

Aero Modeller

INCORPORATING
MODEL AIRCRAFT

JULY 1970
THREE SHILLINGS
USA & CANADA 70 CENTS

AN  HOBBY MAGAZINE

BRITISH NATIONALS plus WORLD INDOOR CHAMPIONSHIPS REPORTS



OSCHATZ'S
WORLD
CHAMP

Quality

plus

Reliability



The incomparable

DART diesel

.5 c.c.

84/5

inc. Tax

means a lot to the sports flier who uses .5 to .8 cc. engines

The light, easy to operate

BANTAM

.75 c.c.

50/7

inc. Tax



MERLIN

.75 c.c.

67/-

inc. Tax



. . . and you'll get it with

QUICKSTART

ENGINES and ACCESSORIES

Highest quality engineering using the latest precision techniques brings you the greatest range of model diesel engines for sports flying. Renowned for ease of starting, long life and consistent operation the "Quickstart" series are also among the quietest of engines when fitted with the inexpensive special silencer exhaust manifold. Marine versions too! These engines can be supplied with water cooled head, and special flywheel for model boat operation. Other specialities in our range include the famous D-C Control-line handle. Test Stand, Nylon Propellers, Quickclip Connector, Quickstart Glowplugs and a full range of spares so that no Quickstart engine owner need ever be concerned about being "grounded".

Overseas customers are advised to write for our Export Price List.



SUPER MERLIN

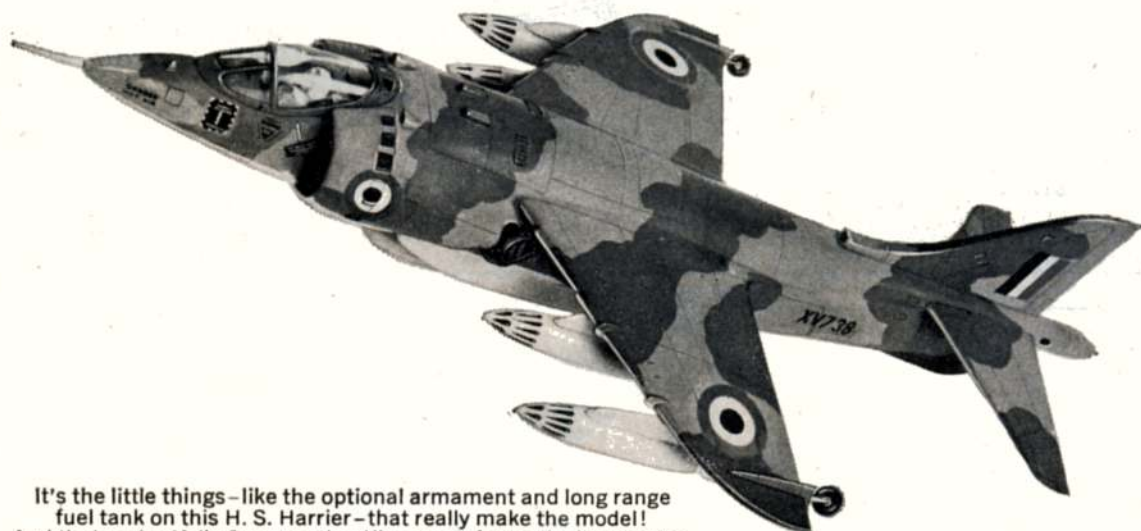
.75 c.c.

73/4

inc. Tax

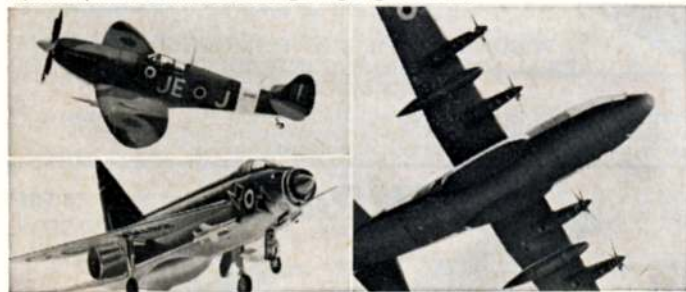
DAVIES-CHARLTON LTD
HILLS MEADOW, DOUGLAS, ISLE OF MAN

Get every detail right with Airfix



It's the little things—like the optional armament and long range fuel tank on this H. S. Harrier—that really make the model! And that's why Airfix Construction Kits are so fantastically popular. Every model is accurate to the smallest detail—a perfect replica of the real thing! There are nineteen series, each made to a constant scale. Over 300 kits to choose from at prices from only 2/11 to 23/6. From all good hobby shops and F. W. Woolworth. Ask for the catalogue.

Top left: Spitfire. Bottom left: E. E. Lightning. Right: Hercules



The world's biggest range of construction kits

ARMOURD VEHICLES!

Tanks, trucks and missiles all in 'OO/HO' scale, can be used with Airfix figures.



SHIPS!

Warships from World Wars I and II, as well as modern liners and historical ships.



FIGURES!

Over 35 different sets of 'OO/HO' scale figures—historical, military and civilian, as well as animals.



STOP PRESS

Handley Page Jetstream. Designed primarily for the general aviation market and now in use with the U.S. Air Force, this 94 piece kit comes in the military version. Price 6/-



News, articles, conversions for modelling enthusiasts every month in AIRFIX MAGAZINE. 2/6 from your model shop or newsagent.

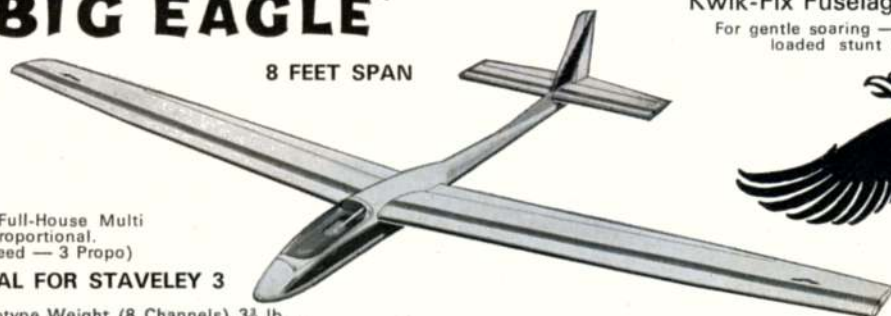
"VERON" for VALUE

GLIDERS GALORE!

FOR RADIO-SINGLE & MULTI & BEGINNERS' SPORT!

"BIG EAGLE"

8 FEET SPAN



Multi-Radio Hillside Soarer
Kwik-Fix Fuselage Structure

For gentle soaring — not a highly loaded stunt model!



For Full-House Multi or Proportional.
(8 Reed — 3 Propo)

IDEAL FOR STAVELEY 3

Prototype Weight (8 Channels) 3½ lb.
Can be flown with Ailerons or Rudder/Elevator only.
Ailerons are specifically to improve lateral control with the high aspect ratio!

