suitable deterrent to the exponents of circle towing and all had to take their chance on a normal tow. Even this caused some problems and I saw a few models towed in, or their towlines snapped. The eventual winner of this class was young Richard Cedar (Croydon) flying a blue and orange taper-winged *Vega A/2* to a 9-minute total. No fly-off was needed since second-placed Steve Marriott (Biggles) dropped one flight, as did a few others. Dave Greaves (Birmingham) filled third spot, with Pete Stewart (Crookham) fourth.

At first, **Open Power** looked like topping the popularity poll, but the trickle of entries stopped at ten. Russell Peers (Falcons) was the first to enter and make a flight and, as it turned out, became the ultimate winner. Unfortunately for Russ, he achieved this at the expense of one of his -40 powered models, last seen heading for the Fens on a D/T failure. Pete Harris (Birmingham) flew a much-repaired Fox 36 powered model into second place, the third flight spoiling his chances of a fly-off. Third man, C. Rushby (Grimsby) was the only other entrant to make three flights; Julian Hopper (Stansted) - fourth - after a long chase following an over-run called it a day at two.

Combined FAI was almost a Biggles-only event, this club providing five of the seven entries. Incidentally, due to wind strength, the number of flights required was reduced to five. All entrants flew A/2 class models, and winner Gary Madelin (Crookham) needed only four very consistent flights to total 11:45, with all the Biggles flyers snapping at his heels! Martin Cowley and John Cooper were second and third respectively, these being the only two competitors to make the necessary five flights.

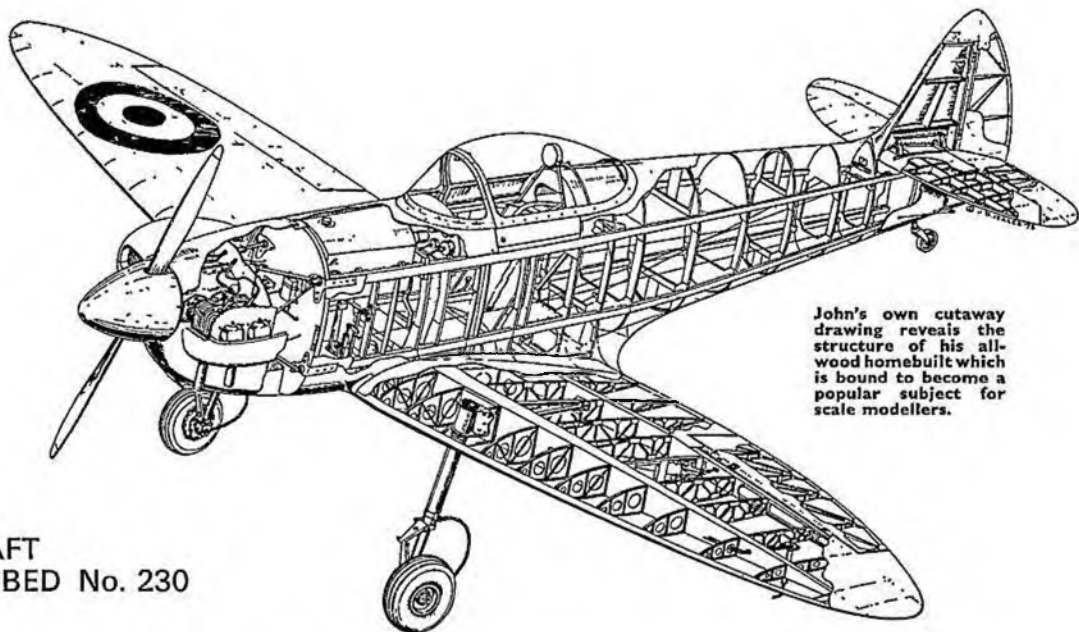
That then is the outcome of our first National Gala for some years; the one very satisfactory aspect being the attendance, with clubs coming from far and wide. To all those who did attend I would like to offer an apology, on behalf of our Area, that we were unable to provide the sort of facilities such an attendance deserved. However, I am sure that you will have appreciated our predicament in this instance.

Combined FAI (7 flew) - 1 G. Madelin (Crookham) 11:45; 2 M. Cowley (Biggles) 11:09; 3 J. Cooper (Biggles) 10:26. **Open Glider (13 flew)** - 1 R. Cedar (Croydon) 9:00; 2 S. Marriott (Biggles) 7:59; 3 D. Greaves (B'ham) 7:27. **Open Power (7 flew)** - 1 R. Peers (Falcons) 9:00; 2 P. Harris (B'ham) 7:04; 3 C. Rushby (Grimsby) 6:52. **Open Rubber (3 flew)** - 1 C. Batty (Bristol & W) 9:00; 2 J. Carter (Falcons) 8:49; 3 R. Peers (Falcons) 2:24.

The Modellers Den of Bath are now importing Tern Aero Company's lightweight and heavyweight tissues in a very wide range of bright colours. They also have lightweight silk available.

Not only the number to telephone, but also the coin to pay for the call - provided its not 'long distance'! 2p piece neatly doubles as ballast weight on this Caprice variant.





John's own cutaway drawing reveals the structure of his all-wood homebuilt which is bound to become a popular subject for scale modellers.

AIRCRAFT
DESCRIBED No. 230

ISAACS' SPITFIRE Mk I

described and drawn by John O. Isaacs

THE TRUE origins of the *Isaacs Spitfire* date back to pre-war days when, as an apprentice at the Supermarine Company, Woolston, Southampton, I worked on the shop floor assembling the very first production Spitfires. That never-to-be-forgotten experience was recalled vividly as I worked on my own 6/10th scale wooden Spitfire at my home in Southampton, half a lifetime later.

Actively encouraged by that great character Vivian Bellamy, my first practical attempt at wooden light aeroplane construction had been fostered at his Hampshire Aeroplane Club, where we built two *Currie Wots* in 1958-9, an entertaining exercise which was followed by my building the *Fury I* biplane (described in *AeroModeller* January, 1965). This was later updated by installing a larger engine, thereby doubling the power, to create the *Fury II* (see *AeroModeller* April, 1969). The *Fury II* was then sold, leaving me free to devote all my energies to the more ambitious Spitfire project, construction of which began at Easter, 1969.

The aim was to produce an aeroplane which would look beautiful and retain a Spitfire 'character,' an object best achieved by combining features from various Marks. Thus the longer nose of the Mk IX is allied to the deeper chin of the Mk XI and the large vertical tail surfaces of the Mk XIV. Apart from the engine cowlings blisters, a slight widening of the fuselage in the cockpit area, and the more forward pilot position, the basic shape is an accurate representation of the full-size machine.

The allegedly too-narrow track of the Spitfire has been increased to improve ground handling which is now good. An attempt has

also been made to improve the less-than-perfect aileron effectiveness by increasing their area inboard, and making them differential in addition to retaining the Frise type feature. After much consideration, and in the interests of simplicity, it was also decided to employ a fixed undercarriage and to omit landing flaps. Once again, as with the *Fury*, Ray Hilborne very kindly agreed to undertake the stressing of the project to $+9$ and $-4\frac{1}{2}$ G.

Structurally the aeroplane consists of spruce members with thin birch plywood covering throughout except for the fabric covered ailerons. The 22ft 1½in., finely tapered elliptical wing is made in one piece with two box spars, using the full depth of the NACA 2200 series wing section. Consequently the built up girder ribs are made in three separate pieces butted to the spars. A spruce leading edge member acts as a butt-strap for the top and bottom ply skin covering, which is applied in short panels forward of the main spar to accommodate the double curvature effect. The two aileron hinges are bolted directly to the rear spar. The main undercarriage legs are slid into steel sockets mounted on the front face of the main spar, the loads then being transmitted via steel tube struts to the box spar.

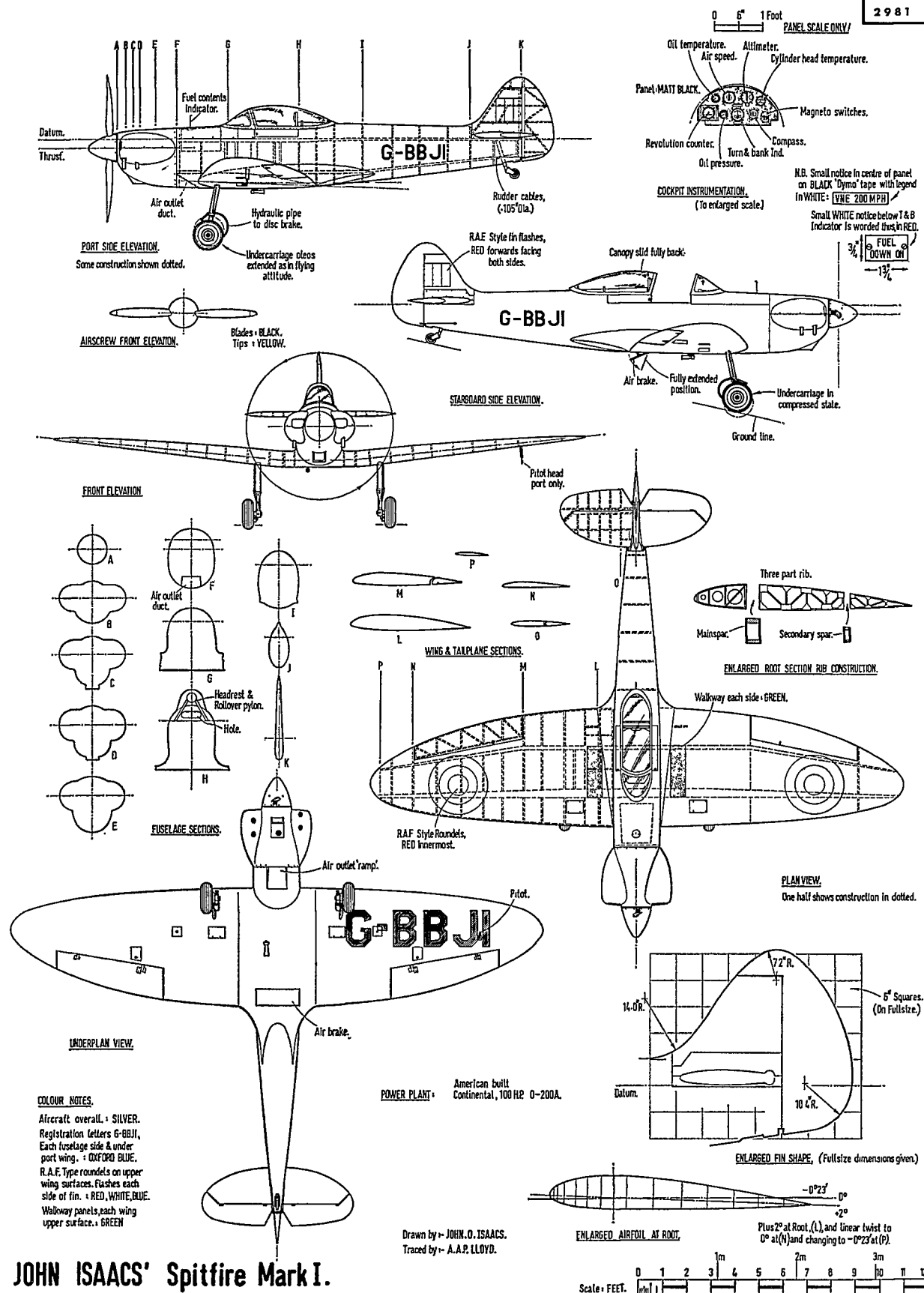
The geometry had to be carefully considered since the $+2^\circ$ incidence remains until 18.6in. outboard of the centre line of the aeroplane, after which it assumes a linear twist, actually resulting in a small negative incidence at the extreme tip.

The fuselage consists of four main longerons assembled to thirteen prefabricated frames built up of shaped spruce side mem-

REPRINTS OF THE FEATURE TOGETHER WITH 1/24TH SCALE DYE LINE PRINTS FROM THE ORIGINAL DRAWING ARE AVAILABLE AS PLAN PACK 2981 PRICE 60p (INCLUSIVE OF VAT AND POSTAGE) FROM AERO-MODELLER PLANS SERVICES, PO BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE.

Bearing the designer/builder's own initials in its registration, the man-carrying scale Spitfire has been flight tested by Bob Cole up to 200 mph in a dive. At the 1975 PFA Rally, Sywell, it was voted the most outstanding new design.





bers, with laminated top and bottom decking formers joined to inter-longeron cross-members with ply gussets. Two slots are left in the bottom of the fuselage so that it can be dropped over the two wing spars. Ply fillets are built onto the fuselage so that only a strip of serrated fabric tape is needed to cover the small gap between the fuselage and wing on assembly. Tail surfaces are of straightforward two-spar construction while all the cable operated flying control surfaces are both aerodynamically and mass balanced, as a precaution against flutter in view of the relatively higher speeds which a clean aeroplane can reach. The 100 hp Continental engine is close-cowled in glassfibre, the same material is also used for the spinner.

Construction of the aeroplane took six years, and I am grateful to the many people who have helped the project along, such as Leslie Broomfield for his work on the 22 foot long mainspar, and Tony Clark for his efforts on the undercarriage, to name but two. The mainspar is the 'backbone' of the aeroplane, and it was built on the floor of a local school during the summer holidays in 1969 then stored in Leslie's garage while I had a 24ft by 10ft shed made at my home in which to build the Spitfire. Since the shed was unheated, small components were stored in the house as they were completed and all tail surfaces together with the ailerons and canopy finished up in my bedroom but the most expensive item was the second-hand Continental O-200 engine, which we also lugged up the staircase.

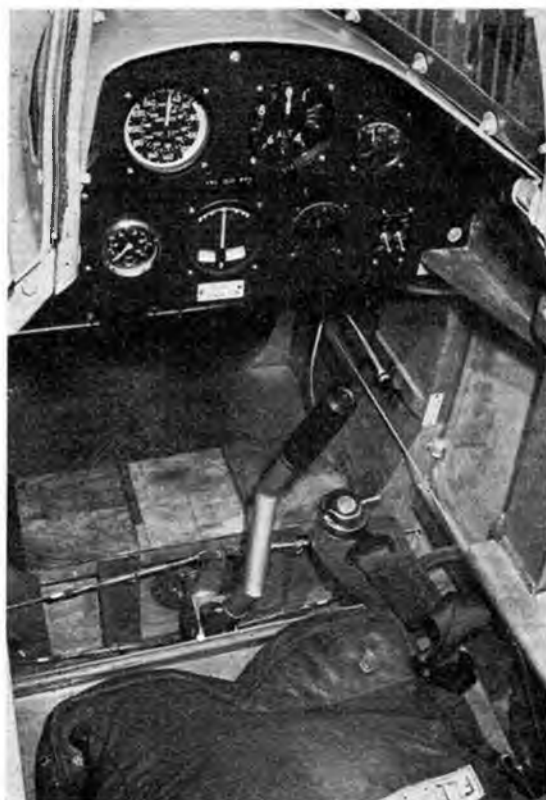
In the spring of 1975, after many tribulations, the Spitfire was hastily assembled at Thrupton, working against the clock, since the hangar had to be vacated by the end of April. It seemed fitting that the first flight should be made by ex-Naval pilot Vivian Bellamy who had flown the Spitfire during the war and subsequently. On 5th May, after waiting for gale force winds to abate slightly, he took G-BBJI into the air on a 25 minute flight. Three days later when the weather improved he flew over to the private airstrip where John Fairry had kindly offered sanctuary. The Spitfire was found to have a cruise of 135-140 mph, a top speed of 150 mph and a stall speed of 54 mph.

At this point Viv had to return to Cornwall and professional test pilot Bob Cole enthusiastically took over the responsibilities of full flight testing and development in the course of which he has carried out eight turn spins and dived the aeroplane to 200 mph.

On 8th June we took G-BBJI back to Thrupton, where it won the best homebuilt prize, while Bob put on a fine aerobatic display as a foretaste for Sywell. At this Popular Flying Association annual 'Flying for Fun' weekend air rally, Bob put on a flying display each day and the aeroplane won two first prizes, the Air Squadron Trophy for the best amateur built aircraft, and the new Benjamin trophy for the best original design.

After the somewhat 'dirty' *Fury*, and despite its fixed undercarriage the Spitfire proved to be so clean an aeroplane that it tended to 'float' during the approach and landing. To overcome this problem an underfuselage, mechanically-operated airbrake has been developed which not only gives a vast improvement in that speed control in the approach circuit is much better; but it has actually reduced the stalling speed by about 2 or 3 mph. In general the aeroplane appears to have the characteristics of its fullsize namesake and in all respects behaves like a classic fighter, giving an exhilarating performance.

Wing Span 22ft 1½in. *Wing Area*: 87sq.ft. *Length*: 19ft. 4in. *All Up Weight*: 1100lb. *Empty Wt*: 800lb app. *Vne*: 200 mph. *Max Speed*: 150 mph. *Cruise*: 135-140 mpg. *Stall*: 52 mph. 100hp Continental O-200. Ratier metal propeller.



Spitfire detail: interior is varnished wood finish, matt black instrument panel. Non scale fixed gear is stalky, has torque links and loop of brake line. Tail surfaces are true Spitfire shape, based on Mk.XIV



topical twists

by 'Pylonius'
illustrated by Sherry

Highly Strung

HAVING at last seen one of the new aerobatic kites in action I felt rather sorry for the poor thing. The kite has always had a certain dignity about it – you might almost say nobility – when you think of the dynasties of Chinese emperors who have slanted a regal eye up the twine. It has always been regarded as an anodyne, a sort of pre-scientific tranquiliser. Poised silently and unmoving over the whirl and tumult of the mad, bad world below, it has a nice therapeutic way of tidying up frayed nerves and unwinding overworked emotions. What it was never meant for was to be used as an aerial yo-yo, subjected to a lot of swoopy-woopy trickery dickery and made to go all frantic and floppy, rather like a spaniel dog doing somersaults. No, a kite is a thing to look up to with the respect its long pedigree deserves.

What perhaps we need is a society for the protection of kites, to ensure that they are handled with traditional deference, gently wafted up to take ethereal station on the billowing bosom of a summer breeze, with no feverish aerobating, and just an occasional friendly twitch of the twine to maintain that time honoured affinity that man has with his kite.

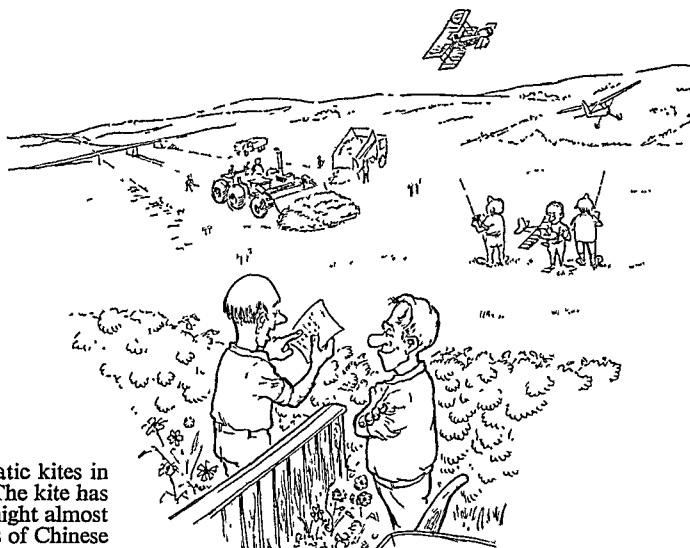
Come to think of it, though, the model plane could do with the same sort of protection. It, too, is at its best when soaring serenely on the balmy air, just doing its quiet thing in a smooth, dignified way. But it is a childish trait in human nature to treat everything as a toy, and to abandon it when the novelty has worn off. In this context I cannot help wondering if this is why the radio flyers are all frantically switching over to thermal soaring.

Science at Bay

I have always been fascinated by those science communicators who come on the telly to inform us, quite gleefully, of what new montstrosity science has cooked up in order to make our lives even more polluted and desolate. It might be a machine for grubbing up dewy hillsides or a new method of laying six lane highways at a mile a minute across our doorsteps. It seems, though, they are not all that gleeful and enthusiastic when science comes to their own doorstep, or should I say rooftop, for we read of one science communicator who is in a state of war with the local radio flyers.

When a model plane, in demonstration of a marvel of aerodynamic and electronic synchronisation, knocked a tile off his Mock Tudor roof, he did not rush to the studio to proclaim this scientific miracle to the world, but went into the sort of high dudgeon we expect of those very unscientific people who resent the intrusion of modern machinery into their quiet, Victorian lives.

His method of combating the menace of the radio machines is most pre-Wellsian, too. You would imagine he would counter with a destructive laser beam, or at least an anti-sonic missile. But not a bit of it. He got all his friends together to put up a barrage of good, old fashioned kites. Rather droll this, I should say. Certainly something to remember when he next threatens us with six more atomic power stations or a scheme for converting our gardens into mercury extracting plants.



"The Council does not think we will have to worry about the model noise much longer."

Buy-Gones

All the talk these days is of preservation. If it's more than a week old, whatever it might be, you are seriously counselled to put it in a glass case or get it valued. On this basis I am not sure I can afford to fly my collection of ageing models, and my wife is in two minds whether I should take them to Sothebys or give them to the dustman. But I think all this nostalgia for the relics of yesteryear being taken too far, especially when you hear of people digging up Edwardian rubbish dumps, and when I read something like, "... tragically, none of these big bombers remain ..." Now, apart from the fact that our airfields are cluttered up with planes that have long since made their last flights, I should have thought there was nothing more desirably disposable than a dirty big bomber. Perhaps we should also preserve a shattered town or two.

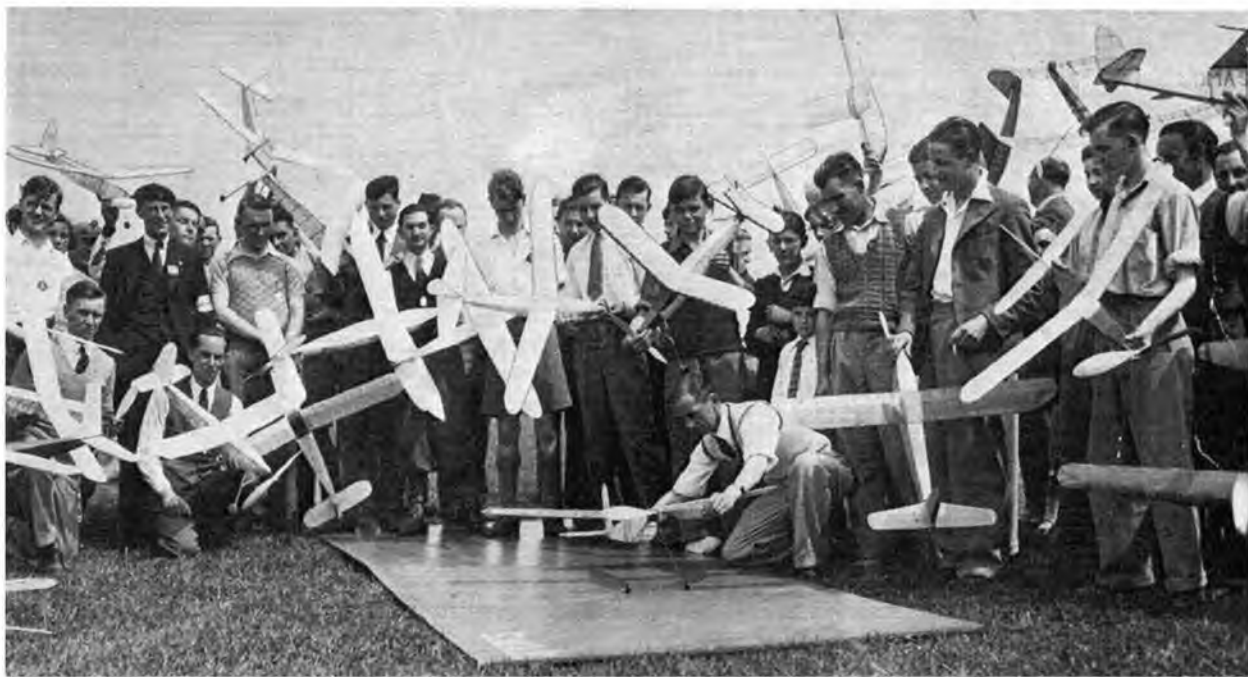
Nostalgia is not just a thing of the eye though – beauty existing in the beholding optic and all that. The lover of things past, and those reluctant to let their bygones be bygones, like to have a tearful earful of what went by the name of noise in days gone by, too. Anyone who has become tired of hearing Beethoven's Fifth or the Top Twenty can now get a stereo of favourite engine noises, and listen to sounds made by Gnomes when they were neither garden nor Zurich, but Rotary.

Unhappy Hoe-Down

It seems that in making a few uncomplimentary comments about that C/L vintage trophy called *Fireball* I got my fingers burned rather badly. I had not realised that vintage C/L flyers were also art lovers, and in likening their highly artistic trophy to a hoe sticking out of a compost heap I could not have evoked more rage and consternation than if I had attacked the Mona Lisa with a 1948 balsa knife. I admit I had half expected a letter of protest from Percy Thrower, but anyway it was thumbs down all the way for your humbled columnist, with strong recommendations for a nice monthly plan or a page of progressive vintage hints and tips in place of my caustic commenting. But really I was only joining in the fun, which I take Vintage C/L to be. By its nature all vintage flying is fun flying, and a bit of knockabout humour should add zest to the proceedings rather than otherwise.

If I remember correctly, free flight vintage enjoyed a spate of popularity until a few contest addicts started to take it seriously. After which everyone produced the same, only-just-vintage, ultra light weight comp-winning model. Result: end of F/F vintage.

Anyway, if this column is to be taken over for 'Vintage Round Up' or 'What's New in Vintage', I want to be first in the field. Therefore, far from attacking the Mona Lisa, I will weigh in with an all balsa plan of Leonardo's flying machine, specially adapted for C/L.



Alwyn Greenhalgh recalls the

1936 WAKEFIELD TROPHY

*Forty years on when afar and asunder parted are those who are singing today,
When you look back and forgetfully wonder what you were like in your work and your play,
Then one day it may often come o'er you, snatches of life like the catch of a song,
Visions of boyhood will float down before you, echoes of dreamland will bear them along..*

—Bolton School Song



IT IS FORTY years since the first British Team for model aviation was sent overseas to compete. The story of that first venture makes a fascinating contrast to present day activities and this account from a participant gives us an intimate reflection on those happy days. To finance the 1936 team, a fund was established in the latter half of '35. Lord Wakefield generously donated £200 towards the total of over £400 contributed by the model industry, the retail trade and private aeromodellers. These amounts may not seem much nowadays until one realises that the equivalents are £1,850 and £3,700 today.

Eliminating trials for the Wakefield Cup Team and Moffett Trophy Team were held on Sunday, 17th May 1936, at Fairley's Great West Aerodrome, Heathrow (turn down by the side of the Three Magpies'). At that time, there was no such limiting devices as 'maximums' and the result was taken from the average of three rise-off-ground flights. At the end of the day, the selected Wakefield Team was:

J. B. Allman	(Leamington and Warwick MAC)	268.3 secs
A. Greenhalgh	(Lancashire MAS)	220.5 secs
(Junior)		
D. Fairlie	(Wembley MFC)	215.03 secs
H. A. Jones	(North Kent MAS)	166.9 secs
(Junior)		
A. A. Judge	(TMAC)	156.8 secs
R. Copland	(Norther Heights MFC)	143.6 secs

Selected team manager was B. K. Johnson, then Chairman of the SMAE. Harry York travelled with the team as press Representative. Others in the party were J. C. Smith, the Competition Secretary, G. W. Greenhalgh and J. Trevethick. It was typical of Lord Wake-

Heading picture shows some of the contestants at the eliminating trials held at Fairley's Great West Aerodrome, 17th May 1936. At left is the team finally selected consisting of (back row, to r) Bob Copland, Dennis Fairlie, Harry Jones and Justin B. Allman, with Albert Judge and Alwyn Greenhalgh, our 'reporter', in front.



The contest was, however, not without drama. Albert's first flight was 8 mins 17 secs and when winding his model for the second flight his motor broke. He rapidly repaired the fuselage and his second flight was 2 mins 16.6 secs. Albert's last flight was a 'cliff-hanger', in that Roy Wriston had totalled 12 mins 8 secs for his flights, unfortunately losing his model. This left Albert Judge to make a flight of at least 1 min 36 secs to win the cup. On winding for the third flight his motor broke again. After further rapid repairs he achieved a flight of 1 min 58 secs, winning the cup.

Bob Copland was third, Justin Allman fifth, Dennis Fairlie seventh, Alwyn Greenhalgh fourteenth and Harry Jones seventeenth. The latter two were very unfortunate because on one of their three flights, their models stalled, touching the ground after six and seven seconds respectively (the 'no flight' time was five seconds). Strange behaviour of these two models was due to undetected warping of the tailplanes in the intense heat. Among other 'names' in the results were Dick Everett (4th), Chuck Tracy (11th), Bill Attwood (15th).

The Moffett Trophy Contest was held on the next day, run by the British contingent. British models were flown proxy and put up a most creditable performance with A. Worley third, W. Worden fifth, A. Gibson sixth, H. Simmons ninth, and H. Francis eighteenth, flown by Copland, Judge, Jones, Allman and Fairlie respectively. The whole contest meeting was sponsored by the *Detroit Times*. Winner was Vernon Gray of New Zealand with a total of 44.141

On conclusion of the contest, the group were taken to the Detroit Olympia from Wayne County Airport, where the Indoor Championships were in progress. This was the first time the British had seen microfilm models in full competition and very impressed they were too. Bob Copland had taken along a couple of small microfilm models, showing that we were not altogether unaware of that branch of the sport in Britain.

After the Indoor Championships had ended, all 400 competitors assembled at the Detroit Masonic Temple for the prizegiving and a banquet as guests of the AC Spark Plug Company.

The British Team were staggered with the support for model aviation in the USA from all connected with full-size and model aviation. Two large tables were loaded with cups and trophies and there were several other prizes of 1,000 mile airline trips, many medals and more prizes of subscriptions and materials. Three of the cups, including the Wakefield and eighteen medals went to the British team — a very creditable performance. A quote from one speech by William B. Stout is significant:

"All this work will lead to changes in construction of large planes, and designs are sure to come from someone in this audience. The next step is in your hands."

Returning to New York, the group boarded the *S.S. Europa* on 8th July, arriving at Southampton on the 13th. The same evening they were guests at a banquet given in their honour by Lord Wakefield, at the Monaco Restaurant, Piccadilly, London. Two hundred guests attended and amongst the speakers were Dr A. P. Thurston, President of the SMAE, Mr Percival Marshall, Lt Cdr H. E. Perrin, Secretary of the Royal Aero Club, and the six members of the Team.

Due to the kindness of Lord Wakefield, the success of the British Team and the vast effort of the SMAE resulting in the ability to send the Team to the USA, much interest in all aeronautical circles had been stirred, and it was clear that at last, in Great Britain

Team Manager, B. K. Johnson and the Lucky Mascot given by Mrs Thurston on board the *Aquitania* for the Atlantic crossing. It is remarkable how the members of the 1936 team have been so successful in subsequent careers. J. B. Allman is in South Africa, Dennis Fairlie is still a very active modeller, as seen with his R/C scale models at Old Warden.



aeromodelling had at last achieved the recognition it deserved.

It is fitting to conclude with the patron's message:

"My first words shall be an expression of my warmest congratulations to the winner of the Wakefield Trophy and to all the members of the British Team."

Their visit to the United States of America has not only been successful in its main purpose but has also been memorable as an international assemblage of enthusiasm for model aeronautics.

Those of us who have held some share in sponsoring this British delegation are deeply grateful to our American hosts, the Model Plane Committee of the National Aeronautical Association whose generous hospitality added so much to the pleasure of the tour. As I myself have had repeated, personal experience of American traditions in this respect, I can imagine what happy memories of their journey the members of the British Team and their coadjutors will cherish.

I recollect that I have had knowledge of the work of the Society of Model Aeronautical Engineers for at least twenty-five years. During this time many of the early exponents of the model aeroplane have, as designers and engineers in the field of aviation proper, achieved well-deserved fame.

Today, the younger generation carries on this great experimental work with equal enthusiasm. The Team which we have just welcomed back from America is indeed youthful; it returns crowned with the laurels of victory, spurred on we may hope to future achievement. I am confident that success awaits many of them in other spheres connected with British aviation."

WAKEFIELD of Hythe

KEY TO PHOTOGRAPH

The 1936 Nationals contest winners: 1. Bruno Marchi (Central Airlines Trophy) 2. Jessie Bieberman (American Airlines Trophy) 3. Robert Copland (Whitfield Trophy) 4. Hewitt Phillips (Model Craftsman Thrush Ace) 5. Wilbur Tyler (Comet Trophy) 6. Al Coutial (Detroit Times Trophy) 7. Sheldon Bell (Balfour Trophy) 8. Joe Nuehrle (Small Texaco Trophy) 9. Dick Korda (Detroit Times Trophy) 10. Melvin Yates (Whitfield Trophy) 11. Roy Wriston (Detroit Times Trophy) 12. Bronik Soroka (Detroit Times Trophy) 13. Chester Lanzo (Megow Trophy) 14. Bruce Luckett (Mulvihill Trophy) 15. Alvie Dague (Bloomingdale Trophy) 16. Ervin Leshar (Stout Outdoor Trophy) 17. Bert Pond, proxy, flew for winner Vernon Grey, New Zealand (Moffat Trophy) 18. Francis Thrush (Texaco Trophy) 19. A. A. Judge (Wakefield Trophy) 20. Louis Casale (M.A.N. Trophy) 21. John Haw (Guillou Cup and Stout Indoor) 22. Joe Matulis (Jimmy Allen Trophy) 23. Carl Goldberg (Springfield Trophy) 24. Mike Kostich (Model Craftsman Trophy and Baby Cyclone).





BETWEEN THE LINES



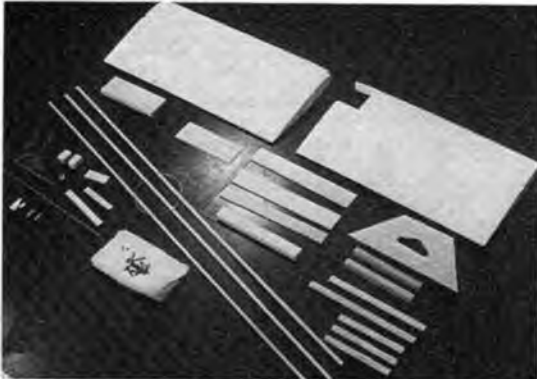
with Dave Clarkson

IMPORTANT – THE DoE DRAFT CODE OF PRACTICE FOR NOISE CONTROL

I heard of the major provisions of the Noise Control Code of Practice for Model Aircraft *proposed* by the Department of the Environment with great sadness, for if they are adopted finally, they mean the extinction of competitive C/L aeromodelling as we know it today. My understanding of these major provisions (the draft code is reproduced in full elsewhere in this issue) is as follows:

- All engines to be muffled such that a noise level of 80 dB (A) at 7 metres is not exceeded with the engine running at maximum speed.
- There will be no exemptions for FAI International Class events *except* where the use of silencers is specifically prohibited by the FAI, and then only for selected UK teams for practice purposes, i.e. Class F1C.
- All muffled engines in free flight or control line models must not be operated nearer than 300 metres from occupied dwellings. For unsilenced engines under the FAI exemption (F1C) this distance is increased to 1 kilometre.
- At major events which attract 'hundreds', it should be 'normal' for the site to be at least 1km from occupied dwellings or other noise sensitive development. Flying should be contained between 9am and 9pm and the organisers should be expected to advertise the event beforehand – so that those inconvenienced can arrange to be elsewhere on the day.

Heading picture: 'Music soothes the savage beast'. Not 20 yards away from our Columnist's 'noise polluter', the horse (just visible at left) seems entirely unconcerned, in fact it happily munches through about 2 hours of 'torture', hardly moving away and scarcely paying any attention. Quite obviously this horse finds the noise neither loud nor offensive. Below is a 'Superstar' combat kit, now available from Outlaw Model Products – see Classifieds for details. Solid foam wing is supplied complete with all parts (including tank kit) and with very comprehensive assembly instructions. Very quick to make. At right is Stefan Ratsch, who was placed 3rd in German Nationals – his first contest – with this O.S. Max 35 powered 'Thunderbird'.



For the large majority of engines currently in use for C/L competition work (and if it comes to that most C/L work) mufflers are *not* available, and the remaining minority of mufflers are probably unable to meet the proposed noise level. Even if 'legal' mufflers were available for all of the motors in use, the fitment of such items would so affect performance that competing at International level would be pointless. Furthermore, the scheduling of any International C/L contest here (never mind the proposed 1978 C/L World Championship) would be a waste of time unless complete exemption could be obtained, for no foreign competitor would voluntarily compete under such onerous conditions.

I do not pretend to understand the reasons for proposing this extinction of C/L competition work. At the International level over the years, especially recently, control line participants have enhanced Britain's reputation abroad. At the local level, adverse publicity concerning C/L aeromodelling has been noticeably absent. So why, oh why, kill us off with restrictions?

My objections to the DoE Draft Code go further than the unavailability and/or unsuitability of mufflers. The basis of English law is the consideration of what is 'reasonable' and it is my contention that a distance of 7 metres for measurement is *not reasonable*. When we talk about noise from Model Aircraft surely it is reasonable to lay down standards for the noise that the average person may hear? SMAE General Regulations require spectators to be a *minimum* of 25ft away, which means an average minimum separation of at least 23 metres since C/L models describe a circular path in flight.



Of course spectators are not 'the average person' who is commonly referred to as the 'man in the street' and so the Control of Pollution Act itself lays down the principle that noise should be measured at the periphery of the site from which the noise may issue. It follows that since a separation must be specified for any noise measurement to have any meaning, for the average urban or suburban C/L flying site, a measurement separation of say 100 metres is the minimum that could be considered reasonable, and for the average airfield type competition site, because these are normally well away from any residential community, a measurement separation of perhaps 500 metres would be reasonable.

I do realise that for strictly practical reasons associated with the difficulties inherent in actually measuring noise, the distance of 7 metres is accepted internationally as the normal measurement separation for determining the effect of a sound source on its environment. However, it is my contention that the 7 metre noise level laid down for C/L Model Aircraft should be referred to what is reasonable for the 'man in the street' to hear at the separations derived above. Before the Government confines us to history, please will someone do some actual measurements so that *reasonable noise at reasonable separation for C/L Model Aircraft* can be referred to a 7 metre standard?

My opinion (not based on actual measurements, but based on using my ears) is that due to noise absorption by the air, the ground and surface features — all most significant for our low capacity high revving motors operated at very low altitude — that a reasonable noise level of 40 dB (soft music!) at a reasonable distance of 200 metres would mean a 7 metre standard for C/L Model Aircraft much greater than 80 dB. If this does not prove to be the case, then I as a responsible member of the community will, with deep regret accept the evidence and give up. But not without the strongest possible protest.

I can make my protest in this Column; but what can you, my readers, do if you wish to protest? Because of the timing now perhaps your only chance, if you feel the same way as I do (and don't forget it is not only C/L that will be hit adversely), is to write to the Editor **NOW**, who will forward your comments to the Department of the Environment. The Department sought comments from many 'umbrella' organisations, so do not worry that your comments will be unwelcome.

By the way, the SMAE has submitted its proposals to the DoE in the form of a Draft Code of Practice and it proposes silencers on all R/C models plus silencers on everything else if you fly within certain defined distances from homes etc. Strangely though, I understand that the 'Model Hobby Trade Federation' fought hard for that 'blanket' silencer rule and refused to accept the SMAE proposals concerning F/F and F/L aircraft. I wonder why? More R/C sales? More silencer sales?

2nd SMAE CENTRALISED MEET—RAF N. Luffenham, 30th May
Although the threatening rain never materialised once the contest had begun, the cold and blustery weather made the conditions far from ideal for enjoyable racing. Despite only moderate entries, the racing events (just Goodyear and FAI) dragged on until 8.30 pm — a case for tightening up discipline all round?

FAI Team Race

With most of the Feltham teams away in Salzburg making a frontal attack in Bugl-land, Northern dominance of this event was to be expected, and in fact the results show this to be so.

The heats were far from spectacular with only Heaton/Ross achieving a respectable 4:14 time using their old 'Verviers' model. They had been practising with their retract U/C new model but a few bugs in the system saw this back in the car. Clarkson/Daly showed 21.5 to 22 sec/10 laps for 35 laps performance in practice but this setting was far too sensitive and their actual results were poor until they switched to a smaller (175mm dia. x 190mm pitch) prop and accepted shorter range for the semi final.

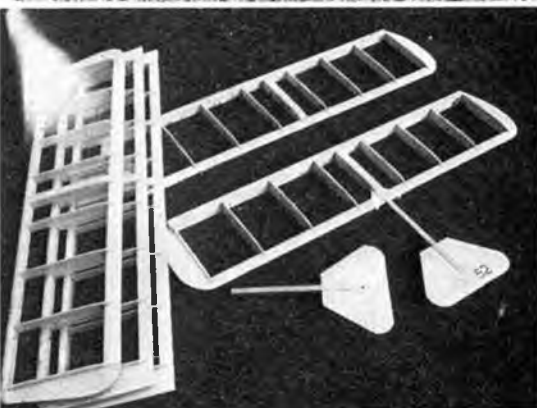
The semi's saw Heaton/Ross pull out a sparkling 4:07 for a new British heat record; meanwhile Clarkson/Daly's Rossi FI behaved a little better than earlier giving a 4:18. Besides these two, the rest remained slow with only Horton/Haworth going under 4:40. By the time the finals actually arrived, Heaton/Ross had decided to opt out, leaving the organisers (Bob Horwood and Richard King) no option but to allow a 2-up final with the following result:

- | | | | |
|-------------------|--------------|------|------------|
| 1. Clarkson/Daly | (Norwest) | 8:35 | Rossi FI |
| 2. Horton/Haworth | (Wharfedale) | 9:20 | ETA 15 |
| 3. Heaton/Ross | (Norwest) | DNF | Bugl Mk.II |

Perhaps as a sign of 'what's in there', Clarkson/Daly completed the last 100 laps in the final in just 246 seconds.

Goodyear

Despite the presence of many Rossi glow powered models (all



Pictured at top is not a semi-scale Spitfire — it is in fact a Veco Thunderbird with modified fuselage profile and appropriate colour scheme — the handiwork of Ian Peacock. Compare with standard 'T-Bird' opposite. Above is one of Frank Smart's latest ideas — plug in tail sections for combat models. Replace during a heat in a few seconds.

seemingly with non-standard cylinder heads), the heats were diese dominated viz:

Horton/Haworth	(Taipan 3-5 Schneurle diesel Ginny)	4:34
Heaton/Ross	(Taipan 3-5 Schneurle diesel Deerfly)	4:45
Allcock/Chambers	(Rossi 'Combat' diesel Deerfly)	4:46
Clarkson/Daly	(MVVS 2-5 TRS Of Blue)	4:46

Once the last mentioned team had been put out of the semi's in a pit stop 'incident', the finalists became predictable although the actual final result was not the expected one.

- | | | |
|---------------------|--------------|------|
| 1. Allcock/Chambers | (Tipton) | 9:44 |
| 2. Horton/Haworth | (Wharfedale) | 9:45 |
| 3. Heaton/Ross | (Norwest) | Rtd. |

Thanks to excellent pitwork by 'fast Frank' Chambers, he and pilot John Allcock just pipped Horton/Haworth, probably due to the latter's Taipan 3-5 BB RV Schneurle diesel having distinctly lost its edge. Heaton/Ross retired when the tail fell off their old and tatty Deerfly in mid-air.