PRICE
£11.5.6

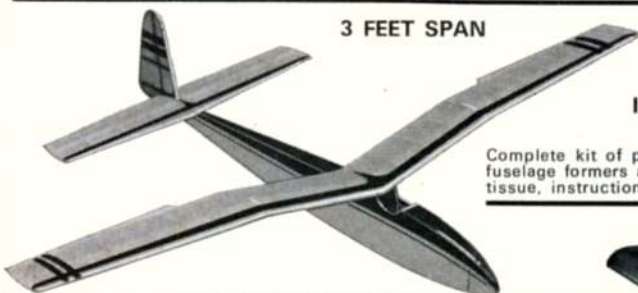
Kit prices include all P.T.

An Inspiringly Beautiful Soarer! Fast penetrative competition design using a slim semi-symmetrical section for speed coursing, yet with a light loading (12.9 ozs.) for superb soaring ability together with slow speed handling facility.

For Intermediate Light-Multi (Proportional or Reed) for Rudder and Elevator only. Wing has centre section with two outer panels on tongues for ease of transport and access. HIGH GRADE QUALITY PREFABING. (Not suitable for Ailerons—or 'Rudder only').

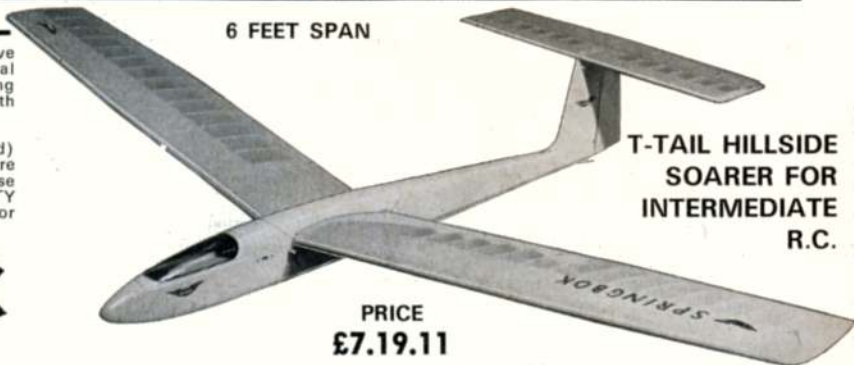
SPRINGBOK

IDEAL FOR STAVELEY 2



3 FEET SPAN

6 FEET SPAN



T-TAIL HILLSIDE SOARER FOR INTERMEDIATE R.C.

PRICE
£7.19.11

THE CLASSIC GLIDER

A SUPERBLY ELEGANT ELEMENTARY SAILPLANE
IDEAL FOR BEGINNERS INTRODUCTION TO BUILDING AND MODEL SAILPLANING!

Complete kit of parts is the essence of simplicity itself! Has Die-cut balsa fuselage formers and all wing ribs. Ready-cut nose block. Full layout plans, tissue, instruction sheet. Ideal for school instruction classes.

PRICE
9/9

IMPALA

4 FEET 4" SPAN



PRICE
£5-2-8

VERON ARE "THE" DISTRIBUTORS FOR STAVELEY

'Tone-Lock' Superhet Single Channel, Electronic Coder, Relayless £27.10.0 Relay £28.10.0

Staveley 2 £76.7.1
Staveley 2 De luxe £80.7.1
(Inc. Deacs)

Staveley 3 £100.17.1
Staveley 3 De luxe £106.17.1
(Inc. Deacs)

Staveley 4 De luxe Choice of miniaturised Servos. (Inc. Deacs) £158.1.6

Staveley Silver Star Digital 4 New Staveley Servos. (Inc. Deacs) £169.10.0

SEND FOR LISTS!

A balanced and progressively developed design, small, tough and rigidly compact for ease of handling. For Rudder-only Single Channel with Compound or Electric Actuators. Space for Pulse-Proportional, 'Galloping-Ghost' even Light-Multi (4 Reeds or 2 Proportional). Ideal for 'TONE-LOCK' or Staveley 2.



MODEL AIRCRAFT (BOURNEMOUTH) LTD.

NORWOOD PLACE : BOURNEMOUTH

Distributors in Australia: PIZZEY LTD., 1 CLARK STR., RICHMOND, MELBOURNE.
Distributors in Canada: ACADEMY PRODUCTS LTD., 51 MILLWICK DRIVE, WESTON, ONTARIO

Aero Modeller

INCORPORATING
MODEL AIRCRAFT

July 1970

VOLUME XXXV No. 414

CONTENTS

HANGAR DOORS	366
WORLD CHAMPION WAKEFIELD	366
1970 BRITISH NATIONALS	367
SPEED ENGINE DEVELOPMENT IN THE U.S.A.	378
EDGAR WESTBURY - AN APPRECIATION	381
AIRCRAFT DESCRIBED - Morane Saulnier 35 EP-2	382
TOPICAL TWISTS	385
ENGINE TEST - D.C. SABRE	386
'ISABEL'	388
CONTROL LINE NEWS	390
FREE FLIGHT COMMENT	392
RECENT RALLIES	394
WORLD INDOOR CHAMPIONSHIP	396
CLUB NEWS	399



HOBBY MAGAZINE



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

This periodical is sold subject to the following conditions: that it shall not, without the written consent of the publishers, be lent, re-sold, hired-out or otherwise disposed of by way of the Trade except at the full retail price of 3/- or 70 cents and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

Second-class postage rates paid at New York, N.Y. Registered at the G.P.O. for transmission by Canadian Post. American enquiries regarding subscriptions, news stand sales and advertising should be sent to AERO MODELLER, Eastern News Distributors Inc., 155 West 15th Street, New York N.Y. 10011 U.S.A. U.S.A. and Canada direct subscription rate \$5, including index.

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

Direct subscription rate 41/- per annum including December edition and index.

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

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

MODEL & ALLIED PUBLICATIONS LTD.

13-35 Bridge Street, Hemel Hempstead, Herts

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

Editorial Director

D. J. LAIDLAW-DICKSON

EDITOR

R. G. MOULTON

Assistant Editor

P. S. RICHARDSON

Advertisement Manager

ROLAND SUTTON

COMMENT

Though strewn with natural obstacles and frequently cursed for its lack of amenities, that vast area of tank testing scrubland south west of London known as Chobham Common remains the *only* free flight venue of reasonable size within easy reach of the great Metropolis. Despite the Motorway threat, and plans for other development, Chobham remains inviolated and is likely to stay that way. At a meeting of the Surrey County Council's Town and Country Planning committee on May 14th, the plans to convert Chobham Common to a Country Park incorporating a golf course were abandoned.

The committee mentioned that the scheme had been regarded as something of an experiment in that the public had participated in a plan of this sort. Very strong objections to the scheme, which would have completely eliminated the Common as a free flight venue, were made by the Chobham Common sub-committee of the S.M.A.E.'s London Area, working in co-operation with the Chobham Society, and other organisations representing users of the Common.