The novice final was full of glows for once, but a pitstop incident at lap 117 eliminated both Rossi glows, allowing the slow but reliable Super Tigre G.15 FI of Morrell/Seward through to a solo win.

- | | | | |
|---------------------|-----------|-------|---------------|
| 1. Morrell/Seward | (Norwest) | 11:28 | Stinger |
| 2. Parker/Bacon | (Ipswich) | Rtd. | Argander Spl. |
| 3. Green/Cunningham | | disq. | San Bernadino |

Combat

Again miles away from the racing circles, so again I got to see precisely nothing of the Combat, and have had to rely on hearsay.

Firstly the results:

- | | |
|------------------|-----------|
| 1. J. Hammersley | (Outlaws) |
| 2. R. Bamford | (Archers) |
| 3. D. Williams | (Archers) |
| 4. D. Wood | (Go) |



At top is German stunt pilot Feger with model, paint scheme and flying style showing Rudi Kessel's influence. Super Tigre 46 power. Above are the pilots in one of the most exciting combat bouts at German Nats - Kuckelhorn (left) and Magg.

Besides the Outlaws (except John Hammersley who is still 'using up old stock') using glow powered 'foamies', converts this time included Dave Wood, Richard Evans, Mick Tiernan, etc. Lack of familiarity with his new glow-foamy probably cost Richard Evans dearly for he went out after two straight losses due to hitting the ground far too often. John Hammersley was the one who put Richard out finally. John then proceeded to the semi's without having to fly again! Helped by two successive byes and then in the quarter finals clubmate Paul Strudwick elected not to fly effectively byeing John into the semi's. To show that we all can do daft things, Mick Lewis essentially killed Dave Wood's chances in the semi's right at the start when instead of holding the streamer he stood on it as Richard Evans launched his model. Result - Dave Wood had to ditch his glow/foamy for a new streamer, the glow/foamy broke on ditching, etc. etc. you live and learn.

GERMAN C/L CHAMPIONSHIPS by Claus Maikis

In no way did this year's meeting turn out as expected, with some drastic reduction in participation in some events contrasting a lot of new flyers in other classes which were supposed 'dead'. Speed saw the usual contenders, some experimenting with magnetically-grouped lines; these are *not* considered legal in Germany, but as the Italians are known to have used them, and while nobody knows the reaction of the World Championship organisers, then you just have to try! Results were Lenzen 253 km/hr, Miebach 244 km/hr, Rumpel 243 km/hr.

Team race had the worst entry for many a year. Only Bader/Kaul are worth being mentioned with a 4:06, and a 4:02 in a two-up race. Alas, they cannot attend the World Champs, so Germany will probably send only one team, since the 'limit' was set at a 4:25 heat.

Combat flying however has nearly doubled in popularity and quality, with some new faces showing the experts how it's

done. Young flyer Kuckelhorn lost third place to Willmer, despite showing much promise in the heats. Jedamcik could not make either of his two Rossis go, so first place fell to young Tino Gasche of Munich with his fast MVVS models. Biggest surprise was stunt with 12 competitors (2 last year!). Admittedly some flyers had come over from the other 'circles' but there were about five new pilots, one of them flying in his first contest, and ending up in third place! Reichle came second after brushing clouds of dust off his aircraft, behind Maikis with yet another new airplane.

THE 1976 SOUTH AFRICAN C/L NATIONALS

A fortnight before this event was scheduled, it was realised that the host club (Rand MAC) lacked adequate facilities, so a last minute change to the East London MAC's circles was made. Due to such short notice, few modellers from other centres were able to attend, causing some events to be cancelled. However, the most prominent speed flyers made the trip and a great spirit of sportsmanship and comradeship prevailed among this small hard core of aeromodellers.

Participation in National Championships has been dwindling over the years, and a very sincere effort is now being made to attract more beginners to the game, and also to encourage more sport flyers to the speed classes. It is the intention to fly an FAI sub-class, which will permit only side-exhaust unpiped 2.5cc motors and 0.3mm lines.

A strong wind was blowing for the FAI speed class and the weather was far from ideal. David Masters set the pace in the first round, by putting in a flight of 214.29 km/h and then followed this up with an identical time, when he proxy-flew his father's model (Bob had very recently had a major abdominal operation, and had just come out of hospital). Des Smith, a newcomer to speed, and a convert from stunt to combat experienced trouble flying his *Kingfisher* on the pylon, because of the wind. Des had recorded 209 km/h in practice, but Basil Menges offered to proxy-fly the model in the second round, knowing that he would push his own placing one position lower by doing so. Gestures of this kind were not uncommon during the meet.

David improved in round two and recorded 216.87 km/h - the big end of his motor was completely 'shot' after this flight, but both he and Bob were satisfied with the position, and elected not to make any more flights. The outcome was a very happy one for the East London club, and it clinched the matter of World Champs team selection for Bob and Dave Masters.

Slow Combat provided the expected number of spectacular crashes, with combat veteran Reg Maclear easily outflying (and practically demolishing) his opposition with an OS 35-powered modified *Flite Streak*. A Proto got under way in calmer weather, where Basil Menges broke the South African record with a flight of 76.76 mph, and then proxy-flew Bob Masters' *Miniball* to a spectacular 83 mph. Bob withdrew this time, for contest purposes, as he had not been able to fly the model himself, leaving Basil first.

Open Speed was flown, for the most part, with FAI models, on 0.3mm lines. Basil Menges's well-finished model, powered by an Aldrich-tuned Super Tigre X-15 on 60% nitro fuel, did not produce its true form, and did not better its second round 138.46 mph. Dave Masters provided the surprise of the day, when he turned in a flight at 145.75 mph with his reserve FAI model - powered by his '70 Rossi, burning 80-20 FAI fuel. Des Smith flew his *Kingfisher* FAI model on 0.4mm lines and FAI fuel, into third place at 137.40 mph.

Also suffering from fewer entries, Goodyear still provided good experience for the East London newcomers. Ray Pitt's *Miss San Bernardino*, powered by a G15 glow, was the fastest model in the event, and he was unlucky to suffer a run-in on take-off, which knocked him out. The two E.L. juniors, Ron and Robert Masters, acquitted themselves very well with their OS 19-powered *Boo Ray* and showed that they could make their presence felt, in the near future. John Wellman's MVVS diesel-powered *Miss San Bernardino* was well handled by Jeff Newton, to win the event. Time: 10mins 46secs.

Open Combat saw some fast and furious action, with particularly exciting bouts between Des Smith and Peter McDougall and Reg Maclear with Owen McDougall. The bout between Des and Peter unfortunately ended with destruction of both of Des's models. Peter's speed and skill at snap manoeuvres won his bout, but a blown plug cost him too much flying time in the final. Peter's model was somewhat faster than Reg's, but Reg managed to minimise his disadvantage by some very crafty flying, and won by 1.5 seconds!

Peter and Owen travelled 360 miles, from Durban to Johannesburg, not knowing about the change of venue - they then drove 650 miles to East London - their enthusiasm was particularly encouraging to those who had doubts about the future.

Peter's magnificently-finished metallic green *Combat Cat* earned him the Concours d'Elegance award, and Dave Masters was the

overall *Control-Line High Point* winner. A most enjoyable, informal prize-giving dinner was hosted by Des and Dianne Smith, at their home, leaving all the impressions of an enjoyable and encouraging Nationals.

This report, was provided by Bob Masters. Thanks Bob and congratulations not only at the SA Nationals but also on the selection of you and son David on being selected to represent South Africa at the 1976 CL World Championships at Utrecht. According to a letter received from Bob, besides the two Masters in F2A Speed, Clyde Boyd-Sutherland and Alan van Breda will represent South Africa in F2C Team Racing.

STUNT SCENE by Glen Alison

At the CLAPPA/SMAE Novice stunt competition and teach-in held at Stopsley sports ground, Luton on 6th June, there was a disappointingly low entry of 5 for the competition, although the weather was hot and sunny with very little breeze to discourage anybody. The morning was spent in practice sessions and discussions with experienced stunt flyers from CLAPPA on hand to give advice – the majority of questions seem inevitably to be on tanks and propellers. Three contest rounds were held after lunch using the new SMAE Novice/Junior schedule. The winner was Peter Dene from Fleet, Hants, flying a model designed by second placed Steve Crawford named *4 Square*, powered by a Fox 40. Steve flew a modified APS *Spitfire* with ST 46 and was in fact leading in Round 1 due to better appearance points, but Peter outflow him in the end. Arthur Birch and Pete Rabjohn took 3rd and 4th positions both with Fox 35 powered *Noblers* – fifth place went to young Barry Eusten with a PAW 2-49 combat wing. Steve Blake of Maple Models, Luton, generously provided a voucher of £3.50 for first prize.

By the time you read this, the C/L World Championships being held at Utrecht, Holland, will be over but just to remind you of our team and their equipment. John Newnham of Rolls Royce MAC will have his own design *Shadoogie*: 55in span, weight 48½oz, using Merco 35 driving a 10 x 5in. wood prop. I understand he hopes to have a spare model in time for the Championships. Second is veteran Jim Mannall now flying *Nimrod 7* with subtle variations and improvements with a 56in. span and weighing 44oz, decorated in his usual style in white with blue trim. Merco 35 again but Top Flight 10 x 6in. nylon prop, using 58ft x .015 Sullivan lines. Our third man is Pete Tindal (at last) with his development of Jim Van Loos *Chipmunk* design now at Mark 9 stage. Fox 40 powered with 11 x 6in. wood prop, this 57in. model weighs about 3lbs and is attractively finished in RAF trainer style, silver with 'dayglo' patches plus full rivet and cockpit detail.

Looking through the equipment used by the Australian stunt flyers at their Nationals reveals a slightly different approach than here. Models tend to be larger with areas around 650-775sq.in. and weighing about 3½lbs. Engines are the usual Merco 35 and Fox 40 in the main, but a few Enya 45s are used in the larger models. Fox R/C type plugs seem to be the most popular but the most interesting feature is the use of Chicken Hopper type tanks for stunt. These were once popular for Class B team racing but their use for stunt is a new development, as they require a fair bit of dexterity with the soldering iron for the construction. See the *Control Line Manual* for the principles involved, but the general idea is that there is a mini tank fitted to the side of the main tank and the engine takes its feed from this which is automatically kept full from the main tank. This maintains a constant hydraulic head of fuel and therefore a more consistent run from the motor in manoeuvres.

SPEED SCENE '76 by Martin Radcliffe

Sunday 30th May dawned cool and gusty for the Speed event at North Luffenham and we all thought of Ivor Roffey's quote, that the ideal speed competition weather was when it was just too windy to fly an O49 model, was to be proved correct. However in reality it was the larger stuff which piled into the tarmac all around us,

Stunters unlimited! Top right is John Newnham, member of the '76 British Stunt team with his 'Shadoogie' design. Below him is Ted Fowler with his latest design – sprayed all green, would you believe? – which features a pair of lightened foam wings imported from the States at great cost. Detachable wing employed. Below are two views of Glen Alison's latest stunter – also using a pair of hollow corod foam wings, with obechi veneer. Wing area is 730sq.in., and total weight should be around 56oz. Note use of D/T timer to stop motor and prevent over-runs – tensioned piano wire arm is held off by the timer, then crushes the fuel tubing on release.



SPEED MODEL DATA

(from N. Luffenham)

Entrant	Nose Length	WING			Moment Arm	TAIL-PLANE			Motor
		Root Chord	Tip Chord	Span		Root Chord	Tip Chord	Span	
P. Halman	2½ in.	3½ in.	2½ in.	17½ in.	3 in.	3½ in.	2½ in.	7½ in.	Rossi 15
Meagers	2 in.	1½ in.	1½ in.	14 in.	3½ in.	1½ in.	1 in.	5 in.	TD 049
M. Radcliffe	3½ in.	5 in.	2 in.	30 in.	5½ in.	3½ in.	2 in.	15 in.	O&S 60
D. Smith	2½ in.	3½ in.	1½ in.	20½ in.	5 in.	3½ in.	2½ in.	7 in.	Rossi 60

whilst the father and son team of Bob (pitman) and son Nick Meager (pilot) flew on to yet another placing with their 049 model, although this time they were second by 0.03%.

The top four out of some 16 entries were:

1. P. Halman 139.8 mph 96.88% *FAI class*
2. R. & N. Meager 87.7 mph 96.85% *049 class*
3. M. Radcliffe 178.9 mph 96.8% *60 class*
4. D. Smith 135.6 mph 93.97% *FAI class*

Halman's and Smith's models are very similar, so I shall describe them together. Both are asymmetric i.e. no outboard wing, no inboard tailplane. Both use a front rotary Rossi, mounted side-winder fashion with the cylinder pointing out of the circle, the wing being mounted on a spar coming out of what would have been the bottom of the pan in a normal model. In both cases the span referred to in the table is measured from the thrust line of the motor to the wing or tail tip. Both models sport a ½ in. span outboard stub wing, which enables the area of the wing in the fuselage to be included in the wing area (à la *Kingfisher*, but smaller). Both models have sheet aluminium wings formed over wooden spars and both engines used Rossi No. 2 heads, although Dave Smith had a 0.6mm shim under his to decrease the compression ratio. The pipe length (Rossi pipes) measured from the glow-plug to the end of the tail-pipe was 11½ in. on Dave's model and 11½ in. on Pete's model. Each has wire gauze over the scoop to the front rotary intake to turbulate the air-flow. Pete's prop on this occasion was a 5.75 x 6.7 in. home made glass/epoxy job, while Dave used a Rossi/McCann 5½ x 6½ in. Suction feed fuel tank arrangements are used as it is easy to get the tank inboard of the carburettor for a rich air setting with this wide-winder arrangement. Both used the 20% castor, 80% methanol fuel as opposed to the 25/75 FAI mix, although in Dave's case it was the first outing for that model and engine.

Compared with the above, the Meager's model was simplicity itself. They used a Cox TD 049 running on crankcase pressure, the fuel being K & B *Speed Fuel* which is available from Irvine Engines. They used a home made carbon fibre/epoxy 4½ x 7 in. prop and flew on two 0.006 in. dia. wire lines. The engine was modified to take a spray bar assembly from a Cox R.T.F. model engine, and was mounted in a home cast pan, which Bob says he will market if there is enough demand. The model was hand launched. For the edification of anyone thinking of taking up speed, I would like to point out that the Meagers currently hold the British 049 record at 90.6

mph. This record was set using an ordinary profile model on suction fuel feed; a fresh approach which is far simpler and cheaper than many others available and just as successful. Anyone building a model like this would be well advised to give it a dollop of tip weight as the torque of these little motors has a remarkable rolling effect on the models!

My third placed model was powered by an OPS 60 using a Taylor Competition glow plug and an OPS 'straight fuel' pipe of 14½ in. length, while the engine is mounted in a Harter's 'C' pan cut to half length. The model is flown on a single 28 thou monoline, using a Stanzel control handle and an H&R torque unit, both from Irvine Engines. Fuel burnt was 10% ML 70 oil, 10% Castor Oil, 35% Nitromethane and 45% Methanol, while the prop was a 10 x 10 in. Punctilio cut to 8½ in. dia. The tank is pressurised from the pipe. I have to confess that I have had trouble with lean runs this year, but this was resolved by crushing the end of the pipe with a pair of pliers to increase the back pressure in the pipe and hence to the tank. A bit crude, but effective; the model did 169 mph four stroking I

* * *

The 'useful ideas' department prize must go to Owen Warboys of Christchurch. Most modern motors don't survive a shaft run, so Owen fitted his model with a ground contact lever, which trips a fuel line cutout should the model hit the ground. This saved Owen a £20 rebuild of his OPS 60 when the cutout actually worked, as he kissed the ground with the model on his first run. This simple idea would have saved at least three other motors at this meeting; one OPS 60 I saw had the gudgeon pin ripped out of the piston in a shaft run and other motors suffered liner damage when the conrods shattered.

Owen also has a rather neat starter consisting of a car starter motor powered by a car 12 volt battery, which is automatically turned on when the model is pushed into the starter, and is automatically switched off when the model is removed. Thus there is no possibility of the model being thrown out of the starter when it is put in, as sometimes is the case with starters which are running when the model is inserted. Owen has accomplished this by putting the starter motor on runners so that as it moves back, under the pressure of the model being pushed in, it completes the circuit. The motor is sprung and thus the circuit is broken when the model is removed.

FOCKE WULF 190

continued from page 437

dope on the whole model, rubbing with 400 paper after each coat. A last check for dents and holes is made now. Car spray cans lend themselves to a camouflage paint scheme of this type. *Duplicolor* offers a wide range of colours; it is a nitro type lacquer which dries fast and is very light. *AeroModeller* Plan Pack 2761 (price 45p including postage) is a great help when searching for details or panel line configuration. A clear two part resin fuel proof finish should be applied finally. My finish usually weighs about six ounces. Since I am rather lazy, I do not rub down the spray coats and while this finish is by no means up to 'American' standard, it is enough for the distance from the judges to the model!

Appended is a listing of the weights of my model - this is about 49 ounces which I am not too happy about, but it is not so bad for an aircraft of this size, especially as it was necessary to move the CG far more forward than anticipated. Even then the aircraft is rather sensitive.

After many years of stunt flying, it is my opinion that aerobatics require more 'nerves' than any other event (control line, at least!). Even 'big names' admit that starting the engine can be decisive to the whole flight. I have found the following contest procedure suitable for

different equipment: If at all possible, a practice flight in the morning of the contest day is desirable. I always fill tank while the previous pilot is flying. The engine is primed and flicked over several times until it feels quite 'wet'. At the circle, the tank is filled once more. The engine is choked (flicked over with closed venturi) twice if warm, four times in cold air. In very cold weather, prime the engine through the exhaust (not with inverted engines!) and via the venturi. Connect the battery and feel the 'kick' on the propeller. Only then are the judges signalled 'ready'.

Now, if your engine starts with the first flick, you have managed the first half of the flight. If you master the wingover, the second half is done. Let your *Focke Wulf* do the third one!

Table of weights

Wing: complete with flaps and two push rods	430 grammes
Tailplane (rough)	23 grammes
Elevators (rough - each)	4 grammes
Tailplane complete	44 grammes
Airframe + 1 coat sanding sealer	770 grammes
+ 2 coats sanding sealer	780 grammes
+ covering + 2 coats of dope	800 grammes
+ 2 coats dope + fairings	825 grammes
+ Dupli color + trim	930 grammes
+ fuel proofer	970 grammes
Complete	1480 grammes



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

GOOD NEWS for all junior modellers who would like to try their hand at contest flying – once more there will be special competitions arranged for them by the *Society of Model Aeronautical Engineers Ltd* at the British National Championships on 14th-15th August. Actually, even if you do not wish to fly in such events, it is still well worthwhile making a trip to the 'Nats', as nowhere else will you see such a variety of aeromodelling activities taking place on one airfield. See 'Hangar Doors' page for details of how to find the venue of RAF Little Rissington, plus the full programme of events.

NOVICE/JUNIOR STUNT

This will be 'two events in one' for Juniors (any person under 16 years of age on the day of the contest) and Novices. A 'Novice' is defined as any person who has not scored more than 650 points in an FAI schedule flight in an SMAE aerobatic contest. If a person obtains more than 350 points in the new schedule in two separate Novice competitions, then they are promoted out of the class.

Although both contests will be flown before the same set of judges, two separate results lists (and prize lists) will be produced. A feature of the scoring system is that groups of manoeuvres (eg three loops or two eights) will be marked as a whole out of 10 and then multiplied by the 'K' (or difficulty) factor. Also any manoeuvre not attempted will score minus 5 times K factor unless the competitor has previously notified the judge that he intends to omit certain items. Pull test to be 10 times model weight.

Now for the schedule itself:

- 1 *Starting within 1 minute* – 10 points; after 1 minute – 0 points
- 2 *Take off* – (K factor 2)
- 3 *Inside loops* – 3 off (K factor 3)
- 4 *Inverted flight* – 2 laps (K factor 2)
- 5 *Outside loops* – 3 off (K factor 3)
- 6 *Reverse wing over* – 1 off (K factor 8)
- 7 *Square loops* – 2 off (K factor 6)
- 8 *Horizontal eights* – 2 off (K factor 4)
- 9 *Vertical eights* – 2 off (K factor 6)
- 10 *Overhead eights* – 2 off (K factor 6)
- 11 *Landing* – Without undercarriage 2 points with undercarriage 5 points

Entrants under 14 years of age on 1st January 1976 will receive an extra 10% of their final score.

A photograph cannot do justice to this pair of trophies made by Ian Dowsett – consisting of a model seagull embedded in clear resin – which have been generously donated by Norman Foster to the SMAE for presentation to the winners of each section of the Junior Kit Contest at the Nationals. These trophies will be awarded annually. In the control line event, Frank 'Pop' Warburton Snr has promised to present another of his striking trophies – many thanks to both these sponsors.



The judges will award appearance points for construction and finish marked out of 10. These points will carry a K factor according to the type of model as follows:

- (a) Flying wing combat type model (K factor 1)
- (b) Profile model with definite wing/fuselage/tailplane (K factor 2)
- (c) As (b) but with undercarriage and minimum fuselage width of 35mm (K factor 3)
- (d) As for (c) but with cowed engine and semi-scale appearance (K factor 4)

For this event, to be held on Saturday, 14th August from 8.00 am, competitors will need to be SMAE members. Entry for contest is via a programme. The event will be located near to the other control line events.

JUNIOR KIT

There are two classes for this free-flight contest (gliders and rubber-powered aircraft) and in each case the models must have been built by the competitor from one

of the selected kits listed below. Models must be constructed exactly as per plan with the exception that a dethermaliser may be added, and gliders may be adapted to use an auto rudder, if this was not originally shown on the plan. The models that may be used are:

Gliders	
St Leonard Model Supplies	<i>Satellite</i>
Cambria	<i>Petrel</i>
Kelston	<i>Swift</i>

Rubber	
St Leonards Model Supplies	<i>Performer</i>
Keil Kraft	<i>Senator</i>
Mercury	<i>Mentor</i>

Competitors must be under 16 years old on the day of the contest, need not be SMAE members, and will not have to pay an entrance fee – although a programme is necessary. They will, however, need to be covered by third party insurance for flying model aircraft. Prizes will consist of a magnificent clear perspex trophy in each class, together with kits and modelling goods – so there is plenty of incentive to try hard.

As for flying, you will need to make three flights of two minutes maximum duration each. If flying in the glider class, you must tow the model up and release it yourself – and do not forget to bring a towline (50 metres long maximum). Entrants in the rubber-powered class must wind the motor and launch the aircraft themselves, and should bring a suitable winder with them.

The Junior Kit event will be held on Sunday, 15th August, from 2.30 pm, and the control point will be located upwind with the other free-flight events.

Dear John Bridge,

I am between 10 and 16 years of age and would like to become a member of the 'Golden Wings Club'. With this application I enclose postal order (International Money Order) for 50p to cover cost of enamel club badge, two coloured transfers and membership-card.

NAME IN FULL.....

ADDRESS.....

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

NAME OF ANY OTHER CLUB OR CLUBS TO WHICH I BELONG (if any).....

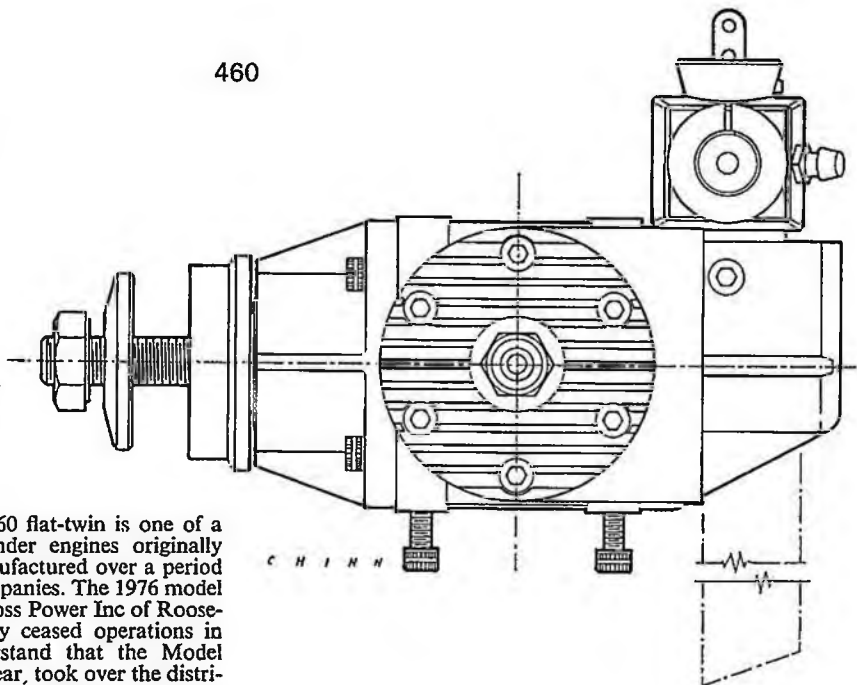
Send to: GOLDEN WINGS CLUB, AEROMODELLER, P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE.

8/76 15p in the £1 Rebate plan purchase coupon for Golden Wing Members G.W. No.....

ENGINE TEST

by Peter Chinn

ROSS 60 TWIN



THE 10CC AMERICAN Ross 60 flat-twin is one of a number of twin and multi-cylinder engines originally designed by Louis Ross and manufactured over a period of six years by three different companies. The 1976 model under review was produced by Ross Power Inc of Roosevelt, Long Island. This company ceased operations in March this year but we understand that the Model Rectifier Corporation who, last year, took over the distribution of Ross engines to add to their Webra and Enya ranges in the US, have acquired all existing stocks of Ross engines and parts. Therefore, although the future production of Ross engines seems to be in some doubt, it appears that there is still time for would-be owners to acquire one of these twins.

Many changes have been made to the Ross Twin since it first appeared in 1970. It is still a rear rotary-valve, crossflow scavenged unit having offset connecting-rods to allow the cylinders to be directly opposed on a common axis and it still uses a one-piece crankshaft in conjunction with connecting-rods having detachable big-end caps. But the crankcase now has a separate front bearing housing and a needle-roller bearing replaces the front outer ball bearing. The connecting-rods are of aluminium-bronze, instead of aluminium, in order to reduce the rate of big-end bearing wear and the inclined Kavan carburettor is replaced by an upright Perry carb.

Changes made to the 1976 model include a larger carburettor choke (now approximately 33sq.mm effective area), a modified crankshaft gas passage and modified transfer porting.

The engine has black anodised castings and gold-anodised cylinder heads. It is unusually compact for a twin and although its bare weight of 15.4oz is slightly more than the original model, this is still a very modest figure for a twin cylinder 10cc engine.



SPECIFICATION

Type: Horizontally-opposed, simultaneous-firing twin cylinder air-cooled glowplug ignition two-stroke. Rotary-valve induction via rear crankshaft journal. Crankshaft supported in two ballbearings and one needle bearing. Single Perry carburettor.

Bore: 0.0-800in. (20.32mm).

Stroke: 0-600in. (15.24mm)

Swept Volume: 0.6032cu.in. (9.884cc).

Stroke/Bore Ratio: 0.75:1.

Measured Nominal Compression Ratio: 8:1.

Checked Weights: 437 grammes - 15.4oz.

485 grammes - 17.1oz (with exhaust pipes).

GENERAL STRUCTURAL DATA

Crankcase barrel and cylinder casings investment-cast in one piece from aluminium alloy with black anodised finish. Investment-cast **front and rear housings** in aluminium alloy with black anodised finish and each secured to crankcase by flange and four Allen cap screws. One-piece carbon-steel **crankshaft** with two $\frac{1}{2}$ in. dia. journals and two $\frac{1}{2}$ in. dia. x $\frac{1}{2}$ in. crankpins. Rear journal bored 10.3mm for gas passage with 14.3mm long rectangular valve port. Shaft supported in $\frac{1}{2}$ x $1\frac{1}{8}$ x $\frac{1}{2}$ in. ball journal bearings front and rear, plus $\frac{1}{2}$ in. i.d. caged needle roller front outer bearing. Machined aluminium alloy **pistons** with baffles and pinned Dykes type **piston-rings**. Fully floating $\frac{3}{8}$ in. o.d. tubular **gudgeon-pins** without pads. **Connecting-rods** of aluminium-bronze with offset small-end bearings and split big ends, each bearing cap being secured with two small socket head cap screws. Machined aluminium alloy **cylinder heads**, deeply finned, shaped to form wedge pattern combustion chambers and each secured with six Allen cap screws. **Perry carburettor** with 7.5mm i.d. choke. Aluminium alloy **prop driver** secured to shaft with Allen grub screw. Replaceable $\frac{1}{4}$ -28 UNF **prop stud** and nut.

TEST CONDITIONS

Running time prior to test: 1 hour.

Fuel used: (i) 25 per cent Newton R castor-oil and 75 per cent methanol (running-in).

(ii) 5 per cent nitromethane, 20 per cent Newton R castor-oil, 75 per cent methanol (test 1).

(iii) 25 per cent nitromethane, 20 per cent Newton R castor-oil, 55 per cent methanol (test 2).

Glowplugs used: Fox 1.5 volt long-reach bar type.

Air temperature: 8°C (46°F).

Barometric pressure: 1013mb (29.9in.Hg.).

Performance

Supplied with the test engine was a pair of 5-in. long square-tube exhaust pipes. These, which attach to the exhaust ducts and project vertically downwards, have a slight scavenging effect and thereby offer a small increase in power. They do not, of course, quieten the exhaust to any marked degree but could easily be adapted to duct exhaust gases into an expansion chamber located below the crankcase, a convenient arrangement, for example, for a typical 'flat-four' or 'flat-six' type scale cowling installation.

Prior to testing the present version of the Ross Twin, we had two 1975 models on test for the manufacturer which turned out to be somewhat below expected levels of performance and it was these findings that led to modifications being incorporated in the 1976 model now featured. The new engine showed a very considerable increase in power compared with all models of the Ross Twin we have handled over the past six years.

Most of the improvement in power came from the engine's much improved torque at the higher speeds. For example, whereas the original early-production 1970 model produced a maximum torque of 78oz.in. at 7,000 rpm on 5% nitromethane fuel, the 1976 model recorded 81oz.in. but, more important, held this to well over 10,000 rpm. As a result, peak power output was raised from 0.74 bhp at approximately 11,700 rpm to 0.96 bhp at 13,000 rpm. While such an output might not be thought very remarkable by present day single-cylinder 10cc R/C engine standards, it is in fact, a very good figure indeed for a twin.

Propeller revolutions by the Ross Twin included the following: 7,700 rpm on a 14 x 6 Top Flite maple, 9,800 on a 14 x 4 Top Flite standard, 9,200 on a 13 x 5½ Top Flite standard, 9,900 on a 12 x 6 Top Flite maple, 11,000 on a 12 x 5 Power Prop standard, 11,500 on a 12 x 4 Top Flite standard, 11,100 on an 11 x 7½ Power Prop maple, 10,600 on an 11 x 7 Top Flite maple, 11,700 on an 11 x 6 Top Flite maple and 12,400 rpm on an 11 x 6 Power Prop maple.

Earlier tests of Ross Twins had shown them to respond favourably to fuels having a higher nitromethane content than our standard 5% test blend. Before concluding the torque and rpm tests, therefore, some checks were made on a 25% nitro mixture. This raised maximum torque to 86oz.in. and power to 1.07 bhp at 14,000 rpm and gave increments on most props of between 300 and 400 rpm.

The manufacturer's instruction leaflet advises the use of an electric starter for the Ross Twin. The test engine could be started by hand and had quite docile handling qualities but piston seal did not seem to be quite so good as with the original model and we have to admit that a starter did give much more rapid results. Naturally, the



simultaneous-firing, horizontally-opposed layout gives less vibration than a single-cylinder engine, although the test motor did not seem to be quite so smooth running as our original Ross Twin.

Throttle response was reasonably good. The safe minimum idling speed (not less than 3,000 rpm on a 12 x 6 prop) was higher than one would normally obtain with a good single-cylinder motor, but this is to be expected with a flat twin where a common crank chamber supplies both cylinders. Any attempt to get the Twin to idle more slowly usually resulted in the left-hand cylinder cutting out when the throttle was reopened. This tendency for one cylinder to cut out prematurely at idling speeds is characteristic of twin cylinder two-strokes of this type. Any user who finds that it prevents an acceptably low idling speed being achieved might care to consider the idea of installing a small nickel-cadmium 1.2 volt cell wired to each plug and automatically switched on when the throttle linkage reaches a predetermined point – say at the 4000 rpm point. This will help to keep both cylinders firing even when the mixture strength in one of them starts drifting outside the normal combustible mixture strength range.

Obviously the Ross Twin is not the sort of engine that one buys for everyday use. It is expensive and is applicable mainly to certain types of scale model, both control-line and radio-control. To some people, however, it is enough merely to own a Ross Twin – i.e., not to use it but to regard it as a highly desirable collector's item.

Power/Weight Ratio (as tested):

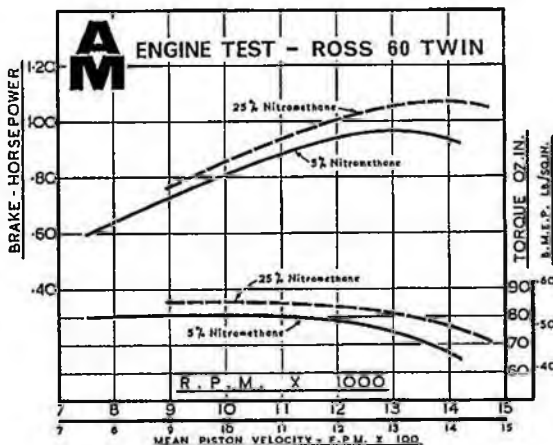
0.90 bhp/lb on 5% nitromethane fuel

1.00 bhp/lb on 25% nitromethane fuel

Specific Output (as tested):

97 bhp/litre on 5% nitromethane fuel

108 bhp/litre on 25% nitromethane fuel



FLYING SCALE COLUMN

continued from page 442

Though this Spitfire is very much a 'Class II' machine – having been built from the Mick Reeves designed, Ripmax R/C kit, Vic Willson puts on a superb display, with absolute control over the Webra 40 motor and retracting undercarriage thanks to his 'R/C link' control system. Total weight of aircraft is just 6lbs – very reasonable considering its size and equipment. Authentic-type background is supplied courtesy of the BBC who were filming a new television series at Old Warden.



One interesting point I found in the troubles that I encountered is that the piston on the *Telco* is made of nylon whereas the Brown used the traditional steel (or cast iron – it is difficult to discern). This undoubtedly led to the rapid wear out of the first motor, when 'lubricated' with aluminium dust. Under normal running conditions, with the recommended lubrication intervals the life should be quite reasonable. Whether it will be as long as traditional metal components only time will tell, although other tests conducted, which included 'shaft running' the motor for several periods of four minutes duration each, have shown no fall-off in performance at all. No doubt the use of so much plastic in the construction of this motor has enabled the price to be held to reasonable levels – the retail price being £8.45 for the complete package. UK distributors will be Ripmax Ltd, Performance Kits Ltd, and The Modellers Den, so availability will be both universal and immediate.

I hope to conclude my findings on this new motor in a future edition of this Column. In the meantime I can recommend any modeller, scale or otherwise, who wants a small, quiet, clean power unit, at a reasonable price, to go out and purchase one.

OLD WARDEN '76

Over the years the annual all-scale day at Old Warden has become a regular fixture for all the scale nuts to get together for a fine day of mutual admiration. June 13th was no exception, although brought forward a week in order to avoid a clash with the World War Two air display at Duxford, it happened that the change of date gave us one of those days that will linger in memory for ages. Though breezy at one period for free flight, the wind direction allowed better separation from the R/C boys (who, incidentally, made 198 flights with 93 different models during the day) than is usual at this small Bedfordshire airfield. Instead of the intermingling that easterly winds have usually brought, this year's S. Westerly produced clearly defined R/C and F/F areas. Even so it was a little surprising to see so many models cast into the air with little regard for where they might land – either among the surrounding admirers, or if more successful in getting away, dead in line with a copse of trees!

Among the flyers who chose wisely was the eventual winner of the Shuttleworth Trophy for best model (all classes) of an Old Warden Museum aeroplane. This was W. D. Dennis, who built his 1/12th *L.V.G. CVI* to such fine detail that it could pass for a non-flying static exhibit. Even the ply panels in the fuselage were reproduced in

correct material and to scale patterns, while the hand-painted lozenge camouflage must have taken hours to stencil. When flown, the LVG 'hung-on' to its Mills 1.3 so realistically it could be easily mistaken for the real thing at a distance. Equally impressive were the *Hanriot* 1910 monoplane and *Bristol Bullet* by Alan Palfrey, each of which was electric, the 45in. *Hanriot* by a Mabuchi 36 and the *Bullet* with the Monogram unit. It wasn't until one realised that there was no visible engine that the virtue of these good flyers was fully appreciated. Electric power is on its way at last.

Dodging the many *Peanuts*, *Moths* of all kinds, *Stossers*, and the ubiquitous *Concorde* which was almost permanently airborne, the Old Warden free flight spectator had lots to see. Perhaps the greatest impression was the number of waterplanes. *Sopwith Schneider* seaplanes, and the *Do18* and *SM55X* flying boats had no difficulty landing smooth and upright on the half strewn grass at this picturesque site.

Control line enthusiasts once again benefited from a large area of short-mown grass, and they responded by bringing more models than ever before, although perhaps there were not as many 'spectacular' aircraft to be seen. In addition, whilst the weather was well nigh perfect, there seemed to be long periods of relative inactivity – perhaps the scale men prefer talking to flying!

Nonetheless, there were some truly notable performances and models – Ron Truelove's *Handley Page Hampden* certainly being in this bracket. Never having flown before, this 1/11th scale design, featuring retracting undercarriage, bomb release and throttled OS40's – not to mention sliding cockpit canopy, landing lights and fully detailed interior – took to the air realistically and demonstrated all its functions most efficiently.

Mike Ennis of the Guildford Flying Group is renowned for his 'exotic' choice of aircraft, so at first glance his Veco 61 powered *Henschel 126* seemed a little uninteresting. However, its large size (3/4th scale), fine flying performance and realistic appearance soon dispelled these thoughts, and he placed a well earned second behind the *Hampden*.

Most impressive flight performance though must have been that put on by Vic Willson, demonstrating his semi-scale *Spitfire* – actually a Mick Reeves designed Ripmax kit – with closed loop telemetry control (based on R/C transmitter minus the RF stage) to throttle and retract undercarriage. To see this large model perform low level runs with retracted gear at accurately variable speeds is to see what *real* control of the C/L model is all about.

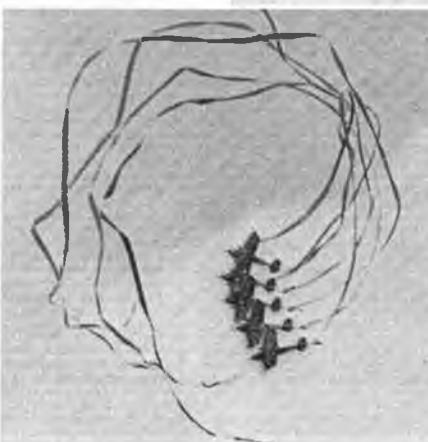
KITES AT OLD WARDEN



REVIVAL MEETING of the old Kite Flying Association (deceased 1910) at Old Warden on 2nd May, produced a response that was way beyond expectations. Over 1,500 kites were flown at one time or other during the nine hours, top count being over 180 simultaneously. Largest was David Dokk-Olsen's replica Cody with a 13ft span and enough lift to require a Land Rover to hold it down, and the smallest was Alwyn Greenhalgh's vest pocket Eddy, flown on the lightest Coates' sewing cotton. Between these were every shape and form imaginable – even the Marconi rig, and of course, all the varieties of control-line kites. Tom Chapman, of Northampton, put up nine Mettoy 'Barnstormers' in linked train for the biggest formation yet demonstrated, but had to be content with five for full aerobatics. A Chinese tailed 'bird', and two huge delta's added to the variety but for our money, one of the most interesting was the wartime Dinghy Kite as shot up by pistol in a sort of splint wrapper and which deploys into a winged boxed at altitude.

Kites fever has arrived in a big way, and the KFA will enable enthusiasts to communicate with one another through the 'Kitelines' newsletter. Details of membership and a newsletter sample can be obtained from the Secretary, KFA, c/o the editorial offices.

Below left John Robson with his remarkable bird design, centre Tom Chapman's aerobatic Barnstormers 5-up in formation and right, Penguin book author, David Pelham, with his Delta against picturesque background of Peter Fisher's (Performance Kits) Caravan which is part of the regular Old Warden vintage scene.



David Dokk-Olsen's huge 13ft Cody replica anchored to his Land Rover which bears an appropriate legend (left). Page spread from Penguin Book of Kites (above) deals with sleds and Control Line typical of the excellent standard of illustration in this successful book.

PENGUIN AIRBORNE

When a technical paperback hits 3rd spot in National all-comer sales statistics it just has to be good. David Pelham's *Kites* (£1.95, 228 pages, colour and copiously illustrated) is one of those delightful once in a while compulsive purchases that can be enjoyed over and over at every viewing. In fact the cleverness of the book is that one can even enjoy it fully without reading a single word! Pictorially perfect, and 99.9 per cent accurate, it's the best yet on the subject. Only the omission of Dunford or Garber control line kites, and confusion over Hi or Lo porosity (p.116) spoil the record. If you want the historical background (first half) or data on knots, fabric seams, use of paper, spar joints, tubes, rings, buttons, lacing, reels etc, in the DIY second half, plus a veritable Kama Sutra of designs, then *Kites* is essential reading. It doesn't scratch the vast commercial kite world apart from the inescapable Peter Powell and long established Brookkites; but for that we're grateful as this aspect is the subject of our own book to appear early next year!

KITE SHOPS

Dave Turner's Windcraft at 36 Alma Vale Road, Clifton, Bristol 8 was first British all kite shop and with a full range of Indian fighters plus oriental decoratives, he started with unusual stock. Eric Gibson opened the first London kite shop at 69 Neal Street, WC1 in June and long time acromodeller, Peter Pilsworth, was interviewed on radio talking of his Woking Model & Kite shop. Others are due to start in York and Bradford. Forecasts are that over 4,000,000 kites will be sold in 1976.

Next KFA rally at Old Warden this year is on 10th October, while the 1977 Spring Festival is on 1st May.





Above: RAFMAA's Morris Gilmore holds the Wakefield winner at the Holland International, as Dave Greaves, winds for his winning flight. At left is Free Flight News co-editor Ian Kaynes who placed third in the same event. Bottom left is Manche of the Netherlands with his Hoerner tipped Wakefield and long tapered tip panels.



DOUBLE DUTCH

Martin Dilly and Michael Warren report on two free flight contests held in Holland, and which netted three British victories

A LARGE British contingent at Roosendaal Helde in Holland, taking advantage of the cancellation of the British Nationals, took part in both the Dutch Free Flight Nationals and the Holland International. Mostly the weather was doing its best to be 'British', with rain, strong winds and poor visibility as well as the sun and light drift leading to the large diameter thermals that we have

At left is Denmark's Thomas Küster - Power winner at the Holland International launching his non-flapped 'Cream'.

Alan Jack (right) from Tynemouth won A/2 at the Dutch F/F Nationals but flew this different model with Burrows section at the Holland International.