It is now more vital than ever to treat the Common that has been saved with the respect it deserves. It is to be hoped that there will be no more litter from the modelling users of Chobham, that special care will be taken to avoid risk of starting fires, and that flying safety and discipline will be given far greater attention than in the past.

on the cover

The 1969 World Champion of that supreme class of free flight model, the "Wakefield" after his victory at Wiener Neustadt, Austria. Dr. Ing. Albert Oschatz of East Germany caught by Laurie Barr's camera. (See also 'Heard at the Hangar Doors' this issue).

next month

Two full-sized plans for C/L Goodyear races - Long Midget and Rivets. A four engine control line scale model of the Avro Lancaster, specially designed for Aeromodeller Plans Service by Harold Towner. More on Fox engines, the French R/C and Scale Championships, a full size glider made by an aeromodeller and other special features as well as the regulars, out on July 17th.

Come Fly with MAINSTREAM



Simprop Digi 2 + 1

Improved design. Lower current consumption servos means more airtime. An advanced digital system internationally acclaimed. 3 propo. functions entirely independent all channels. Dual teacher-pupil operation. Tx: plug-in crystals for 12 spots in 27 MHz band. Two stick layout, easily reversed. Trim controls, central throttle lever. Centre-loaded aerial angled to stay above the horizontal. Output stage over 720mW. 12V Deac operation with charging lines and socket. Rx: Superhet plus decoder. 3uV sensitivity. 4.8V Deac, 14 mA consumption. $2\frac{3}{8}'' \times 1\frac{7}{8}'' \times \frac{7}{8}''$ 2½ oz. Servos: three new Mitsumi mk II servo motors fitted. Mainstream D502 and mini servos interchangeable. All-up weight with 3 mini servos: 12 oz.

£96.14.0. Deacs. £10.

Simprop Digi 5

Fully simultaneous propo. control on all five channels with ease and accuracy PLUS all the other features of the improved Digi 2 + 1. Tx: smooth-as-silk operation. 2-axis sticks, self-aligning bearings, easily reversed throttle control and four trimmers. Teacher-pupil training lead extra accessory. Neck strap. Rx: Similar to Digi 2 + 1. Consumption only 16mA, weight only 3 oz. Servos. New Mitsumi mk II servo motors fitted. Miniature and D502 servos fully interchangeable. Nylon servo mount available for Minis simplifies your installation. A sophisticated system designed for the connoisseur. All-up weight with 4 mini servos: 14½ oz.

£158.0.0. Deacs. £10.



Mayflower Year

Celebrate the 350th Anniversary with Revell. 1970 sees the 350th Anniversary of that epic journey of the Pilgrim Fathers who set sail in 1620 from Plymouth in the now famous "Mayflower". Revell present their magnificent 14 $\frac{3}{4}$ " long model of this beautiful sailing vessel. This is just one of the many in their range of ancient and modern ships.



■ H327 MAYFLOWER



■ H324
GOLDEN HIND

H346 ■
CHARLES
MORGAN



For full colour
catalogue showing Revell's
entire range write to

Revell

REVELL (G.B.) LTD.
Cranborne Road,
Potters Bar, Herts.

The Guidance System Mk. 3 TX and RX

RCS

IS NOW AVAILABLE IN
A SUPERHET VERSION

PRICE **£20**

EXPORT £15.10.0

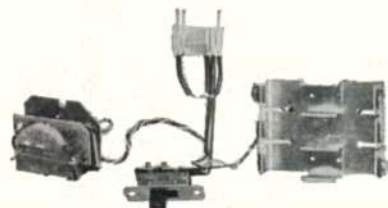
RX ONLY **£15**

EXPORT £12

SUPERREGEN VERSION



**Export
Price £10**



Compact accessory outfit. Gives you selective right, left, rudder up or down elevator and motor control
£4.5.0
EXPORT PRICE £3.5.0



Conquest accessory outfit. Gives you right or left rudder only
£2.15.0

EXPORT PRICE £2.2.6

Corporal motor control unit **£3.0.0**

EXPORT PRICE £2.6.0

Ready to Fly

	Regen	Superhet
with simple Conquest acc. outfit	£15.15.0	£22.15.0
Export Price	£12. 2.6	£17.12.6
with compound Compact acc. outfit	£17. 0.0	£24. 0.0
Export Price	£13. 5.0	£18.15.0
with Compact acc. outfit and corporal motor control unit	£20. 0.0	£27. 0.0
Export Price	£15.10.0	£21. 0.0

Superhet or Super Regen plug into same accessory outfits



TRANSMITTER. Super Power, all Transistorised. Crystal Controlled Tone with fast action micro switch. Beautifully styled and balanced case. Size 5½" x 3½" x 2½". Wt. 1½ lb.

RECEIVERS. All Transistor Temperature Stabilised. 4.5 volt operation—Guaranteed sensitivity of better than 2 micro volts. Size 1½" x 1½" x ½". Wt 1 oz. With new indestructible nylon case.

Superhet is completely integrated and practically indestructible. Size ½" x 1½" x 1" Wt. 1½ oz.



RADIO CONTROL SPECIALISTS LTD.
 NATIONAL WORKS, BATH ROAD, HOUNSLOW, MIDDX.
 Telephone: 01-572 0933/4/5

308

THE BEST CHOICE FOR THE SCALE ENTHUSIAST

At '308' we are doing our best to cater for all the requirements of the specialist scale modeller, and to that end we are importing direct from the States such items as the Williams guns and wheels, the Roberts 3-line control system for the Control-line enthusiast, as well as silencers from Switzerland and Germany. These specialist items combined with our very extensive stocks of selected materials such as Balsa wood, nylon, dopes, polyurethane finishes, and R/C and C/L accessories means that you will find the greatest number of these desirable items under one roof at '308'.

WILLIAMS BROS. AIRCRAFT MACHINE GUNS



LEWIS GUN

The American made Lewis Gun was used on Allied fighter, bomber and observation aircraft during World War 1. It was employed singly and in pairs as well as in conjunction with other guns.



VICKERS

The standard British aircraft weapon in W.W.1. Used extensively on Allied fighter and reconnaissance machines it was mostly mounted as a forward firing unit synchronised to fire through the propeller blades.



PARABELLUM

This German machine gun was developed in 1913 and used throughout W.W.1. It was employed on all two-seater and bomber aircraft mostly for operation by the observer and in pairs as the cockpit. Occasionally synchronised to fire through the propeller.



SPANDAU

This was the favourite weapon of the Red Baron, famous German Ace of W.W.1. Usually mounted in pairs, one on each side of the engine, to fire through the propeller, or two together on top with a radial engine.

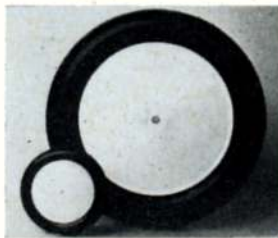
All the above are in kit form and can easily be built to make a really authentic scale model of these historic weapons in a few hours. The end result is most realistic and adds realism to any model. Kit price 16/11 plus 1/6 p. & p.

MERCURY WING FIXING SET



A must for all scale modellers and those who want to eliminate unsightly rubber bands as wing retainers. Set comprises dual threaded brackets with bolts for trailing edge and pair of sockets for 1/4" dowel for leading edge. Complete with illustrated instructions and all screws, etc. 6/5.

WILLIAMS WHEELS



W.W.1 VINTAGE

The only available W.W.1 scale wheels. Solid white nylon hubs with semi-pneumatic tyres. Can be used with all aircraft types up to about 1930. Very free rolling. 1 7/8" 20/11; 2 1/4" 26/11; 3 1/8" 41/-; 3 3/4" 53/6; 4 3/8" 67/-; 5" 81/6 per pr. (N.B. smaller sizes to come!)



SMOOTH CONTOUR

These contour type wheels are equipped with nylon bearings and semi-pneumatic tyres. Popular from the late 1930's to early 40's. Ideal for many scale light aircraft types. 2 1/4" 20/9; 2 3/4" 29/10; 3 1/4" 41/-; 3 3/4" 53/6; 5 1/4" 96/- per pr.

NEW FROM ROCKET CITY

Throttle device for LOG III servo. Designed to increase servo throw to a full 3/4" at the same time giving an override at each end of the movement. Makes coupling to any engine throttle easier and more effective. Can easily be adapted to any double linear output servo. Per set 5/9.

Throttle override device

To fit any 5/32" square rotary servo output. Gives 3-position adjustable throw to suit any engine and flexes at each end to give full override capability. Highly recommended. Per set 5/9.



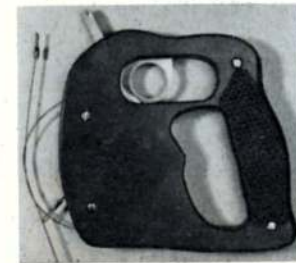
MERCURY SPINNERS

Highly recommended. These high impact glossy nylon spinners are universal fitting. Base held on by prop nut and nose cone to base by two self-tapping screws. Can be used with mechanical starters with confidence. In red, yellow and black. 2" 4/11; 2 1/4" 6/8; 2 1/2" 7/8; 2 3/4" 9/-.



TITEBOND

Now that we have had the opportunity of thoroughly testing out this remarkable adhesive we can understand why all our American friends have gone overboard for this and say that it is the only adhesive for main structural work especially where scale construction imposes stresses and strains. The joints made by Titebond really are unbreakable. Well worth the extra cost. 2 ozs. 6/3; 4 ozs. 10/6; 8 ozs. 16/9. Also now available the rapid setting German STABILIT Express for metals, ceramics and plastics as well as wood. A quick setting epoxy two part glue that is dead hard in 20 mins. Ideal for field repairs. Per box 8/9.



FOR THE CONTROL-LINE SCALE FAN AND CARRIER PILOT

The famous ROBERTS 3-line control handle. Now in stock. £3.15.0



U-REELY

The control handle deluxe without question. Enables the lines to be rolled up in the handle. With friction brake and positive stop lock for safe flying. Complete with 200ft. of superb quality stranded non-kink lines. £6.46



FIREBALL GLOWPLUG

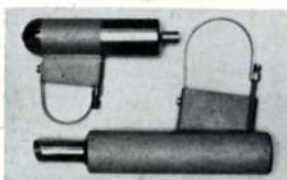
The most consistent and reliable plug we have ever sold. The steadily increasing demand proves that modellers everywhere now know that the easiest way to get rid of plug trouble is to FIT FIREBALL. In three grades. Hot, standard and cool. 6/9 each or 75/- per dozen.

NEW FROM DUBRO

Latest addition to the superb Dubro range is a new plug connector that will go down into the fins of the closest fitting cylinder heads. A good buy at 18/6.

FULL RANGE OF DUBRO WHEELS AVAILABLE

SILENCERS



KO MUFFLERS

These have proved extremely popular since we introduced them some six months ago and are now the most acclaimed of all silencers we supply. They are both effective and efficient, power loss being a minimum and noise pleasantly reduced. Venturi type construction. Beautifully finished in satin chrome and anodising. To fit most available engines. For OS 19 £3.5.0. For all 35's, 49's and 61's £3.5.0.



MINI-VOX

This German unit is renowned for its low power loss but it is not so effective as the KO. Available for most engines from 40 to 61 capacity. Price £4.10.0



TATONE PEACE PIPES

The silencer with the built in advantage that the fitting is universal, so that each unit can be fitted to practically every engine in its size range. In three sizes: 09-19; 29-40; and 45-61. All 49/6 each or with long manifold 59/6 each.

COVERING MATERIALS

'308' lightweight selected grade nylon. Close mesh and even weave. White 6/- per yd. Yellow, orange, red, blue and olive drab. 6/6 per yd. All 36" wide. SOLARFILM. White, yellow, orange, red, blue, black, green and silver, transparent yellow, red and blue. All 10/6 for 36" and 14/6 for 50" lengths, 27" wide. Gold, 12/6 and 16/-.

R/C EQUIPMENT

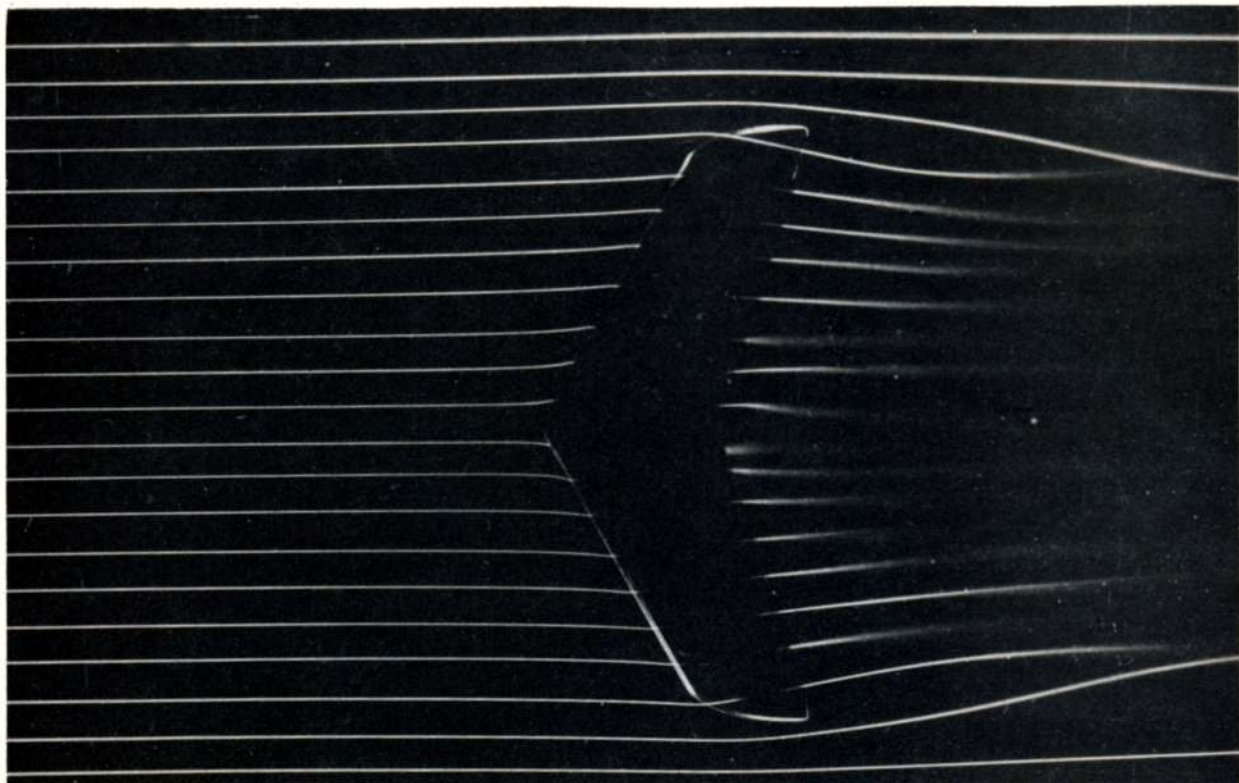
We have all the following in stock at the time of writing this advertisement for immediate delivery. All available on Paybonds extended terms.