Interesting West German A/2 (left) used MYA 123 airfoil and 'buzzard' wingtips made from thin Plasticard with thin steel strip reinforcement to set the washout of the feathers. Above is an A/2 sized flying wing by Bos of Haarlem, which won its class at the Dutch Nats.

come to expect on the sandy heath about ten miles east of Arnhem.

The weather on the day before the Dutch Nationals had been fairly discouraging, with squally showers, quite violent at times and even thunder. Contest day (Thursday 27th May) was only slightly better; it was windy and turbulent over the fairly rough terrain and occasional trees of the heath and, though it did not actually thunder again, it was quite wet at one point in the morning. However, it proved a very successful day for the British, with a victory in A/2 for Alan Jack and in Wakefield for Steve Marriott though this success cost Steve a lost model. The next day (Friday) was a splendid day – calm and still, and just right for re-trimming models which were still damp from the day before.

A/2 at the Holland International (held on 29th/30th May and organised very well by the Arnhem Club) featured 87 competitors taking the field; representing eight nations: the Netherlands, West Germany, Sweden, Denmark, Austria, Belgium, France and Great Britain.

Saturday lunchtime saw the start, and the best of the weather – with lightish wind taking aircraft towards the scattered pines and birches – an accurate compass bearing and frequent stops to re-check the line were essential for successful retrievals. With extensive heather a foot or more high, circle towing could be pretty tiring and one of the writers certainly had a premature release solely because of the onset of exhaustion and resulting lack of airspeed sufficient for a top-of-the-line release.

Competitors were split into groups of six per launching pole and glider round times were seventy minutes for the first and fifty for subsequent ones; the Wakefield and Power flyers shared a forty minute slot, due to the smaller number in these classes. Generally the British A/2 flyers had 'all British' poles and initially agreed to fly alphabetically and split the round time equally. The Dutch timekeepers had a fairly loose interpretation of the announced five minute waiting period per flyer, once that flyer had arrived at the pole.

Round one saw sixty A/2 flyers maxing, and 14 of the 22 Wakefield flyers; Alan Jack was unlucky to drop one second in

Wakefield and only Martyn Cowley maxed out of the three British Power flyers. Ken Faux had trim troubles, with one over-run caused not surprisingly when he forgot to trip the timer. The resulting glide at about 60 degs with the tailplane on the power setting terminated with a nasty thud into the heather from almost a thousand feet, but without damage. In the second Power round Martyn Cowley had a short engine run with the model just too high to catch for an attempt, the resulting 21 seconds effectively putting him out of the running.

The combination of foot-slowng heather and circle towing produced a crop of line crosses; Steve Marriott, who had a full house (3 maxes) by the end of the day, had three crosses in the first round and nobody would take to the heather more times than necessary just for tactical reasons. The previous evening, in the calm and warm conditions already mentioned, Steve lost a glider with a D/T hang-up, watching it disappear upwards after nearly an hour; as he packed to leave the heath a Ranger stopped and there in his Land Rover was the missing A/2, which had been dumped four miles away by the thermal.

Halfway through the second glider round, now down to 50 mins. in length the rain started, light at first, but enough to upset the more closely trimmed models. In the same round Alan Jack had a premature unlatch and the A/2 managed only 69 seconds.

On pole 11 things were a little strained; the six British flyers had agreed to fly in alphabetical order but, as a couple of them dropped time in Round 1, it seemed sensible to let those who had maxed have first try at the weather. After Jim Baguley maxed, Brian Baines was next to go, but took 20 mins to decide to move to the pole and start his five minute period, leaving the remaining flyers little time for their own flights. In the subsequent round with the rain looking steady Brian decided to let some of the other flyers go before him, but in fact the downpour increased and he managed only 2:10.

At the end of the Wakefield flying on Day 1, Dave Greaves was two seconds behind Manche of the Netherlands, having dropped 8 secs on his third flight, with Alan Jack

fifth, John Bailey seventh, Ian Keynes eighth and Ron Pollard tenth.

Several of the West German gliders had rather club-like large diameter fuselages of rolled balsa, and a number of flyers used timers that were protected against dust by a push-on nose, usually of alloy tube. The Dutch, who rarely fly from runways or other hard surfaces, tended to have the whole mechanism of the circle towhooks hanging below the fuselage. Several Germans used translucent moulded glassfibre noses on A/2s housing internal timers and hooks, Helmo Fleishacker's variant employing an Italian made glassfibre boom tapering from about 2cms behind the wing to 1cm at the tail. Flexi-jointed fuselages were quite common; one of the most interesting being Austrian Klaus Salzer's who also used a wing with separate tips and two 16 swg wire joiners. Main joiner was steel, protruding an inch from the mating face, while the other was about half an inch long brass wire, with the end slightly flattened to make a positive pop-in location into a hole drilled into a nylon sheet insert in the other rib. Airfoil was Isakson 73508, and it used an aluminised Mylar-covered tailplane. The wire tip joiners enabled Salzer to adjust the washout on each tip, after which they were taped in place.

Several of the Dutch and French A/2 flyers towed with two foot long extensions to their winches giving an effective increase in arm length and resulting in quicker response to changes of model pull. Certainly in the stiff winds of the second day's flying the impression held by some British flyers that 'continentals' were only at home in flat calm conditions was not borne out. Launch site was changed as a result of an almost 180 degs. wind shift overnight, and on the Sunday we were 200 yards from a drop, facing into the wind, with 20ft. high birches scattered round, a few feet upwind of the line of launch poles. These trees not only made towing a bit of an obstacle race but their associated turbulence made lift spotting a trifle hard. Anyone still doubting that model flying is an activity 'with appreciable physical involvement from the participant' (Sports Council definition of a sport!) should have been out on the



French entrant at the Holland International. Yves Hirliemann flew this A/2 with high mounted tailplane, dural pylon and flexi-jointed fuselage.

blasted heath dodging the trees, towlines and other models, running downwind through the heather, jumping the foxholes and weapon pits, and then taking up orienteering to locate and recover models half a mile away. In view of the wind speed and the short round times scheduled the organisers decided to set the max at 2 minutes after Round 4, and only in Power was a fly-off required. (The organisers had previously reserved the right to vary the max if necessary; on balance it was a sensible decision, though there was some dissatisfaction since it gave those who were 'in the hunt', but not in the first three or four, less available flight time in which to try to catch up.)

Dave Greaves was having trim changes on his triple finned Wakefield and added Plasticene to the nose after each flight to compensate for moisture on the tailplane. Although the Croydon thermistor chart recorder and bubble machine were working upwind, Dave usually relied on his own weather sensitivity, and pulled ahead of Manche, who was flying a Hoerner-tipped model with long, tapered outer panels. After his sixth round flight Dave's Wake came back with a wingtip broken off and half an hour to go before the next flight; both your reporters, having given up the battle with the wind and having decided to retire from flying gliders while they still had intact legs and aircraft, settled down with cyano-acrylate and persuaded Dave that it would be less liable to produce trim changes than epoxy in the time available. In the event, in spite of a fast loopy initial climb on the crucial final flight Dave retained his lead and followed his win at last year's Pierre Trabod with an equally popular success at Arnhem: drawings of the winning model appeared — where else? — in this magazine's *Free Flight Scene* column in December 1975. Only difference from the published plan is a new Bob White-style propeller.

In Power the seven people with full houses on the first day were whittled away to leave only Bert Huijben of the Netherlands and Denmark's Tom Køster to fly-off, after some drama when Køster had an over-run on his sixth flight, only to find that the recovery crew had taken his spare model with them downwind. Tom and model were back within seven minutes, leaving two minutes to go in the round: the

signal pistol went halfway through the climb, leading to a protest from the Germans, who spent much of the contest calling loudly for the International jury. Their protest, that the round ended late, was disallowed.

Before the fly-off Køster did a thorough overhaul of the systems of his aircraft (the standard, un-flapped *Cream*) and tightened the needle valve clamping nut on the Rossi; as it happened, he had a sharp rev drop about a second into the climb so perhaps his worries about the fuel setting were justified. The aircraft ended at about towline height after the five seconds, but thanks to the superb transition, floating glide and some hill lift off a downwind ridge, he made the two minutes needed. Huijben, flying second, used an all-sheet aircraft with elliptical dihedral on both wing and tailplane; finally disappearing behind the ridge that saved Køster at 1:55 for second place.

Glider winner was Ton van Dijk, the only man to max out; he used a towing extension to his winch, and flew a flexi-jointed aircraft with sheet top and bottom to the wing which had an outrigger turbulator. He was also, incidentally, placed third in the Dutch Nationals only a few days earlier.

During the Saturday evening competitors were invited to a local hockey club bar

where general conviviality took place, enlivened by drinks on the house 'by way of apology for the weather' as Jan van Rij explained on behalf of the organisers. Two films by Ewout Reuss were also shown, one made at the 1974 European Championships and the other at the 1975 World Championships at Plovdiv; both were a definite cut above the usual amateur movies and were justifiably well received by the audience. In particular some shots of climbing power models, with a pearly overcast sky backlit by the sun, a rotating camera following the aircraft, impressed several people.

With Ian Kaynes and Ron Pollard taking third and fourth places in Wakefield and the earlier successes at the Dutch F/F Nationals the 1976 Holland International was an enjoyable and successful contest for the British flyers. As a reminder to those of you who perhaps have not yet flown in a competition it is *fun*, which is why we do it. Try it; you'll like it.

DUTCH NATIONALS

A/2 Glider (52 entries) — 1. A. Jack (UK) 588; 2. A. Hacken (Holland) 578; 3. M.v. Dijk (Holland) 576. *Other British placings* — 10. P. Stewart 460; 16. M. Dilly 368; 31. J. Baguley 187; 36. M. Warren 160. **Wakefield (7 entries)** — 1. S. Marriott (UK) 588; 2. L. Kroon (Holland) 537; 3. H. v. Hoorn (Holland) 478.

HOLLAND FREE FLIGHT INTERNATIONAL

A/2 Glider (87 entries) — 1. M.v. Dijk (Holland) 1080; 2. Selzer (Austria) 1015; 3. Lendering (Holland) 1011. *British placings*: 10. S. Marriott 969; 18. G. Madelin 892; 19. P. Williams 881; 25. A. Jack 843; 30. B. Baines 796; 31. P. Stewart 780; 39. D. Greaves 676; 53. J. Baguley 585; 57. M. Warren 577; 62. M. Dilly 523; 72. Hawkins 457; 76. K. Protos 389; 85. J. Thompson 248. **Wakefield (22 entries)** — 1. D. Greaves (UK) 1009; 2. H.v. Hoorn (Holland) 973; 3. I. Kaynes (UK) 944; 5. A. Jack (UK) 902. *Other British placings*: 8. J. Bailey 864; 11. S. Marriott 824; 15. G. Madelin 588; 17. J. Baguley 533; 21. G. Lefevre 9; 22. K. Proctor 4. **FAI Power (18 entries)** — 1. T. Køster (Denmark) 1080+120; 2. B. Huijben (Holland) 1080+155; 3. J. Brodarac (Germany) 1037. *British placings*: 6. F. Chilton 794; 16. K. Faux 440; 17. M. Cowley 296.



Henk van Hoorn — Dutch team member at Plovdiv (and second placer in Wakefield) uses wing set at —1° to the thrustline 80% CG and a Seelig operated auto rudder on this Hoerner tipped Wakefield.

CLUB NEWS

NOW THAT model flying has become a popular sport rather than the hobby interest it once was, the whole nature and function of club life has undergone a marked and drastic change. The catalyst, as you well know, is the radio model, the attraction of which is not so much what can be created on the work bench but what can be realised on the flying field with the minimum of effort. There are, of course, radio flyers who are just as keen as any other type of modeller, and just as dedicated to their building boards, too, but there are many who have no real interest in club life, but merely join the club for somewhere to fly. Often, this results in clubs with bulky memberships but with a very limited amount of actual flying. Thus the officials are involved in a lot of work, not directed, as they perhaps wish, towards an intensive club life, but serving the interests of those whose attachment to the club is at most of a very casual nature.

Whether such considerations are involved in discussions on club membership that we are told about in a report from Mike Parrott, PRO of the Buckaneers Model Club, we do not know, but certainly in the accompanying newsletter there is a lament about the 'same old mugs' doing all the work whilst others are content to just partake of the fruits of the organisational labours. It should be borne in mind though, that not all non-participants are slackers and spongers. Some people find it impossible to involve themselves too deeply in club life because they live too far from the centre of activities, or that they have other, more pressing commitments. However, the Buckaneers decided against continuing the three month freeze on membership, and instead are confining any new influx to those living within reasonable distance of the club's three main flying fields, forming a rough triangle between Dunstable, Bicester and Newport Pagnall. One exception to the rule is the USAF Air Base at Upper Heyford with which the club has had a long connection. Whether at weddings or model nights nothing excites more than bringing along something old and something new. The new at the 'Bring a Model' night were a *Britten Norman Islander*, a *Gloster Gladiator* and an *ME 263 Delta* fighter, also a part finished *DH4*. The old was an 8 foot span free flight A.P.S. *Vulcan*, a cabin monoplane which appeared in 1940. This was a replica, of course, and safely modified for R/C. Activated at a display these types of R/C scale models make for an exciting exhibition. Boy Scouts were subjected to the deadly toffee bombing (designed to rot the teeth of the enemy) and the bombing of a miniature factory by Pete Smoothery, with sound and visual effects supplied by Jack Bearton, and Dave Mayne, with Derek Giles providing a lively commentary.

Seadog, the newsletter of the South Eastern Area (SMAE), carries the results of the protracted negotiations with the Ashdown Forest Conservators on model flying concessions. They look pretty good to me, with seven

Area meetings allowed per year, and flying of silent models almost unrestricted. Some limits are set on engine powered flying, but these are not nearly so onerous as was feared. Although the newsletter evinces no sign of jubilation, I should say the Area are entitled to put out a flag or two on a very creditable result. But wherever you fly, silence is very much the golden watchword in these noise conscious days, but Mr T. J. Grey, the editor, finds himself in something of a dilemma in that, as a F/F man, he cannot see how the general silencer rule, which he believes in, can be extended to F/F power without destroying its viability. As he says, you cannot hear a silenced engine cut out, and the F/F Power model has the saving grace of only being flown in specialised areas and then only occasionally. The question I would like to ask though, is your rocket type flying – now only marginally viable – really necessary, or should the FAI find some sort of low cc, power assisted glider formula? Talking about power assistance for gliders, on many model sites the twang of the bungee has become the more familiar sound than the old, polluting buzz. Already this year the Forest has played host to some quite fantastic thermal soaring meetings. The May meeting, for instance, attracted an entry of no less than 26, all flying to a high standard.

Most things are cheaper than R/C helicopter flying, but one thing that definitely is less costly than r.o.g. windmills is Hang Gliding, on which leg-buckling sport Watford Wayfarers MAC's Chairman, John Sharman, has been hooked. We are reminded that it was that chap who was not only the first real wing style flyer, but who did all the basic work for all flyers, model and otherwise – none other than the illustrious Lillenthal. He laid down two basic lessons for hang pilots. One is to remember you have to carry the thing back to the top again. And, two, never to fly higher than you are prepared to fall. But if you must fly silly little model planes, you will be in violation of the new bye law if you try it on Croxley Moor on Sunday afternoons, that is if you are unwise enough to use one of the publicly-damned noise grinders up front. Better to do what Dave Feven and Tony Rose have opted for: thermal soaring. We are told that Tony Rose got a shock when he opened the kit box and saw all those ribs – *farsends of 'em!* We see elsewhere in the newsletter a contributor complaining of all those Trade impact words such as *Kwik-bild*, *Top Elite* etc, but oddly enough heads his column '*Compsec Corner*'.

It's mostly the free fliers who make the news in the SMAE's Western Area, taking up the best part of the report we received from PRO, L. A. Rogers. Area meetings are held at Wroughton Airfield and Merryfield, and the first one of the season at Wroughton got under way in very windy conditions indeed, with Swindon, Torbay, South Bristol plus Bristol and West clubs battling it out for top honours. The next meeting at Merryfield was a much calmer affair altogether, with Glider man Elton Drew in top form to take both Open and FAI. Barry Hyde of Torbay was first in Rubber and Richard Green-slade of South Bristol topped Open Power. Rex Woodruffe, in the Area Minor, was the only one to return a full house with five lovely maxes. Rex, one of the leading F/F lights of Swindon is engaged in a ding dong battle with club rival Dave Bailey in the club F/F championships. News for radio buffs, to whom the term 'Club 20' holds a significant message, is of a visit by Swindon to the Aylesbury club for one of these events. A great time was had by all. Best effort came from Dudley Pattison, who took second place. Keith Hart was once again unlucky, although he won his heat very easily.

Main news from the SMAE's Northern Area is of the *Vintage & Pannett Trophy* meeting back in April. Seems the N. Area has been unfortunate in its choice of weather in the early part of the season, with the wind generally

Contest Calendar

- July 18th **SVAS OPEN DAY.** Sports day, mainly for F/F and C/L at Old Warden, Beds.
NORTHERN AREA (SMAE) THERMAL SOARING. To SMAE rules. Venue RAF Driffield. Pre-entry to A. M. Barker, 1 Bramley Garth, Appletree Village, York YO3 0NQ.
SMAE 4th AREA CENTRALISED. Team glider, FAI Power and C d'H. Area venues.
- July 25th **N. BERKS R/C SCALE FLY-IN.** Pre-entry (50p) plus SAE to T. Franks, 46 Edwin Road, Didcot, Oxon.
***SMAE INDOOR MEET.** General fly-in at RAE Cardington, Beds.
BRACKNELL & DIST. HELICOPTER FLY-IN. Fly for fun, 50p pre-entry plus SAE to J. S. Alexander, 24 Crossfell, Wildridges, Bracknell. Venue: TBA.
- July 24-25th **SMAE FAI OPEN-INTERNATIONAL EVENT.** FAI rubber/glider/power. Venue Sculthorpe, Norfolk.
- July 23-26th **COMBAT '76.** International combat event at Belper Sports Centre (new venue). Details: P.T. Siddall, 112 Coronation Drive, South Normanton, Derbyshire.
- July 31st **RAFMAA THURSTON TROPHY.** Wakefield event open to civilian SMAE members. Pre-entry (50p) plus SMAE number to Flt Lt N. Zotov, 31 Norfolk Road, Harrington, Bury St Edmunds, Suffolk IP31 1LP.
- August 1st **FACCT R/C THERMAL SOARING RALLY.** Percentage slot scoring system. Venue: RAF Weston-on-the-Green. Pre-entry (50p) to N. Webb, The Bungalow East Street, Fritwell, Oxon.
TORBAY RALLY. All-in FAI for 'Torbay Trophy' Open R/G/P, HLG. Venue: Woodbury Common, Nr. Exmouth.
LONDON GALA (SMAE/RAFMAA). C/L Speed, Combat, Stunt, Class B FAI and Goodyear team race, Scale. Competitors only at RAF Wyton, Nr Huntingdon.
- August 8th **PERFORMANCE KITS SPORTS DAY.** At Old Warden, near Biggleswade, Beds.
- August 14-15th **BRITISH NATIONAL CHAMPIONSHIPS** at RAF Little Rissington, Glos.
- August 22nd **EAST ANGLIAN AREA F/F GALA.** Combined FAI Open R/G/P. Venue: Bassingbourn Old Airfield, Nr Royston, Herts. SMAE members only.
- August 29th **WOODFORD RALLY.** F/F: Open R/G/P, A/1, HLG, Scale. C/L: FAI & Goodyear team race, Carrier, Scale, Combat (for Mainstream Trophy run by Stockport MAC). R/C: Class II Scale (blue and brown freq), Club 20 pylon race. Also novelty Junior events. Free contest entry. All events start 10am. Guaranteed quality prizes. Pre-entry for Club 20 (quote freq) FAI and Goodyear team race plus Combat essential, to T. Hughes, 96 Queensway, Rochdale, Lancs, by 22nd August.

***NOTE:** All events held at Cardington are restricted to SMAE members only, plus wives. No small children or dogs please!

sufficiently high to plague the free fliers' swiftly disappearing models, long treks and landing damage on those hard, hard runways. The Elvington meeting was no exception, and the Vintage event in particular suffered as a result of the quite stiff breeze. A power model seemed to be the best answer to the conditions, and Ewan Jones' Elfin powered *Mallard* appeared to be a quite easy winner, with Barry Judge's *Pylonius*, another power model, in second place. In the Open Power Pannett Trophy the expensive models were drifting over the notorious Elvington Wood, and some of the models took a bit of finding. Tom Smith of BAC, did well to turn in three maxes for a winning score.

Not much to report from the Concorde AMC this month, and the Hon Sec, R. F. Morton, is somewhat apologetic about this as he did promise us more newsletters in the future. The club still goes marching on, though, in spite of the loss of some members due to the exigencies of the aircraft business, and the membership now stands around the 17 mark. A very useful membership addition, however, is the honorary one given to the club Scale Consultant, Mike Hutchinson. He has, apparently, a vast reference library and quite wide aviation experience. Under his aegis the standard of scale building is improving all the time.

Any projected meeting in this windy, but now not so wet, island is at the complete mercy of our unpredictable climate, and the lament in the bulletin of the Leicester MAC, is for quite literal blowing away of the first Area comp. Unluckily, the club vintage suffered the same fate. But, if the F/F schedule has been blown off course, everything has been going smoothly, even soaringly, with the comp schedule of the glider group. Leader after two events is Mike Pitchers with his *Monteray*. And so to Stage Two (Covered) of the Winter Building Competition. There was a fine display of models of every type and category, with such divergent craft as a KK *Gypsy* and a *Flying Flea* lining up together. Of the splendid field of 28 entries the highest totals to date were those of G. Crofts' *Gyrofly* and D. Pullen's *Grunad Baby*. According to a 'Who's Who' bit in the newsletter, Mike Pitchers, the Chairman, is quite an oldie, having started model flying with oiled silk jobs back in the 30's. He is now a very active R/C Glider enthusiast, which about makes me the last of the old free fliers.