SKYLEADER SL digital complete with 4 servos £165. SIMPROP digital 5 with 4 servos £168. SIMPROP digital 3 with 3 servos £108. SPRENGBROOK 4 with 4 Controlaire servos £169.10.0. SPRENGBROOK 4 with 4 Microlock servos £179.10.0. FLIGHTLINK 4 with 4 servos £168. STAVELEY Digital with 4 servos £169.10.0.

We shall be pleased to discuss your choice of equipment and demonstrate any of the sets we have in stock to callers.

COMING SOON: The NEW SKY-LEADER all-British CLUBMAN Model digital, the price of which is expected to be around £140 with 4 servos. We hope to have this in stock before the end of June.

HENRY J. NICHOLLS & SON LTD. THE MODERN MODEL SHOP 308 HOLLOWAY RD. LONDON N7. TELEPHONE: 01-607-4272



A DESIGNER WITH THE 'WRACKET EYE'...

According to engineering legend, a man with a 'wrocket eye' is an intuitive designer. He knows how to produce shapes and constructions which are 'right', without having to bother about theory and calculations. Most of the best model aircraft designs have been produced this way, with further improvement added by practical development. The final results are as good as – or probably better than – a purely theoretical design shape evolved through wind tunnel testing. After all, the proof of any design is how well it can be trimmed to perform. Trimming, in fact, can be more important than the design – and again a 'wrocket eye' can help!

There's one side of aeromodelling, though, where you do not have to be gifted in order to achieve the best possible results. That's in material selection, where balsa is the automatic choice for most jobs. Just be sure it's Solarbo Balsa you are using, and then you know that every piece will be top aeromodelling quality. It has been most carefully selected and graded, and subjected to final inspection by experts with 'wrocket eyes' – for Balsa! In other words, it's right for the job.

Wind tunnel photo of the airflow over a swept wing at moderate angle of attack is a useful guide for designers lacking a 'wrocket eye'.

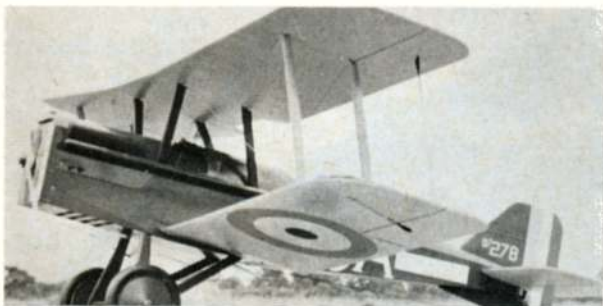
Solarbo Balsa

SOLARBO LTD.,
COMMERCE WAY, LANCING, SUSSEX

ALWAYS ASK FOR IT BY NAME

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

RipMax



TOPFLITE SE 5a

2" to the foot
(ONE SIXTH) scale

To a NEW STANDARD OF KIT ENGINEERING - see any of the kit reviews - with SCALE STRUCTURE, scale-type framework throughout and quite outstanding for AUTHENTICITY and innovation of design. The kit is TRULY DE-LUXE (and complete); and the model has all the flight characteristics the R/C pilot could wish. The SUPREME SCALE MODEL.

de-luxe kit £27.19.6 incl P/T



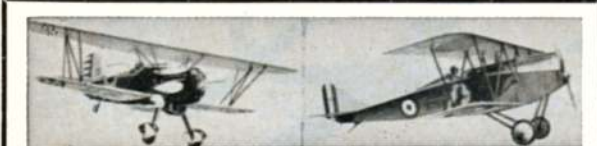
Control Line kits

Goldberg SWORDSMAN	£1.19.6
Goldberg L'il Wizard	£2.7.6
Goldberg L'il Jumpin' Bean	£1.19.6
Goldberg SHOESTRING	£4.15.0
Goldberg L'il SATAN	£1.13.6
Goldberg JNR SATAN	£2.6.6
RILEY WOOTEN VOODOO	£2.19.6
Sterling Beginners MUSTANG	£1.4.11
Sterling RINGMASTER biplane	£1.11.6
TopFlite NOBLER	£9.7.6
TopFlite NOBLER JUNIOR	£4.19.6
TopFlite FLITE STREAK	£3.15.0
TopFlite FLITE STREAK Jr	£2.9.6
TopFlite PEACEMAKER	£5.12.6



FREE FLIGHT OR R/C

Goldberg Skylark 42 de luxe	£6.14.6
Goldberg Skylark 62 de luxe	£23.10.0
Goldberg Skylark 56" (twin)	£14.10.0
Goldberg Jnr Skylark 37"	£5.7.6



STERLING RUBBER-POWERED SCALE KITS

REAL flying scale models with IN-FLIGHT ACTION FEATURES design for rubber power BUT EASILY CONVERTED TO CONTROL LINE OR RADIO CONTROL! Look at the choice you get too - 27 different models, all in fully prefabricated kit form with hardware, plastic parts, etc. . . . and EXCLUSIVE design features. Real value for money!

Fokker D-7 24" span	49/11	Stearman PT-17 22" span	49/11
Beechcraft Bonanza 22" span	31/6	Thunderbolt P-47 20" span	31/6
Nieuport 17 biplane 24" span	49/11	Ju 87 Stuka 20" span	31/6
AT-6 Texan 18" span	24/11	Messerschmitt 109 17" span	24/11
Piper Super Cub 18" span	18/11	Curtiss Hawk P6E 16" span	24/11
Cessna 180 17" span	18/11	L-19 Birddog 17" span	18/11
P-51D Mustang 24" span	49/11	F4U-5 Corsair 24" span	49/11
SESA biplane 22" span	49/11	Fokker D-8 21" span	31/6
Jap Zero 24" span	49/11	Ansaldo SVAS 19" span	37/6
Spitfire Mk. I 24" span	49/11	Focke-Wulf 190 24" span	49/11
Spad 13C 24" span	49/11	Piper Cub J-3 30" span	49/11
Aeronca C-3 36" span	49/11	Gt. Lakes Special 24" span	49/11
Eindecker E-3 25" span	37/6	Sopwith Camel 24" span	49/11

NEW SCHWEIZER 2-32 scale sailplane 42 3/4" wingspan ... 37/6



SEE THEM ALL AT YOUR LOCAL MODEL SHOP!
distributed by RipMax

NEW KAVAN

Air wheels with black tire walls

- φ 1 3/4" (45 mm) \$ 1.39
- φ 2" (50 mm) \$ 1.59
- φ 2 1/4" (56 mm) \$ 1.79
- φ 2 1/2" (62 mm) \$ 1.99
- φ 2 3/4" (68 mm) \$ 2.19
- φ 3" (75 mm) \$ 2.39



Air wheels with white tire walls

- φ 1 3/4" (45 mm) \$ 1.79
- φ 2" (50 mm) \$ 1.99
- φ 2 1/4" (56 mm) \$ 2.19
- φ 2 1/2" (62 mm) \$ 2.39
- φ 2 3/4" (68 mm) \$ 2.59
- φ 3" (75 mm) \$ 2.79



\$ 9.95

WORLD BEST CARBURETOR available for all engines!

WRITE AT ONCE FOR A NEW CATALOG WITH MANY NEW ARTICLES AND INTERESTING CONDITIONS.

FRANZ KAVAN - 8500 NÜRNBERG LINDENASTSTR. 67 W.-GERMANY

Graupner 1970 de luxe KITS

THE WORLD'S FINEST KITS

with the accent on super quality . . . extensively prefabricated in selected 'aircraft grade' materials . . . and noted for their COMPLETENESS. Comprehensive instructions, including separate overlay Radio Installation plan (where appropriate). See the complete GRAUPNER range AT YOUR LOCAL MODEL SHOP . . . TODAY!

TAXI ... £11.16.0

Superb 59" span model for multi training lightweight proportional. Features 'Quickie' construction with prefabricated balsa, ply and balsa-ly parts, all hardware, etc.

KWIK-FLY Mark III

PHIL Kraft's WORLD CHAMPIONSHIP design - top of the R/C models! 59 1/2" span A FULLY PREFABRICATED kit.

KADETT

46" span weather sports model (1-2cc) £4.19.6

all hardware, wheels, decals, adhesives, etc. Price £19.10.0

KAPITAN £4.18.6

A free flight or R/C model taking engines up to 19 cu. in. 42" span.

41" span CONSUL ... £9.19.6

Fuselage, wings, tail, all FINISHED MOULDED in lightweight foam plastic, other parts fully prefabricated.

TOPSY ... £3.3.6

32" span for 5-1 c.c. engines. Excellent sports flyer, also for single-channel radio control.

MINI-PIPER ... £5.9.6

Injection moulded plastic fuselage, prefabricated sheet wings and tail for instant assembly.

AMATEUR ... £6.19.6

44" span for engines up to 1.5 c.c. and 2- to 6-channel radio.

PIPER Pa22 TRI-PACER (not shown) £7.10.0

A superb free flight or R/C scale model 43 1/2" span. Wheel set kit 32/6 extra. Winking Light set 13/6

FLOAT KIT to fit Consul and similar models with all-up weight under 73lb £4.17.6

CIRRUS* SAILPLANE . . . £18.10.0

118" wingspan Kit includes finished fuselage mouldings in ABS plastic, pre-cut wood parts, covering material complete hardware, adhesives, etc., etc. Makes a truly magnificent model with fantastic soaring ability.

FILOU* ... £4.9.6

Sports type glider of modern design for towline soaring or R/C. A very well prefabricated kit.

Join the CIRRUS owners - the nearest thing to full-size flying when operated with multi or proportional R/C!

FOKA de luxe scale type sailplane for free flight or Radio. £13.13.0

SCHLEICHER K 10* (scale) £9.12.6

79" span model for towline or slope soaring - also for radio control.

De luxe kit includes fully moulded fuselage and wings in foam plastic.

*ALL THESE MODELS TAKE PYLON MOUNTS TO ADAPT POWER FLYING (F/F or R/C)

PYLON MOUNTS
CIRRUS 25/6
FILOU 18/6
K 10 25/6
JOLLY 18/6
AMIGO 18/6
DANDY 18/6

HS19 CLOU £15.10.6

A true multi-purpose model, with alternative nose unit for power flying (free flight or R/C).

OTHER KITS:
WEIHE 50 £16.6.0
*AMIGO 2 £17.13.6
DANDY £6.12.6
BEGINNER £2.13.6
JOLLY* £3.6.0

Kit includes parts for 75" span wing for slope soaring - or parts for 97" span for towline soaring - with choice of either wing size for flying as auxiliary sailplane.

CONTROL LINE KITS

ULTRA-STUNTER ... £4.19.6



Span 35 1/2" 1.15 c.c. engines. Designed for quickie construction. Full stunt model.

KLEMM KL107 £5.13.6

28 1/2" span



As the photo shows - a really authentic model.

Engines up to 2 c.c.

MUSTANG ... £5.8.6

Span 29 3/4" semi-profile type aerobatic model.



FW 190 £8.5.0

38 3/4" span. Super aerobatic replica of this famous fighter!



TOWLINE HANDLE AND LINE 7/3
TEMPO GEARED WINCH 70/6
FULL LENGTH PILOT DOLL 18/3
GRAUPNER RADIO CONTROL LINKAGES
Quick-Clip 8/6 Moulded 5/4
Metal 6/3 Ext'n. rod 3/8
HORNS: Metal 7/11 Nylon 2/6

U.K. DISTRIBUTORS

RipMax Ltd

80 HIGHGATE RD
LONDON, N.W.5

other Graupner Agents include—

U.S.A.: POLKS MODEL HOBBIES,
314 5th Avenue,
New York, N.Y.
CANADA: G. BOK & CO.,
41 Wimpole Street,
Toronto 18, Ont.

AUSTRALIA: PAUL GROSMANN,
14a Timbers Road,
Avalon VIC 3174
S. AFRICA: PHIL & BRUYN,
85 Pritchard Street,
Johannesburg.

HONG KONG: RADAR CO. LTD.,
3 Chaterway Road,
Kowloon, N.Z.
N. ZEALAND: BURTON BRADFORD,
241 Willis Street,
Wellington, C.I.