Things are quieter down on the farm these days, or so we gather from the pages of the Anglia MFC's *High Flyin* and our own direct experience. Whether this is due or not to members getting scared stiff over the Noise Pollution Act, everyone seems to have traded in their flying ear drills for softly-softly thermal soarsers. And



Complete with 34 accessories

DISTRIBUTED BY RIPMAX

DREMEL® MOTO-TOOL

lets you grind, polish, cut, carve, drill, sand, sharpen, rout, deburr, and more! The perfect miniature multi-purpose tool for fine work on metals, plastics, and other hard materials. You NEED one in your workshop!

MODELLERS (240v) .. £35.95
 INDUSTRIAL (110v) .. £42.50

Extra attachments are also available



AT ALL GOOD MODEL SHOPS NOW



TELEPHONE: 021-373 5945
021-373 3535

JIM DAVIS MODELS

313 MARSH LANE . ERDINGTON
BIRMINGHAM B23 6JD . ENGLAND

NEW ITEMS FOR AERO MODELLERS



M.A.P. POWER PANEL

Operates from 12v battery. Built-in fuel pump. Transistorised circuitry for 1½ or 2v glow outputs - metered. 12v starter outlet. Plug caddy £17.90



ENGINE SOCKET SET

Plug spanner plus 4BA and 6BA adaptors £1.15



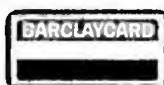
FLIGHT CADDY BOX

Fuel bottle; Filter; Tool drawer; Transmitter compartment; Fuel proof paint finish
£13.50



ADD-ON SET

Philips Head; 8BA; Allen Key £1.00



and NO DEPOSIT LOAN FACILITIES

just to show how glider conscious the club has become, they held a National Thermal Soaring Contest at Great Baddow. The meeting was a huge success, with no less than 54 entries competing for the six highly coveted trophies. Naturally, flying off 54 competitors took some organisation, particularly with four rounds to get through. This meant 216 flights with a slot time of ten minutes each. But the schedule was complete by 5.45 when the eight finalists flew off for the six trophies. Mike and Joy Mears dispensed 160 hot dogs, and no doubt supplied a few useful thermals in the process.

Court Circular's account of a ten strong Three Kings contingent going to the Vintage C/L Rally at Old Warden to recapture the excitement of the early days of controlled flying, calls to mind the spectacular debut of the famous *Boxcars* at Fairlop back in the late forties. And was it there that I saw the gallant little *Kan-Doo* put the wing-over opposition to shame in the Gold Trophy? Anyway there were many memories recalled with ED Comp powered *Kan-Doo's* and other pioneer models from the days when the man who could do a loop was king. A strong contingent, too, to the Wolves Fly-In in May. It was a pity the weather was so windy as it took the edge off the Scale and Carrier events, making for not a few disasters, like the *Fokker Triplane* that flipped and the writing off of a *Corsair* in Carrier. However, Vic Willson's large *Fournier* got a bonus from the wind in that it gave it almost realistic wobble. Not that that contributed to the general good looks and positive flying that earned it the Jack Carter Memorial Trophy.

Question asked in the Scottish AA newsletter, *When will we see a Scot in an International event?* Answer given is 'never', unless the Scots foray across the border to get the contest experience.

Clubman

AVICRAFT LTD.

6 Chatterton Road, Bromley, Kent Telephone: 01-460 0818

Shop hours: Mon-Sat 10am to 6pm, Wed 10am to 1pm. Mail order any time
SPECIAL ITEM FOR RUBBER POWERED ENTHUSIASTS:
WINDER £1.95 post 25p. 5 : 1 ratio - ideal for PEANUT models. Takes up to 3 loops! Special luxury American Tissue - lt. wt. white 9p; colours 10p H.W. White & colours 28p sheet, 1ge sheer, plus post. 'Flying Scale Models' oi VVW2 - £3.40 post paid. 12 1/24th scale models plans with full building instructions and details. FLYELECTRIC - Junior RTP needs only batteries or mains transformer to complete outfit. £7.95 post 75p, needs 10lt. circle. P.A.W. 1.49 £7.02 post 28p. Needles for any P.A.W. 54p, post 10p. S.T. GLOW-PLUGS - Standard 65p, Speed 84p, X15 plug 84p all plus post 10p. Vernon's 'SATELLITE' Power Duration winner 83.25 in span elliptical section, geodetic construction, precut kit with many accs. for free-flight or R/C including instant glue. £34.41 post £1. WARLORDS - FAI Combat for 2.5cc £4.31, a few left at this price post 65p. GINNY GOODYEAR now £6.15 post 65p. CONTROL LINE SPEED INDICATOR £1. Post 15p. New Sterling double peanut kit - £2.95 post 30p. The Ideal glue for them ADVEL Band I £1.50 post 12p. Sullivan C/I 018 x 60' £2.50 p/pd. 015 x 60' £2.45 p/pd.

THE 100% MODELLING SHOPS WHERE SERVICE COUNTS

PLYMOUTH model center

**FULL RANGE OF KITS, ENGINES
AND ACCESSORIES FOR AEROMODELLERS
BEST STOCKS IN THE SOUTH WEST**

Local aeromodellers — why not join Plymouth Model Association for a wide range of interests and friendly club atmosphere.

BIGGER, BETTER & BRIGHTER

THE MODEL ENGINEER EXHIBITION.
WEMBLEY. JANUARY 4th ~ 15th 1977.

London's newest Conference and Exhibition Centre. Wembley.



FOX

CONTROL LINE STUNT SPECIALS FOX 25

The Fox 25 starts easily, runs smoothly and will fly a much larger aeroplane than you would expect. The flange type carburettor mount has proved to have less distortion than the types held in with set screws or clamps, and it makes it an easy switch from one kind to another. The Fox 25 has a bronze bushing and lapped mohanite piston. It takes the B size Fox Silencer.

£8.64 'B' Silencer **£3.42**



**FOX 35
STUNT**

The size, weight and performance of the .35 Stunt has made it the world's leading contest stunt motor for 24 years. We are even more proud of the fact that it has introduced hundreds of thousands of young men to model building. An ideal beginner's motor, its low compression is easy to crank and forgiving of poor tank installations. The B size FOX SILENCER is easily bolted onto the exhaust stack studs.

£10.15 B silencer **£3.42**

JOHN D. HAYTREE, Fox Manufacturing Co. (U.K.)
40 BUCKERIDGE AVENUE, TEIGNMOUTH, DEVON

Distributed by IRVINE ENGINES, 'RIPMAX' and 'VERON'

INTRODUCING...

Lancaster
MODEL CRAFT
EASTCOTE MODEL SHOP

AIRCRAFT AND ACCESSORIES, BOATS AND ALL
ACCESSORIES. RADIO: FUTABA, SANWA, MACGREGGOR,
WALTRON — MAIL ORDER WELCOME — SPECIALS A
PLEASURE. B/CARD-ACCESS. WE ARE ALSO LOOKING
FOR SECONDHAND AIRCRAFT AND BOATS IN GOOD
CONDITION.

FRIDAY LATE NIGHT 8pm
CLOSED ALL DAY WEDNESDAY
HUGE FREE CAR PARK AT REAR

217 FIELD END ROAD, EASTCOTE,
MIDDLESEX

(NEAR STATION—MET/PICCADILLY LINES)

TELEPHONE—01-866 7631



'Joy-Plane' BALSA CEMENT

New and improved
quality. Very quick and
hard setting. Penetrates
deeply, and is heat resisting
and fuel proof. In tubes.

Made by Modellers for Modellers



Is the registered trade mark of **TURNBRIDGES LTD., LONDON, S.W.17**
manufacturers of quality products for **STICKING, STAINING, POLISHING, PAINTING**



KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

ACE R/C

**FOR FUN FLYING
ON A BUDGET
ALMOST ANYWHERE
ANY TIME!**

How would you like to have a plane you can take out in the backyard or to the football field, along with a small bottle of fuel and put in a few relaxing flights between coming home and supper time? - No problem with a Rudder Only plane

The light weight and small size of the Pulse Commander System enables you to fly a model that is small, light (as little as 4½oz. in some cases!) and inexpensive. Because months of work and over a hundred pounds have not been invested in your RO airplane, flying is a joy rather than a nervous trauma. So don't let the energy crisis keep you from enjoying your hobby. Join the swing to the Pulse Commander and find a new dimension in building and flying model airplanes.



THE MABUCHI POWERED SILENT COMMANDER

This amazing miniature SUPERHET system has an all-up weight of 2½oz. only including rechargeable nicads and is fully proportional with trim control.

£38 + P.P. 70p including charger but not transmitter battery

Plans for these ideally suitable models available at 65p each.

Only available direct from

AQUARIUM MODELS OF COALVILLE

The sole UK. ACE R/C Dealers

2A BELVOIR ROAD, COALVILLE, LEICS.

Tel: 0530 34875



THE 25in. SPAN CLOUD COMMANDER



THE 21in SPAN HOT TODDY

TWO NEW EASY-TO BUILD ELECTRIC R.T.P. KITS FROM THE SPECIALISTS



12in. span 'Ampster' the ideal trainer/combat/sport model for all flying line lengths. Die cut and pre-decorated kit comes partly assembled and can be ready to fly in minutes. Kit includes plastic vac-formed fuselage sides, and features an easily adjusted elevator. Price with (Johnson III motor and prop) **£1.99**, or model, less motor, 89p.

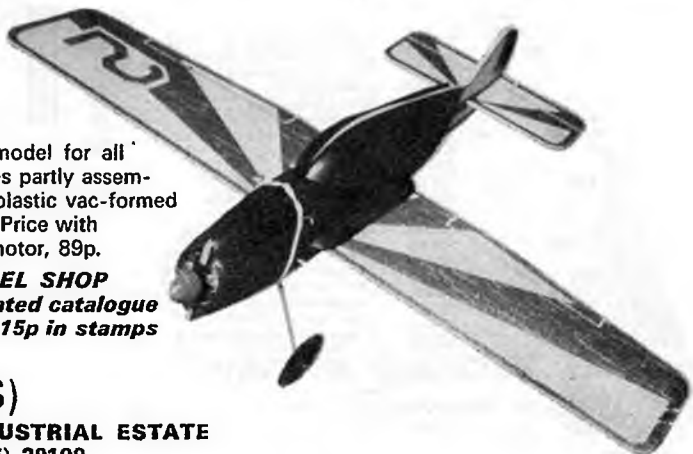
AVAILABLE NOW FROM YOUR LOCAL MODEL SHOP or direct (please add 25p for mail order). Illustrated catalogue of specialised electric R.T.P. components, send 15p in stamps

Callers welcome at our new address: Closed Mondays.

HARRY BUTLER (MODELS)

UNIT 13, BRUNEL ROAD, GORSE LANE INDUSTRIAL ESTATE
CLACTON, ESSEX. Telephone Clacton (0255) 29190

20in. span profile P.38 Lightning - an ideal first 'twin'; kit includes all balsa parts die cut, u/cart pre-formed, wheels, cement, decals, plan and instructions. Kit price **£2.45** (inc. VAT). Motors available at 95p each (Cat. No. SP7) or for extra power, the SP8 at £1.45 each, both complete with prop.



KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS



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
Horizon
Swan
Waltron
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
KoilKraft
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
Fibreglass
Solarfilm
Nylon
Paints
Adhesives
Rubbing Strip
Buoyancy Foam

Mail Order Catalogue 35p - Barclaycard - Access - Paybonds



QUESTION.

- Which magazine will keep the wife/husband amused for hours, while you're busy with your hobby?
- Which magazine will keep YOU amused on the train or in the dentists' waiting room?
- Which magazine has 68 pages PACKED with puzzles?
- Which magazine comes in a handy pocket size?
- Which magazine offers CASH PRIZES every month?
- Which magazine is published every month and only costs 30p?

ANSWER

Tel: Hemel Hempstead 2501-2-3 (Mon-Fri)
PO Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE
MODEL & ALLIED PUBLICATIONS LIMITED
Available from newsgroups or direct from:

PUZZLES DIGEST



SUPER Tigre

THE NAME THAT
STANDS FOR
SPEED & POWER



G.60 F.I. R/C £47.58

Super Tigre Engines

Retail
(Inc. VAT)

*G20/15D	£17.30
*G20/15 DR/C	£24.53
*G20/15G	£17.30
*G20/15GR/C	£24.53
*G15 F.I. w/spinner Goodyear	£21.43
*G15 F.I. R/C	£27.00
*G15 R.V.D.	£26.44
*G15/19 F.I. R/C	£27.00
*G15/19 F.I.	£21.43
*G20/23 Std.	£17.30
*G20/23 R/C	£24.53
*G15/19 CAR. ABC	£31.50
G21/29 F.I.	£24.81
G21/29 F.I. R/C	£30.01
*G21/35 F.I.	£24.81
*G21/35 F.I. R/C	£30.01
*G21/40 F.I.	£25.11
*G21/40 F.I. R/C	£30.83

*G21/46 F.I. Std.	£25.93
*G21/46 F.I. R/C	£31.63
ST. 35 Std.	£19.71
ST. 35 S R/C	£25.50
*ST. 60 R/C	£31.20
*G60 F.I. Bluehead ABC	£47.58
*G71 F.I. R/C	£47.58
*X15 RV Tuned	£29.92
X15 RV Normal	
X40 RV Pylon	£31.35

Silencers	
S15, fits G20, 15, 19, 23	£4.71
S29, fits G21, 35, 40, 46	£5.06
S35, fits ST35S, ST35C,	
ST35R/C	£5.06
S40, fits G40	£5.06
S56, fits ST51, 56, 60	£5.06
S71, fits G60 FI & RV & G71	£5.06
Glow plug standard	.65
Glow plug R/C	£1.26
Speed Glow Plug	.94
Needle valves, fit all sizes	.30
Needle valve and spray bar	.98
Pressure Nipple	.30
R/C car heat sink	£2.58
Exhaust extension (R/C car)	£1.60
Idle Needle Assy. MAG 111	£1.04
Fuel Inlet Section	£1.04

*Indicates from stock at July 1st.

To Commonwealth Dealers,
Importers and Wholesalers—
We are the agreed suppliers for
engines and parts. Just drop us a
line for copies of our latest price
schedule & delivery position.



WORLD ENGINES

LIMITED

97 TUDOR AVENUE, WATFORD, HERTS
PHONE WATFORD 42888

VISITORS BY APPOINTMENT ONLY. PLEASE
TRADE ENQUIRIES INVITED S.A.E. WITH ENQUIRIES. PLEASE



FOR ADULTS
AND CHILDREN
ALIKE

Control-A-Kite

2 STRING AEROBATIC
AERODYNAMICALLY DESIGNED
4ft HIGH

- MADE TO THE HIGHEST STANDARDS
- ALUMINIUM TUBING
- 500 GAUGE POLYTHENE SAILS
- REINFORCED NOSE PIECES FOR THE CARELESS LEARNER!
- 75ft. TAILS SUPPLIED

Assembled in 2 minutes, ready for Looping, Diving, Fishing, Sky Writing, Landing and Taking Off etc.

Complete Satisfaction Guaranteed

Price £4.40 inc. Post & Packing. Please send P/O or Cheque made payable to: CONTROL-A-KITE

Bidavon Industrial Estate, Waterloo Rd, Bidford on Avon Warwickshire
Telephone: Bidford on Avon 2683

**Dunford Kite
now available**



The Dunford Flying Machine[®]

Aerobatic kite; circles, loops, figures of 8, dives, hovers.

Designed by Squadron Leader Dunford, aeronautical engineer.

Sold direct to retailers through manufacturers' agents:

Flown on two lines, attached to a control bar. Carries accessories.

Made in UK of highest quality fabric.

Three sizes; Wing span 41", 51" and 61".

Dicky Bird, Reading 477606; Mike Dawkins, Tadley, Hants 2791; Len Groom, Stamford 720410; Martin Mack, Leeds 674668; Philip Slatter, Byfleet, Surrey 48514; J. Wilks, Lichfield 22268; Dave Beswick (N. Wales); Baxter Bros, Wholesale, Scotland.

For further information please contact:

Cochranes of Oxford Ltd

Leafield, Oxford OX8 5NT, England
Tel: Asthall Leigh (099 387) 641

I'LL BE AT WOODFORD . . .



Liz Jones,
"Miss Aeromodelling
1976"

- Hawker Siddeley Aerodrome nr Bramhall, Cheshire 29th August, Bank Holiday Sunday 10 am - 5 pm
- Something for everyone - SCALE - R/C C/L - F/F

- Event details in contest calendar
- Guaranteed quality prizes
- Free contest entry
- Free parking
- Novelty events and side shows for the kids
- Tradestands, refreshments and all amenities

Admission 50p adults, children free

COMING?

©CLASSIFIED advertisements

All classified Advertisements must be pre-paid.
Private and trade rate 10p per word (min. £1.00). Box Numbers 35p extra. Display classified £5.00 per column inch (max. 2in.). All advertisements are inserted in the first available issue. Box replies to be sent care of Advertisement Department, PO Box 35, Hemel Hempstead, Herts. HP1 1EE. There are no reimbursements for cancellations.
PHONE - ADS. When time is pressing, telephone Hemel Hempstead 55499 with your copy for speedy entry into the next issue.

The Advertisement Manager reserves the right to refuse or suspend advertisements without giving any reason. Every care is taken to avoid mistakes, but the publishers cannot be held liable in any way for clerical and printing errors or omissions. Receipt of 'copy' for publication implies acceptance of these conditions by the advertiser. Whilst every care is taken to exclude advertisements from doubtful sources, no responsibility can be accepted by the publishers for the bona fides of advertisers.

Flying scale kits by

Flyline U.S.A.

3 Classic Slabiders, true scale with selected wood for built-up construction. Super plans plus scale marking decals, tissue, incomparable standard for the connoisseur modeller. Velie Monocoupe 22in. for rubber, .010 or CO2 \$5 or £2.60. Bellanca Skyrocket 34in. for rubber, .020 ift or light R/C \$8 or £4. Curtiss Robin 41in. for .049 ift or R/C twelfth scale, beauty of all-time, favourite \$12 or £5.20 special price. Post incl. Limited stock.

RON MOULTON

AeroModeller Office, P.O. Box 35, Hemel Hempstead, Herts. HP1 1EE.

FOR SALE — PRIVATE

Vintage ignition, diesel and glo. engines for sale. Send S.A.E. for list to: Box No. 973 (Surrey), AeroModeller Office, PO Box 35, Hemel Hempstead, Herts HP1 1EE.

Copeman Olivers, one Mk.III, one Mk.IV, little run. Cox TDO49, modded PAV149, Mills .75, Offers? Crawford, Old Ballikrain, Balfron, Glasgow.

FOR SALE — TRADE

Electric flight, nickel cadmium cells. Very powerful. Fast recharge. Fully sealed. 0.5Ah, 1.25v, 25g, 94p each (dimensions as AA pencil). Larger 1.2Ah, 1.25v, 50g, £1.16 each. Others. For full details, S.A.E. to: Sandwell Plant Ltd, 1 Denholm Road, Sutton Coldfield, West Midlands, B73 6PP. Tel: 021-354 9764. (P&P add 10%).

Spruce, obechi, mahogany strip. Large range of sizes in stock. 36in., 48in., 60in. lengths. S.A.E. for list. Punctilio Model Spot, Waterloo Road, Hinckley, Leicestershire.

Wanted — Ready built model aircraft, boats' yachts, cars, steam driven models, also engine kits, radio control equipment etc. If you are selling up, Tel. Godalming 21425.

Vintage ignition diesel and multi-cylinder engines wanted for cash. Tel: Godalming 21425.

MAXAID

CIRCULAR TOW UNIT

NOT YET RUNNING AROUND IN CIRCLES?

Join the circular tow revolution the easy way. Improved version now available, £4.00 inc. P & P. World wide (Airmail, plus 20p)

MAXAID

MODELLING PRODUCTS

2 Downfield Close, Alveston
Bristol BS12 2NJ

New Twin Peanut Kits from America

SES A/Fokker D8	} 2 FOR ONLY £2.65
Monocoupe/Citabria	
Waco SRE/Kadet	

Rubber Motor winder only £1.95. S.A.E. for lists !!! Add 20p p & p.

SWINDON MODEL CENTRE

2 Theatre Sq., Swindon, Wilts. Tel: 26878

SERVICES

Will-build. Now building Spitfire, Pup, Commanche, Flycatcher, Nieuport 17—can manage more! Just write with SAE for free quote. Spencer, 4 Station Road, Whitechurch, Hants. or Phone: 2629 after 6.30 any evening.

SMALL SCALE SERVICE

There's a large range available — in a small scale. From the Small Scale Service. Find out more about the complete range of kits and accessories available by writing (both mail order and trade enquiries welcome) for the current literature to —

The Small Scale Service, Dept.A,
The Modellers Den Ltd.,
2 Lower Borough Walls,
Bath BA1 1QR, Avon.
Telephone (0225) 60115

BUY

SELL

SWOP

with a
CLASSIFIED
ADVERTISEMENT

WANTED — TRADE

Cash paid or part exchange for vintage and new engines worldwide! 646 High Road, North Finchley N12 0NL. Tel: 01-445 6531.

EPOXY GLASSFIBRE PROPELLERS

Elliptical Blade 7 x 6 85p each

Broad Blade 7 x 6 85p each

(including P & P)

Props require finishing before use

R. J. JAMES

21 Rochester Crescent, Hoo Rochester
Kent ME3 9JH

AGENTS WANTED

Midlands, North, Scotland & South West. Large expanding, established range of R/C, F/F and C/L kits

Good commission paid

BOX NO. 972 (Suffolk)

AeroModeller Office, PO Box 35
Hemel Hempstead, Herts HP1 1EE

GENERAL

Assistant Manager required. All rounder preferred. Tel: Michaels Models on 01-445 6531.

Penfriends wanted anywhere, any age. S.A.E. to: Pen Society (T.77), Chorley, Lancs.