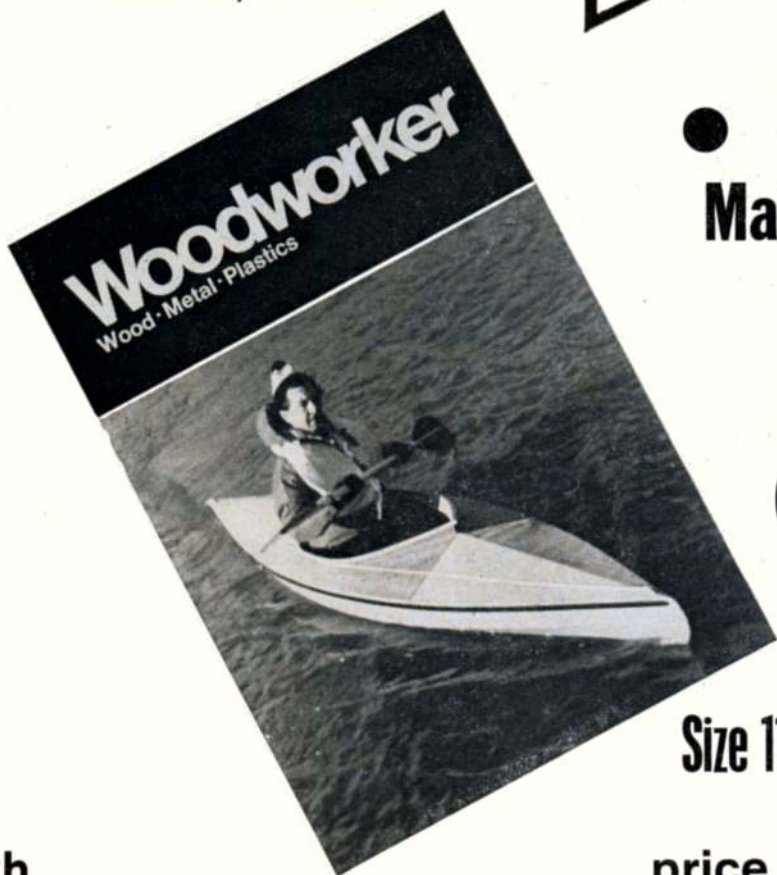
Woodworker

is our newest, latest



CRAFT MAGAZINE

From all
good
newsagents
and
paper shops...



●
**Make this
13ft
holiday
CANOE!**

**JULY
ISSUE
on sale
Friday
June 12th**

Size 11 $\frac{3}{4}$ x 8 $\frac{1}{2}$ ins.

price 3/-

Metalwork ♦ Plastics ♦ Glassfibre ♦

Furniture making ♦

Wood carving ♦

Carpentry ♦

For all craftsmen ♦

**MODEL & ALLIED
PUBLICATIONS LTD.**

**13/35 Bridge Street
HEMEL HEMPSTEAD, Herts.**

MAP

If unable to obtain your copy, complete this coupon and send to **MODEL & ALLIED PUBLICATIONS Ltd.**, 13/35 Bridge Street, Hemel Hempstead, Herts. together with P.O. for 3/6d. and we will post a copy to you.

Name

Address



WELCOME to the mast-head this month is extended to Peter Richardson, now appointed Assistant Editor to *Aeromodeller*. Peter has been responsible for varied editorial duties over the past year and his personal policy of 'practising what he preaches' has endeared him both to ourselves and the broad range of aero-modelling interests with which he maintains contact. As delegate on the SMAE Council representing the S. Midland Area he is fully aware of administrative affairs concerning the hobby as well as being a most active participant in many forms of practical modelling. This experience, will we are sure, make his jovial presence more than welcome wherever models are flown or discussed.

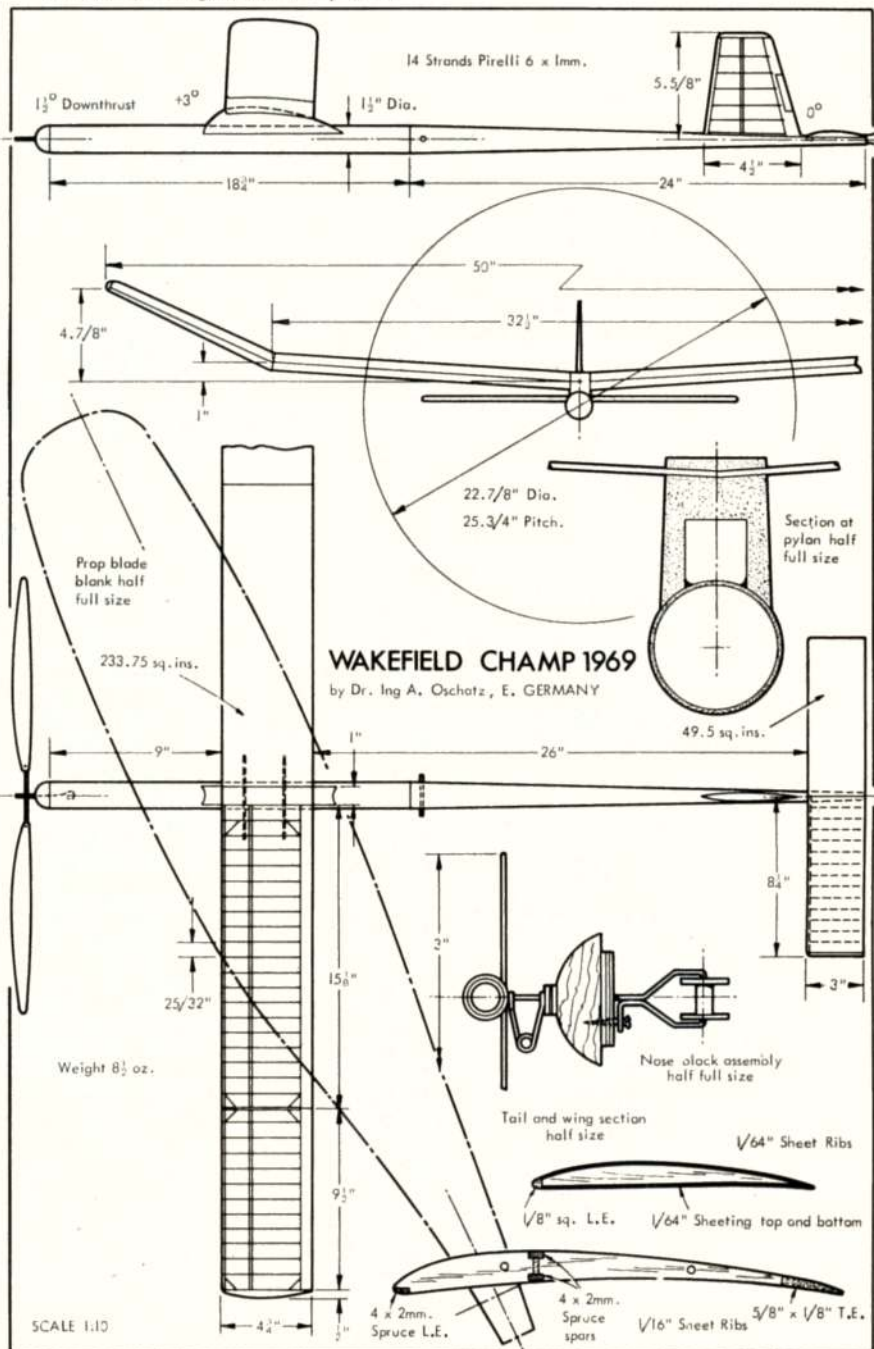
COVER MODEL this month is the World Champion's Wakefield, and as a foretaste of things to come, we are reproducing a page from this year's *Aeromodeller Annual* here to satisfy the impatient!