BOOKS AND PUBLICATIONS

Superkites! New datasheets with topflight plans/instructions. No special skill/materials needed to build these special kites. £2 post free. F. Oughton (A) 59 Doughty Street, London WC1.

AeroModeller back issue street, vast stocks of back issues held in stock. Beaumont, 656 Holloway Road, London N19 3PD.

Plans enlarged or reduced and additional copies made. Send for details from Causer & Co., 216 Goldhawk Road, London W12. Tel: 01-749 3441.

'Sailplane and Gliding' - the only authoritative British magazine devoted solely to the sport of gliding and soaring. 48 pages of fascinating material and pictures. Published every other month. Send £3 (or \$8) for a year's subscription to: British Gliding Association, Kimberley House, Vaughan Way, Leicester, England.

The Modern

AIR RACERS

In 3-VIEWS 1949-1975

£3.00 postage included

All the American racers shown in magnificent detailed drawings. 3-views galore! Voluminous notes give the full story of each racer - pilots - race results - construction and performance data - colour schemes and markings. The period is recreated on large, crisply printed 8 1/2" x 11" pages covering over 70 aircraft. Companion volume to the National Air Racers 1929-1949 (£2.00 postage included).

BEAUMONT
AVIATION LITERATURE
656 Holloway Road,
London N19 3PD

PRICES QUOTED ARE THOSE PREVAILING AT PRESS DATE AND ARE SUBJECT TO ALTERATION DUE TO ECONOMIC CONDITIONS

Why not try a Gliding Holiday this year?

Accommodation in a village inn and instruction by professionals at our lovely site in the Cotswolds. Bring your camera and record the holiday of a lifetime.

Write to: **The Holiday Manager**
Bristol & Glos Gliding Club
Nympsfield, Stonehouse, Glos
GL10 3TX. Uley 342

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. I 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.

PAY THE POSTMAN C.O.D. - IT MAKES GOOD SENSE
Newsletters and all lists sent for 20p in stamps
ROLAND SCOTT LTD.,
28 East Lanes Road, Swinton, Worsley
Phone: 061-790 6707

FOR SALE — TRADE

Limited number of genuine Frog
MKV Gear Boxes.

Ideal for Peanut Scale or
Scale Rubber Free Flight
50p each including P & P

WOLVERHAMPTON MODELS & HOBBIES

Bell Street, Manders Centre
WOLVERHAMPTON
Tel: Wol. 26709

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 50p.
POPULAR FLYING ASSOCIATION
Terminal Building, Shoreham Airport
Shoreham-by-Sea, Sussex, England
Shoreham-by-Sea 61616

CORNISH GLIDING & 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
Tel: Porthleven 294

WANT TO BE A GLIDER PILOT?

Weekly Holiday Courses for beginners or
advanced pilots. From £66-£69 p.w. all
inclusive.

KENT GLIDING CLUB,
Challock, Ashford, Kent.
Write or ring Challock 274

BILL GORDON (Models & Hobbies)
2 Tower Court, Dunston, Gateshead,
Tyne & Wear Tel: (0632) 605545

ELECTRIC R.T.P. EQUIPMENT & MODELS

Polehead kits £3.25 & £5.25. Motors from
£1.25. Hand Controllers 95p & £1.75. K.K.
Flying Scale kits 85p. Profile kits: Spitfire &
Messerschmitt £1.90 each.

Wire, plugs, wheels, etc. FLY-ELECTRIC kit
complete with model, motor, pole, hand-
controller—£7.95 (12v. D.C. power supply
required).

Send 10p stamps for list.

Twin line control stunt kites £1.29 & £1.49
P & P 25p.

Peter Powell stunter kites £4.40 P & P 35p.

Access & Barclaycard

STUDLEY MODELS

Visit us for a friendly chat and all the advice
you require. We stock: Futaba, MacGregor,
Cougar, Enya, OS, Fox, Merco, Super Tigre,
Micro Mold, CAP plans and kits, DB kits,
Veron, Kell Kraft, Trueline and ready-to-
fly aircraft.

B. T. WILLIAMS MODEL SHOP

39a Alcester Road, Studley,
Warwickshire

For further information ring Studley 3002

Barclaycard, Access and HP facilities

Take a holiday gliding course with the YORKSHIRE GLIDING CLUB

Fully 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

Who is BINDING?

Authorised agent for standard style
binding of all Model & Allied Pub-
lications' Journals, into annual vol-
umes from loose copies of issues
together with index is:

Beaumont Aviation Literature,
656 Holloway Road,
London N19 3PD Tel: 01 272 3630

Peanut Scale Kits and Plans Service

Plans by Butch Hadland of Lacy M10, Blackburn
Monoplane and Wittman Tailwind. All 55p.
Post paid. Kits by Tern-Peck at £1.75 plus P.P.
Moorhouse at £1.25 plus P.P. Many accessories.

1911 Bristol Racer Plan 60p

SWINDON MODEL CENTRE

Theatre Square, Swindon - Tel: 26878

VINTAGE FLYING SCALE PLANS

1935 Megows 12/15" Waco, Aeronca, Topsy,
Douglas 0-43, Vought V-100, Curtiss Falcon,
Fokker DR 1, Fairchild 45, Polish Fighter,
Lockheed Vega, BA Eagle, ME 29, 20p each.
All 12, £1.50, (US \$5.00) (Aus/NZ £2.00).

1939 Aer-o-Kits 15" Master, Battle, Skua, Spit-
fire, Moth Minor, Harvard, Fury, Cygnet,
Wellesley, Vildebeest. Plan, printed wood for
ribs and formers. 8 page instructions. 40p each.
All 10, £3.00, (US \$8.50) (Aus/NZ £4.00). Add
10p to all UK orders for postage. Foreign prices
include airmail postage. Many others, including
Henry Struck's 'Trailblazers' from 'Flying Aces'
1937/39 at prices from 15p to 30p. Illustrated
lists of over 60 drawings 10p or International
Reply Coupon. All models rubber power.

C. TISSIMAN

8 Greystones Grange Crescent
SHEFFIELD S11 7JL

GORDONS EXTRA LIGHTWEIGHT D/T FUSE

at your model shop; or 2 metres 30p plus 6p
stamp

Agents and export enquiries welcome

GORDON MNE. CO.

24 London Road, Manchester 1

NJM

FOR RADIO CONTROL AIRCRAFT KITS & ACCESSORIES

	PRICES INC. VAT	E. & O.E.
New Kell Kraft SE5A	£19.98	R/C BY MACGREGOR (12 1/2% VAT)
KK ELMIRA (Glider)	£20.20	all inc. Servo's (S), dry batt. (D),
KK Super 60	£17.44	Nicads (N)
RipMax Spitfire 63"	£28.95	MR1020D/IS £29.95
RipMax Hustler 54"	£16.80	MR1222D/2S £48.50
KKScorpion 46"	£15.50	MR1323N/2S £84.00
Sterling Cirrus 87"	£9.95	MR1424N/4S £123.00
RipMax Mini Trainer	£11.50	MR1626N/4S £135.00
RipMax President 57"	£16.90	EXTRA MR12 Servos £12.50
Fokker DB 46"	£14.95	BOOKS:
Cessna Skylane 54"	£15.68	RM Propo Book £1.75 p & p 30p
2 Volt 9 A/H Accumulator	£3.65	R/C Soaring £2.50 p & p 49p
2 Volt Charger	£5.96	Flying Scale Mod. WW2 £3.00 p & p 33p
RM Push-on glow clip	99p	R/C PRIMER £1.75 p & p 30p

EASY CREDIT TERMS: PAYBONDS, BARCLAYCARD, ACCESS

Second-hand equipment bought and part-exchanged
Stamped Addressed Envelope With All Inquiries Please

NORWOOD JUNCTION MODELS LTD. Early closing Wed. 1 p.m.
3 Orton Buildings, Portland Rd., Sondon, S.E.25 Tel. 01-653 4943

DIESEL and GLOPLUG AERO ENGINES

DC Wasp 0.8cc	... £4.12
DC Merlin 0.76cc	... £5.78
DC Spitfire 1cc	... £6.29
DC Sabre 1.5cc	... £6.66
Enya 19 R/C	... £10.00
DC Rapier	... £9.08
Fox 15 BB R/C	... £12.88
P.A.W. 1.49 DS	... £6.50
P.A.W. 19 DS	... £7.50
P.A.W. 2.49	... £7.00
Veco 61	... £35.41
ED Fury R/C	... £8.80
Fox 25 R/C	... £11.49
Fox 36	... £9.40
Webra 61 R/C 10cc	... £41.56

Many more Aero and Marine.
New Zealand orders welcome
Send 10p P.O. for Lists. Duty
free — Export only. Duty &
VAT UK liable customers.

look!
low prices

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

SHOP GUIDE

READERS PLEASE NOTE:

Due to soaring postal charges many retailers are unable to answer postal enquiries unless accompanied by a stamped addressed envelope.

★Mail Order
Welcome

DEALERS —

get your shop on the MAP guide for only £3 a month — telephone Hemel Hempstead 55499 NOW

MODELLERS —

buy with confidence from these well-stocked shops

AUSTRALIA

MELBOURNE 3000 Tel. 347 8029 ★
RIVERSIDE HOBBY CENTRE
16 LITTLE LATROBE STREET
9am–5.30pm Mon.–Fri. 9am–12 noon Sat.

AUSTRALIA Tel. 497087 ★
SEMAPHORE HOBBY CENTRE
44 HART STREET, SEMAPHORE SOUTH
S. AUSTRALIA 5019

AVON

BRISTOL 5 Tel. 557764 ★
AVONAIRE MODELS
351 CHURCH ROAD, ST GEORGE
9am–6pm Mon–Thurs. Late night Fri 7pm.
Half day Wed.

BRISTOL Tel. 662544
BEV'S MODELS
35 WEST STREET, BEDMINSTER
10am–6pm. Late night Fri. 7pm

BRISTOL 1 Tel. 23714
MODELLERS DEN
65 FAIRFAX STREET
Open 9am–5.30pm Mon.–Sat.

BEDFORDSHIRE

LUTON Tel. 23182
AEROMODELS (LUTON) LTD.
20 GORDON STREET
Open 9am–5.30pm. Closed Wed.

LUTON Tel. 28435 ★
MAPLE MODELS
16 MAPLE ROAD
9.30am–6.30pm. Lunch 1.30pm–2.30pm
Closed Tues.

BERKSHIRE

NEWBURY Tel: (0635) 46004 ★
TRENTS MODELS
25-26 CHEAP STREET
9am–5.30pm Mon–Sat

READING Tel. 477122 ★
CHILTERN SPORTS SUPPLIES
16 CHURCH STREET
Open 9.30am–5.30pm. Half day Wed.
Closed lunch 1pm–2pm Mon.–Fri.

READING Tel. 51558
READING MODELS
5 CHATHAM STREET
9am–5.30pm each weekday

READING Tel. 50074 ★
G. SLEEP LTD.
22-24 KING'S ROAD
Open 9am–5.30pm. 9am–4.30pm Wed.

READING Tel: (0734) 586899 ★
TRENTS MODELS
51 BUTTS CENTRE
9am–5.30pm Mon–Sat

BUCKINGHAMSHIRE

AYLESBURY Tel. 85752
TAYLOR & McKENNA LTD.
46 FRIARS SQUARE
Mon.–Thurs. 9am–5.30pm. Fri.–Sat. 9am–6pm

BLETCHLEY Tel. MILTON KEYNES 70478
TAYLOR & McKENNA LTD.
16 THE CONCOURSE, BRUNEL CENTRE
Mon.–Thurs. 9am–5.30pm. Fri.–Sat. 9am–6pm

WOLVERTON Tel. 313142 ★
LAKE BROS.
28 STRATFORD ROAD, MILTON KEYNES
Open 8.30am–6pm Mon.–Sat. Half day Wed.

CAMBRIDGESHIRE

CAMBRIDGE Tel. 59620 ★
MODEL MANIA
17 KING STREET
9am–5.30pm Tues.–Sat. Closed Mondays

CHESHIRE

MACCLESFIELD Tel. 29467 ★
HOBBYCAPS (MACCLESFIELD) LTD
PARK MILL, HOBSON STREET
Open 9.30am–5.30pm every day except Sunday

STOCKPORT Tel. 061-480 5478
THE MODEL SHOP
280 WELLINGTON ROAD SOUTH
Open Mon–Sat 9am–5.30pm. Closed Tuesdays

CLEVELAND

MIDDLESBROUGH Tel. 47889 ★
THE MODEL CENTRE
17 CLEVELAND SQ., CLEVELAND CENTRE
9.30am–5.30pm Mon.–Sat.
Early closing Wed. 1.30pm

MIDDLESBROUGH Tel. 211212 ★
MODELDRONE
265 LINTHORPE ROAD
9.30am–6pm. Closed Wed.

CORNWALL

TRURO ★
COUNTY MODELS
THE CREATION CENTRE, BACKQUAY
Open 9am–5.30pm. Half day Thurs.

DEVON

EXETER Tel. 0392 58417 ★
EXETER MODEL CENTRE
48 COWICK STREET, ST. THOMAS
Open 9.30am–5.30pm. Half day Wed.

PLYMOUTH Tel. 0752 21851
PLYMOUTH MODEL CENTRE
 11 OLD TOWN STREET
 9am-5.30pm Mon.-Sat.

PORTSMOUTH Tel. 25049
RAY BROWN MODELS ★
 10 KINGSTON ROAD
 Mon. 9am-6pm, Tues. 10am-5.30pm,
 Thurs. 10am-6pm, Fri. 9am-6pm,
 Sat. 9am-5.30pm. Lunch 1.30pm-2.30pm.

HONG KONG

HONG KONG Tel: 3-680507
RADAR CO. LTD. ★
 3 OBSERVATORY ROAD, TSIMSHATSUI
 KOWLOON
 Open 10am-7pm. Closed Sundays

TORBAY Tel. 0803 521767
MANSEL'S MODELS ★
 PALACE AVENUE, PAIGNTON
 Open 9.15am-5.30pm Mon.-Sat. Inclusive
 Half day Wed.

SOUTHAMPTON Tel. 7849
EASTLEIGH MODEL CENTRE
 2e HIGH STREET, EASTLEIGH
 Open 9am-6pm. Half day Wed.

KOWLOON Tel. 3-800155
SCIENTIFIC HOBBIES LTD.
 185-D PRINCE EDWARD RD, MONGKOK
 10am-8pm. Sunday 2pm-8pm

TORQUAY Tel. 27764
TORBAY MODEL SUPPLIES LTD. ★
 59 VICTORIA ROAD, ELLACOMBE
 Open 9.15am-12.45pm and 2.15pm 5.45pm
 Half day Wed.

SOUTHAMPTON Tel. 25919
HOBBY LOBBY LTD. ★
 52 COMMERCIAL ROAD
 Open 9.30am-5.30 pm Mon.-Fri.
 Sat. 9.30am-5pm

HONG KONG Tel. 3-684184
WINNING MODEL & HOBBY SUPPLIES ★
 2a AUSTIN AVENUE
 KOWLOON, HONG KONG
 Open 10am-7pm. Closed Sun.

DORSET

BOURNEMOUTH Tel. 763480
WESTBOURNE MODEL CENTRE
 59 SEAMOOR ROAD, WESTBOURNE
 9am-5.30pm Mon., Tues., Thurs., Sat.
 9am-7.30pm Fri. Closed Wed.

SOUTHAMPTON Tel. 29223
SOLENT MODELS LTD. ★
 60 OXFORD STREET SOI IDL
 Open Mon-Sat 9.30am-6pm
 Fri. 9.30am-7.30pm

KENT

BROMLEY Tel. 01-460 0818
AVICRAFT LTD. ★
 6 CHATTERTON ROAD
 10am-6pm (not closed for lunch) except
 Wed. 10am-1pm

POOLE Tel. 3300
SETCHFIELDS ★
 21-25 HIGH STREET
 Open 9am-5.30pm. 6 days

HEREFORD Tel. (0432) 4152
FRED PERKINS LTD. ★
 48c COMMERCIAL ROAD
 Open 9am-5.30pm. Half day Thurs.

CANTERBURY Tel. 69888
THE MODEL SHOP ★
 83 NORTHGATE CTI IBA
 Open 9 a.m.-5.30 p.m. inc. Sat.
 Closed all day Thursday

ESSEX

ILFORD Tel. 01 590 2390
NEWBURY PARK MODELS ★
 958 EASTERN AVENUE, NEWBURY PARK
 Open 9am-6pm. Half day Thursday

HERTFORDSHIRE

HATFIELD Tel. 63404
DESIGN AND HOBBIES ★
 5 MANOR PARADE
 Open 9.30am-6.30pm (Thurs. 7.30pm)
 Half day Wed.

MAIDSTONE Tel. 51719
THE MODEL SHOP ★
 19-23 UPPER STONE STREET
 Open 9.30am-1pm, 2.30pm-5.30pm
 Closed all day Wed.

WICKFORD Tel. (037 44) 2621
WICKFORD MODEL EXCHANGE ★
 ST. PETERS TERRACE, LONDON ROAD
 Open 9am-7pm Mon., Thurs., Fri., Sat.
 10am-1pm Sun.

HEMEL HEMPSTEAD Tel. 53691
TAYLOR & MCKENNA LTD.
 203 MARLOWES
 Mon.-Thurs. 9am-5.30pm, Fri.-Sat. 9am-6pm

NEW ASH GREEN Tel. 0474 872136
THE HOBBY HOUSE
 10 UPPER STREET NORTH
 Open 9am-5.30pm. Closed Mon.

WOODFORD BRIDGE Tel: 01-504 3602
ARNOLD'S GIFT SHOP ★
 656 CHIGWELL ROAD
 Open 9am-6pm Mon-Sat. Closed Wed

HITCHIN Tel. 56132
REDHILL MODEL SUPPLIES
 21a HERMITAGE ROAD
 10am-6pm. Thurs. open till 7.30pm. Closed all
 day Wed.

SWANLEY Tel. 67457
SWANLEY MODEL CENTRE ★
 (Formerly H & J Electronics)
 39 HIGH STREET
 Open 9.30am-6pm. Half day Wed.

HAMPSHIRE

ANDOVER Tel. 61307
RADIO CONTROL SUPPLIES ★
 1a UNION STREET
 Open 9am-6pm. Fri. 9am-8pm

POTTERS BAR Tel. 59355
HENRY J. NICHOLLS & SON LTD.
 8 SOUTHGATE ROAD
 9.30am-6pm. Closed all day Thurs.
 Fri. 9.30am-8pm

TUNBRIDGE WELLS Tel. 36689
E. M. MODELS ★
 42 CAMDEN ROAD
 Mon.-Sat. 9am-5.30pm. Closed Wed.

FAREHAM Tel. 4136
G. M. H. BUNCE & CO. LTD. ★
 206 WEST STREET
 Open 9am-5.30pm. Closed Wed.

ST. ALBANS Tel. 53954
S A M S
 12 HATFIELD ROAD
 9.30am-6pm Tues. to Sat. Closed all day Mon.

LANCASHIRE

BLACKPOOL Tel. 24901
D.G. MODELS ★
 109 CENTRAL DRIVE
 Open 9am-6pm weekdays
 10.30am-4.30pm Sun.

BOLTON Tel: 41808
BOLTON MODEL SUPPLIES
503 CHORLEY OLD ROAD
10am-7.30pm Mon-Sat Inc.

LEICESTER Tel. 21935
RADIO CONTROL SUPPLIES ★
52a LONDON ROAD
Open 9am-6pm. Fri. 9am-8pm

LONDON EAST

LONDON Tel: 01-520 7397
ARNOLD'S GIFT SHOP ★
132-134 HOE STREET, E17
Open 9am-6pm Mon-Sat. Closed Wed

BOLTON Tel. 0204 74688
JOYCRAFT ★
MOSES GATE, 58 STARCLIFFE STREET
9am-6.30pm. Wed. half day

LINCOLNSHIRE

LINCOLN Tel. 25907
MODEL CENTRE ★
24 NEWLAND
10am-5.30pm. Closed all day Wed.

PLAISTOW Tel. 01-472 2471
A. G. HERMITE ★
633 BARKING ROAD, E13
Open 9am-6pm. Closed all day Thurs.

BURNLEY Tel. 23983
A.D. MODEL SUPPLIES ★
22 PLUMBE STREET
10am-6pm Mon.-Fri. Sat. 9am-5.30pm

STAMFORD Tel. 4524
SPORTS & HOBBIES ★
4 ALL SAINTS STREET
Open 9am-5.30pm. Half day Thurs.

MIDDLESEX

EASTCOTE Tel. 01-866-7631
LANCASTER MODEL CRAFT ★
217 FIELD END ROAD
Mon.-Thurs. 9 a.m.-6 p.m. Fri. 9 a.m.-8 p.m.
Closed Wednesday

BURY Tel. 061-764 5787
A.L.J. ELECTRONICS ★
(NORMAN McFARLAND)
52/54 BOND STREET
10am-6pm. Thursdays till 8pm. Closed Tues.

LONDON NORTH

CAMDEN TOWN Tel. 01-485 1818
AERONAUTICAL MODELS ★
39 PARKWAY, NW1
9.15am-5.30pm Tues.-Fri. 9.15am-5pm Sat.
Closed all day Mon.

HARLINGTON Tel. 01-897 2326
RADIO CONTROL MODEL CENTRE ★
214 HIGH STREET
Mon., Tues., Thurs., Sat., 9am-6.30pm
Fri. 9am-8.30pm. Wed. closed all day

LEIGH Tel. 77152
LEIGH MODEL CENTRE ★
4 QUEEN STREET
Mon.-Sat. 9am-6pm. Wednesday 9am-1pm

LONDON Tel. 01-607 4272
HENRY J. NICHOLLS & SON LTD. ★
308 HOLLOWAY ROAD, N7
Monday to Friday 9am-6pm
Saturday 9am-5.30pm

HARROW Tel. 01-427 0387
THE MODEL SHOP ★
31 ST. ANNES ROAD
9.30am-6pm Mon-Sat. Half day Wednesday 1pm

LIVERPOOL Tel. 051-709-8039
STAN CATCHPOLES MODEL WORLD ★
85 BOLD STREET
9.30am-5.30pm. Six days

NORTH FINCHLEY Tel. 01-445 6531
MICHAEL'S MODELS ★
646-648 HIGH ROAD, N12
Open 9am-6pm. Closed all day Mon.

ISLEWORTH Tel. 01-560 0473
RADIO CONTROL SUPPLIES ★
581 LONDON ROAD
Open 9am-6pm. Fri. 9am-8pm

MANCHESTER Tel. 061-794-4084
LISTERS MODEL SUPPLIES
285 EAST LANCASHIRE ROAD, SWINTON
Closed all day Wed. Open Sun. 10.30am-1pm

LONDON SOUTH

ELTHAM Tel. 01-850 4324
ELTHAM MODELS ★
54 WELL HALL ROAD SE9
Mon.-Sat. 10am-5.30pm. Closed Thurs.

KENTON Tel. 01-204 9867
HOBBIES AND MODELS
217/219 STREATFIELD ROAD
QUEENSBURY CIRCLE
Open 9am-6pm. Thurs. 9am-8pm
Closed all day Wed.

MANCHESTER Tel. 061-794-1949/793-8078
ROLAND SCOTT LTD. ★
28 EAST LANCS ROAD, WORSLEY
Open 9am-6pm Mon.-Sat. Closed Wed.

FULHAM Tel. 01-385-9864
PATRICK MODELS ★
107-111 LILLE ROAD, SW6
Mon. Sat. 9 a.m.-5.30 p.m. Thurs. 9 a.m.-1 p.m.

NORFOLK

AYLSHAM Tel. 3145
THE MODEL SHOP
PENFOLD STREET
NORWICH

WIGAN Tel. 45683
G. FORSHAW & SON
58 MARKET STREET
Open 9.15am-5.45pm Early Closing Wed.

LEWISHAM Tel. 01-852 2637
LEWISHAM MODEL CENTRE ★
45 LEE HIGH ROAD, SE13
Mon.-Sat. Closed 6pm. Thurs. Closed 1pm

KING'S LYNN Tel. 63164
BARNEY'S MODEL SHOP ★
SOUTH EVERARD STREET
Open 9am-6pm

LEICESTERSHIRE

HINCKLEY Tel. 30952
PUNTLIO MODEL SPOT ★
6 WATERLOO ROAD
Open: Mon. 9.15am-7pm Tues. 2pm-7pm Wed.
& Thurs. 5.30pm-7pm Fri. 9.15am-7pm Sat.
9.15am-5pm

LONDON Tel. 01-228 6319
E. F. RUSS ★
101 BATTERSEA RISE, SW11
Open Fri. till 7pm. Other days 9am-6pm. Early
closing Wed. 1pm

NORWICH Tel. 618023
GALAXY MODELS ★
107 WADDINGTON STREET
Closed Mon. Tues.-Thurs. 10am-6.30pm
Fri. 10am-8pm, Sat. 9am-6pm

SHERINGHAM Tel. 2006 ★
MODEL CRAFT
44D STATION ROAD
9am-5.30pm Mon-Sat

SOMERSET

BRIDGWATER Tel. 3632 ★
R.M. TOYS AND MODELS
36 ST. JOHN STREET
Open 9am-5.30pm. Half day Thurs.

FARNHAM Tel. 26128
FARNHAM MODELS
57A DOWNING STREET
Tues, Thurs, Fri, Sat, 10am-5pm. Sun 9.30am-11.30am

NORTHANTS

NORTHAMPTON Tel. 31223 ★
THE MODEL SHOP
230 WELLINGBOROUGH ROAD
Open 9am-6pm. Half day Thurs.

MINEHEAD Tel. 2516 ★
OASIS MODELS
44A THE AVENUE
9am to 6pm, 10pm Fridays. Will open Sun by request

KINGSTON on THAMES Tel. 01-546 4488 ★
MICK CHARLES MODELS
180 LONDON ROAD
Mon., Tues., Thurs., 9.30am-6.30pm
Wed. 9.30am-1pm, Fri., Sat. 9.30am-9pm

NORTHAMPTON Tel. 27726
TAYLOR & McKENNA LTD.
41-43 PRINCES WALK
GROSVENOR CENTRE
Mon.-Thurs. 9am-5.30pm. Fri.-Sat. 9am-6pm

STAFFORDSHIRE

BURTON-ON-TRENT Tel. 64240
J. & N. MODELS
22 DERBY STREET
Open 9am-5.30pm. Closed Wed.

SUSSEX

BRIGHTON Tel. 418225 ★
HARRY BROOKS
15 VICTORIA ROAD PORTSLADE
Open every day except Sun. 8.30am-5.45pm (no half day)

WELLINGBOROUGH Tel. Rushden 2309 ★
D. B. MODELS
17 SILVER STREET
Open 10am-6pm Mon-Sat

STAFFORD Tel. 3420 ★
JOHN W. BAGNALL LTD.
18 SALTER STREET
9am-5.30pm. Closed all day Wed.

CHICHESTER Tel. 83592
PLANET MODELS & HANDICRAFTS
108 THE HORNET
Open 9am-1pm and 2pm-6pm. Closed Thurs.

NORTHUMBERLAND

NEWCASTLE UPON TYNE Tel. 22016 ★
THE MODEL SHOP
18 BLENHEIM STREET
Mon.-Fri. 9am-5.30pm. Sat. 9am-6pm
Closed Wed. all day

STOKE-ON-TRENT Tel. 263574
JOHN W. BAGNALL LTD.
30 PICCADILLY, HANLEY
9am-5.30pm. Closed all day Thurs.

CRAWLEY Tel. 21921
HEATHER CRAFT
60 HIGH STREET
9am-5.30pm Mon-Sat. Half day Wednesday

NOTTINGHAMSHIRE

NOTTINGHAM Tel. 50273 ★
GEE DEE MODELS LTD.
19-21 HEATHCOTE ST., OFF GOOSEGATE
Open 9.30am-5.30pm. Early closing Thurs.

STOKE-ON-TRENT Tel. 85856 ★
PLEASURE TREASURES LTD.
4 SWAN SQUARE, BURSLEM
9.30am-6pm. Half day Thurs.

HORSHAM Tel. 61533 ★
MODEL CORNER
30 NORTH STREET
Open 9am-5.30pm Mon.-Sat. Closed Thursday afternoons

WORKSOP Tel. 2855 ★
RUSSELL MODELS
MODEL CENTRE, RYTON STREET
Closed all day Thursday

WALSALL Tel. 23984
AEROMODEL'S (WALSALL)
123 WOLVERHAMPTON STREET
9am-5.30pm (6pm Fri.-Sat.) Half day Thurs.

WORTHING Tel. 207525 ★
SUSSEX MODEL CENTRE
10 TEVILLE GATE
9am-5.30pm. Open six days a week. Monday to Saturday

OXFORDSHIRE

ABINGDON Tel. 21927 ★
F. KNIGHT & SON
44 BATH STREET
Open 8.30am-1pm/2pm-5.30 pm. Late night Fri. 6pm. Closed all day Thurs.

WOLVERHAMPTON Tel. 26709 ★
WOLVERHAMPTON MODELS & HOBBIES
BELL ST., MANDERS CENTRE
9am-5.30pm Mon.-Sat. Early Closing Thursday

WALES

CARDIFF Tel. 29065 ★
BUD MORGAN
22 CASTLE ARCADE
SOUTH GLAMORGAN CFI 2BW
Open 9am-5.30pm. Half day Wed.

OXFORD Tel. 42407 ★
HOWES MODEL SHOP
9-10 BROAD STREET
Open 8.45am-5.30pm. 6 day week

SUFFOLK

IPSWICH Tel. 51195 ★
BOWMANS OF IPSWICH
37/39 UPPER ORWELL STREET
Open 9am-5.30pm Mon.-Sat.
Early closing Wed.

CARDIFF Tel. 31367 ★
RYALL & WALTERS RADIO MODELS
34 LLANDAFF ROAD
Open 9am-12.30pm/1.30pm-5.30pm Monday 8pm. Closed Wed.

SCOTLAND

GLASGOW Tel. 041-632 8326 ★
RIDDELL BROS.
61 MOUNT ANNAN DRIVE
Open 9am-6pm. Half day Tues.

SURREY

ADDLESTONE Tel. Weybridge 45440 ★
ADDLESTONE MODELS LTD.
63 STATION ROAD
Open 9am-6pm. Closed all day Wednesday.
Late night Friday 6.30pm

CWMBRAN Tel. 66727 ★
THE HOBBIES SHOP
32 THE PARADE (on the balcony), GWENT
9.30am-5.30pm. Half day Wed.
Open late Fri., 7pm

FLINT Tel. 3123
FLINT MODELS ★
 5-9 CHURCH STREET
 Open six days 9a.m.-5.30pm. Half day Wed.

STUDLEY Tel. 3002
STUDLEY MODELS ★
 (B. T. WILLIAMS)
 39a ALCESTER ROAD
 9am-6pm Mon, Tues, Thurs, Sat. Fri 9am-7pm.
 Closed all day Wed.

CASTLEFORD Tel. 57619
ARTS CRAFTS & MODELS ★
 4 CASTLEWAY
 Open 9am-5.30pm. Half day Wed.

NEWPORT Tel. Newport 65061
MODELS & HOBBIES ★
 (J. & J. W. MARTIN & SON)
 112 COMMERCIAL STREET, GWENT
 Mon.-Sat. 9am-5.30pm

WILTSHIRE

SWINDON Tel. 26878
SWINDON MODEL CENTRE ★
 2 CIVIC CENTRE, THEATRE SQUARE
 (Next to Wyvern Theatre)
 Open daily 9am-5.30pm
 Early closing Wed. 1pm

DONCASTER Tel. 62524
B. CUTTRISS & SONS ★
 40 DUKE STREET
 Open 9am-5.30pm. Closed all day Thurs.

SWANSEA Tel. (0792) 52877
SWANSEA MODELS & HOBBIES ★
 11 SHOPPERS WALK, OXFORD STREET
 GLAMORGAN
 Mon., Tues., Wed., 9.30 a.m.-5.30 p.m. Thurs.
 9.30 a.m.-1 p.m. Fri. and Sat. 9.30 a.m.-6 p.m.

SWINDON Tel: 32829
THAMESDOWN HOBBIES ★
 21 HIGH STREET, OLD TOWN
 9.30am-5.30pm Mon-Sat
 Early Closing Wed 1pm

DONCASTER Tel. 20767
SOUTH YORKSHIRE MODEL SUPPLIES ★
 313 BENTLEY RD, BENTLEY
 Mon, Tue, Wed, Sat. 10am-6pm.
 10am-8pm Friday. Closed Thurs.

WARWICKSHIRE

BIRMINGHAM 10 Tel. 021-772 4917
BOB'S MODELS ★
 520-522 COVENTRY ROAD, SMALL HEATH
 Open 9.45am-6.30pm. Early Closing Wed.
 1.30pm

WORCESTERSHIRE

EVEHAM Tel. 45828
P. & R. MODELS ★
 8 VINE MEWS
 Mon., Tues., Thurs., Fri., Sat., 9.15am-6pm
 Closed all day Wed.

HUDDERSFIELD Tel. 43964
WEST YORKS MODELS ★
 61 WAKEFIELD ROAD
 Mon.-Sat. 9.30 a.m.-6.30 p.m.
 Late night Fri. 7.30 p.m

BIRMINGHAM 11 Tel: 021-777 5964
KEN WHITTLE MODELS ★
 788 STRATFORD ROAD, SPRINGFIELD
 Mon, Tues, Thur, Fri 9am-5.30pm
 Closed Wed, Sat 9am-5pm

QUINTON Tel. 021-422-1000
HOBBY SPOT ★
 280 HAGLEY ROAD WEST
 Weekdays 9.30am-6.30pm. Sat. 9.30am-5.30pm
 Wed. closed

LEEDS Tel. 646117
FLYING MODELS ★
 88 CROSSGATES ROAD, CROSSGATES
 Mon.-Sat. 6am-6pm, Sun. 8am-1pm

BIRMINGHAM 8 Tel: 021-327 0872
POWELL'S MODEL CENTRE ★
 769 ALUM ROCK ROAD
 Open 9.30am-5.30pm. Closed Wednesday

YORKSHIRE

BARNLEY Tel. 6222
DON VALLEY SPORTS ★
 28 DONCASTER ROAD
 Open 9am-5.30pm Mon.-Sat.
 Closed Thursday

LEEDS Tel. 457891
THE MODEL SHOP (LEEDS) LTD. ★
 38 MERRION STREET
 Open 9am-5.45pm. Half day Wed.

BIRMINGHAM Tel. 021-554 5569
MODEL MECCA ★
 (G. I. & N. ROWAND)
 204 WITTON ROAD
 Open 9am-6.30pm. Wed. 9am-1.30pm.
 Sat. 9am-6pm.

BATLEY Tel. 479300
BOBS MODELS (BATLEY) ★
 4 OXFORD STREET, MOUNT PLEASANT
 Open: Mon.-Thurs. 9am-6pm. Fri. 9am-7pm.
 Sat. 9am-5.30pm. Half day Tuesday

YORK Tel. 0904-34281
YORK MODEL CENTRE ★
 17 DAVYGATE CENTRE, DAVYGATE
 9.30am-5.30pm Mon.-Sat. Early Closing Wednesday

RUGBY Tel. 3282
A. J. LEE ★
 308 HILLMORTON ROAD
 9am-6pm Mon-Sat. Wed 9am-1pm

BRADFORD 8 Tel. 26186
MODELDRONE ★
 182 MANNINGHAM LANE
 9.30am-5.45pm. Closed Wed.

YORK Tel. 23704
YORK MODELS LTD. ★
 69 EAST PARADE, HEWORTH
 Open 9am-5.30pm. Half day Wednesday

SOLI HULL Tel: 021-744-3374
SHIRLEY MODEL SUPPLIES ★
 62 STRATFORD RD., SHIRLEY
 9 a.m.-6 p.m. Mon.-Sat.

SHOP GUIDE BRINGS YOU BUSINESS
£3.00 per month £36.00 per year

Make it Legal . . .

get your R/C Licence

Just in case some newcomers to the hobby are not aware, operation of radio control equipment requires a licence. This costs just £1.50 and covers a five-year period.

Licence application forms are available from:
 The Home Office, Radio Regulatory Dept.,
 Waterloo Bridge House,
 Waterloo Road,
 London S.E.1.

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS



Model products from the gloy range.

Gloy model products are top quality adhesives, designed to help you make the most of your skill.

Ask at your hobby shop for details of other Gloy products.



gloy

Eighth Avenue, Manor Park
London E12 5JW

gloy is the trade name of Associated Adhesives Ltd.

MAPLE MODELS

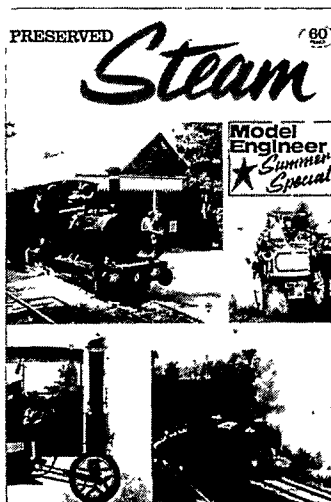
(Steve Blake)

'ENGINE CLINIC' Try us first for all spares, repairs, mods and special work requirements
Lightweight Glass Fibre Cloth 0.60oz. per sq.yd. Fine quality £1 90 per sq.yd. plus 15p p&p.
New H B Engines HB12 Stunt £12.75; HB15 Stunt £14.00 Both include silencer.
'TRIED 'N TESTED' Used Motor Service All our used motors are now fully inspected, overhauled as necessary, and test run before sale. In addition all glowplug motors are supplied with a NEW plug or head FREE.
MAPLE LEAF Newsletter, includes second-hand list. SAE brings your copy.

Mail order a pleasure - SAE with Enquiries please
Access - Barclay Card - Hire Purchase - Welcome
16 Maple Road, Luton LU4 8AE Tel: 0582-28435



A feast for STEAM fans...



SCOTLAND

EAST AND WEST

Now making personal shopping more practical for the majority of Scottish modellers—but still only as far away as the telephone if it has to be mail-order.

Authorised Skyleader Service Agents

DUNNS MODELS

26 GLASGOW ROAD
PAISLEY TEL. 041. 840.1381

29 SCOTT STREET
PERTH TEL. 0738 24540

£100,000 INSURANCE

P.O. BOX 35,
HEMEL HEMPSTEAD,
HERTS., HP1 1EE

All that is necessary for you to do to obtain the benefits of this magnificent cover is to complete the forms at the bottom of this announcement, sending the one part to us together with your remittance of £1.50, which covers you for one year and handing the other part to your usual magazine supplier. Those who wish to make the most of flying and other modelling opportunities must be insured not only for their own peace of mind—accidents do sometimes happen—but also because Local Authorities' Ministers and others are showing an increasing awareness of this need for insurance and are demanding proof of adequate cover.

It covers modelling activities within Great Britain, Northern Ireland, Channel Islands and the Isle of Man, and has been negotiated with a leading Insurance Company to provide exactly the cover which the Ministry of Defence requires when its airfields are used for model flying. It is also sufficiently embracing to cover all other forms of model activity, and so should be completely acceptable to Local Authorities requiring some cover for modellers using their boating lakes or control line flying circles. It is equally applicable to free flight models, control line models, radio control models, aircraft boats and cars.

PART II. TO BE SENT TO M.A.P. LTD.

Name (in full)

Address

..... Date

Registered No.....

I enclose herewith postal order value £1.50 for membership of M.A.P. £100,000 insurance scheme. I understand that membership is conditional in my placing a regular order for:

• AEROMODELLER • MODEL BOATS • RADIO CONTROL MODELS & ELECTRONICS • SCALE MODELS • MODEL ENGINEER • MODEL RAILWAYS • MILITARY MODELLING, (*Delete those not applicable.)

I have today instructed my newsagent

Address

to deliver me the magazineuntil further notice.

PART I: TO BE HANDED TO NEWSAGENT.

To

Please *reserve/deliver one copy of 'AEROMODELLER/MODEL BOATS/RADIO CONTROL MODELS & ELECTRONICS/SCALE MODELS/MODEL ENGINEER/MODEL RAILWAYS/MILITARY MODELLING', commencing with the Issue.
(*Delete as applicable.)

Name

Address

Model Engineer

SUMMER SPECIAL

60 pages superbly illustrated with eight in full colour. Price 60p.

Features:

LEVIATHAN STEAM NARROW BOAT . . . operated by the Crofton Society on Kennet & Avon waters.
STEAM ON THE ROAD Road haulage in steam from its early days. LOVE OF SMALL STEAM Two features dealing with small model steam locos and model steam traction engines. ALL THE FUN OF THE FAIR Steam operated fairground equipment. THIS BUSINESS OF STEAM The economics of full size steam loco operation. S.S. GREAT BRITAIN Her history and return home. STEAM IN ACTION Three sections devoted to narrow gauge, miniature and model railways PRESERVED LOCOS Pictorial Pot-pourri. LIVING WITH STANLEY One man's experience with Stanley Steamers.

On sale Now. Available from your Newsagent, or direct from:

MODEL & ALLIED PUBLICATIONS LTD.

P.O. Box 35, Hemel Hempstead, Herts HP1 1EE
Tel: Hemel Hempstead 2501-2-3 (Mon-Fri)



Britfix

A GOOD NAME THAT STICKS!



Britfix Balsa Cement 66
Quick drying cement ideal for balsa and other soft woods.

Britfix Polystyrene Cement 77
Suitable for all polystyrene plastics, except expanded or foam.

Britfix Contact Adhesive
Suitable for plastics, leather, rubber, fabrics, wood and general purpose use.

Britfix Rubber Lubricant
For rubber motors and all rubber components.

Britfix PVC Adhesive
Ideal for PVC surfaces.

Britfix Tissue Paste 44
Just the job for paper, card and tissue.

Britfix Model Filler
Perfect for polystyrene or wood.

Britfix Wood Glue
Quick setting adhesive for wood.

Britfix Liquid Poly 70
Suitable for all polystyrene plastics, except expanded or foam.

Britfix Epoxy 88
Multi-purpose extra strong adhesive.

Britfix 5 Minute Epoxy 19
Provides extremely strong, fast bond setting in only 5 minutes. Now available in new 'easy select' blister packs.

Britfix and HUMBROL

AVAILABLE FROM ALL
MODEL SHOPS AND MOST
TOY SHOPS.



Flying Scale models



Here's a chance to build AND FLY a first class model of a famous aircraft. Many hours of building pleasure can be obtained from these remarkable kits, and for a very small outlay. Construction is traditional using balsa and tissue making attractive models capable of a reasonable flying performance. Kits include detailed plans, printed balsa sheet, stripwood, plastic propeller, noseplug, wheels, wire, rubber motor and plenty of information for the showpiece modeller. Average wingspan 18½".

WWII—Spitfire, Hurricane, Me 109, Focke Wulf 190, Mustang, Westland Lysander.

WWI—S.E.5, Nieuport, Sopwith Camel, Fokker D-8.

Military & Private—Fairey Gannet, Percival P.56, Chipmunk, Fairey Junior, Auster Arrow, Beechcraft Bonanza, Globe Swift, Cessna 140, Piper Family Cruiser, Piper Super Cruiser, Stinson, Luscombe Silvalre, Ercoupe.

24 Fully detailed models to choose from

These models can be built to display standards if desired and detailed camouflage drawings are included with the WWII fighters. Matching transfers are also available.

See your local retailer for details

PRICE 85p inc VAT

Manufactured in England by **E. KEIL and Co Ltd** Wickford Essex