SAD NEWS . . . Arthur Collinson is no longer with us. Arthur was perhaps better known for his connections with Silvio Lanfranchi (who we were pleased to see at the Nats) and the famous 'Swiss Miss'. As a pioneer of the power duration model, Arthur was one of those contest types who always shared his experience and held no secrets. No Championships at Cranfield was complete without him and we are sure his many friends around the world will be sad to learn of his early death, on May 8th.

HEARD AT THE HANGAR DOORS

MORE SAD NEWS . . . of vandalism and theft. What makes a person break into a shop and tear out all the engines, batteries, etc? This happened at Eastbourne, and among the models was Harold Towner's prototype C/L Lancaster which we shall feature next month, plus his *Beagle* twin already in APS. Harold is now short of six engines, and any clues

leading to recovery will be welcomed. So too would some of the Nats flyers like to meet their downwind destroyers. This year a new twist on the engine removal business came to light. The remains of at least one broken up airframe minus its mechanical parts was deposited on top of a hangar!





Super Nats!

Sunshine + Big entry + High standards, at RAF HULLAVINGTON

RARELY have the fates served aeromodelling so well as at R.A.F. Hullavington on the Spring Bank Holiday. The combination of clear skies, moderate winds, warm and dry weather with new high standards in modelling and organisation will make this a meeting to remember. Such fine conditions brought the crowds out by thousands - so much so in fact that the vast parking area was filled with a mass of cars by noon on the first day. Never before have we seen so many caravans and such brilliant hues of canvas in the huge camping site - nor have we seen such queues for lool!

The S.M.A.E. organisation and R.A.F. Hullavington personnel coped with the situation admirably. A 180 ft. marquee had been erected as an exhibition and contest control area with supplementary trade tents adjacent. Here one could find all the Scale entries on display, ready to be viewed at close quarters. This feature alone was a much approved innovation; made possible by the generous support of Messrs Mainstream. There was plenty of other trade support too, with model shops doing a roaring business, Heath-Kit providing the monitoring of Radio, and all manufacturers were represented in some way or other around the field.

An added treat was the sight of the HAPS Lancaster, familiar as an Aeromodeller cover subject, camouflaged by courtesy of Humbrol, and actually running its engines preparatory for its flight to new storage at Blackpool.

As is now expected, scale models gathered all the glamour, especially in radio control. Among 24 models flown, there were only a couple of duplicates (a pair each of *Turbulents* and *Zlins*) and just two which could be described as well known through previous performance. These were the *Miles Hawk Speed 6* by Terry Melleney and Roy Yates' *Proctor*; level on static scores, and almost equal in flight though Terry had the margin to win deservedly. Top scorer in judging was the remarkable *Miles Master* by David Vaughan. When its builder gains more radio control experience, his will be a real threat to the big names. Equally impressive to us were the metal fuselaged *Ryan* by Roy Scott, Tony Lunt's perfect but plain *Chilton DWI* and Dennis Bryant's oh so realistic *Condor*; but perhaps the most memorable of all the new models was Derek Ibbotson's *JU 87 Stuka*. A little more work on the surface finish, and a full engine run could turn the results topsy turvy. Fixed landing gears were the vogue, and the application of a complexity factor in static judging

appears to have given a fair chance to the full range of subjects. Top scoring flights were World War One subjects, Norman Butcher's *Fokker DVIII* and Robin Lehman's *Nieuport XI*, but this has no significance other than to emphasise that too many others were overloaded thus underpowered. In C/L Scale the tale was similar to the effect that one had to have a good power margin to place anywhere and of course this favoured the flights by A. J. Briggs with his complex but powerful *Brigand* and stunt flier Mick Reeves *Turbulent*. Betwixt this pair who were first and third came Derek Goddard with a top scoring *Pfalz DXII* in static points - and practically static in flight too! The C/L Scale entry was much sharper off the mark than usual, with no reticence to fly. Big effort by the 3 Kings Club (half the entry!) was most commendable, especially since their models were so varied in subject. The sight of the huge *Gladiator* (a converted Complete-a-Pac R/C design!) flying so slowly was incredible.

Other spectacular event of the Nats was undoubtedly Pylon Racing. We leave the full report to sister magazine *R.C.M. & E.*, as with R/C Aerobatics but must comment that for a first trial, F.A.I. class Pylon seems to have made its mark in a big way. The pace of this and other R/C events in the 3 ring circles was adequately matched by the continuous 2 day performance of David 'Golden Voice' Bishop on the P.A. system. When the commentator raises fever-pitch excitement for so long, he's doing a great job in communication.

CONTROL LINE

reported by P. Richardson

The judges of the Gold Trophy were treated to bright sunny conditions while watching a very varied assortment of models, although most of them were 'regulars' having been flying for several seasons now. The inclusion of

R/C Scale

	Club	Aircraft	Acc'y	Craft	Complexity	Flight	Total
1	T. Melleney (Hillingdon)	<i>Miles Hawk Speed 6</i>	242	190	44	418.6	894.6
2	R. Yates (Eastcote)	<i>Percival Proctor</i>	240	166	70	396	872
3	N. Butcher (Buckaneers)	<i>Fokker D8</i>	178	115½	39	479.3	811.8
4	R. Lehman (N. London)	<i>Nieuport 11</i>	220	119	39½	431	809.5
5	D. Bryant (Bromley)	<i>Glosson Condor</i>	243	182	35	268.6	727.6
6	D. Foskett (L.A.R.C.A.S.)	<i>Ross. Air Tourer 115</i>	135	103	23	392	653

Control Line Scale

	Club	Aircraft	Acc'y	Craft	Flight	Total
1	A. J. Briggs (Esher)	<i>Bristol Brigand</i>	207	193.5	137	537.5
2	D. B. Goddard (C.M.)	<i>Pfalz DX11</i>	216	224	88	528
3	M. Reeves (Wanstead)	<i>Druine Turbulent</i>	128.5	96	159	383.5
4	M. Pareclet (3 Kings)	<i>Tigercat</i>	149	109.5	119.5	378
5	R. Ivans (Wolves)	<i>Ju87</i>	138.5	109.5	123.5	371.5
6	W. B. Cordwell (3 Kings)	<i>Grumman Duck</i>	154	114	85.5	353.5



R/C MULTI



C/L STUNT



F/F POWER

WINNERS



OPEN RUBBER

Den Hammant's 'Warrior' design, retract U/C, multi R/C winner. C/L Stunt leader is Jim Mannal; double power event winner, Roger Baggett. Bearded Dave Hipperson topped Open Rubber and Frank Van den Bergh clearly fastest in F.A.I. Pylon: Albert Briggs flew Brigand to lead C/L Scale. Free Flight winners are Grahame Lucas (Jr.), Wendy Wood (Women's Cup), Laurie Barr (Wakefield), Jim Gregory (Open Glider) and Jim Wassell (Tailless) all last three from Hayes! Previous page: R/C scale winning 'Speed 6' comes in to land.



F.A.I. PYLON RACE



JUNIOR EVENT



C/L SCALE



TAILLESS



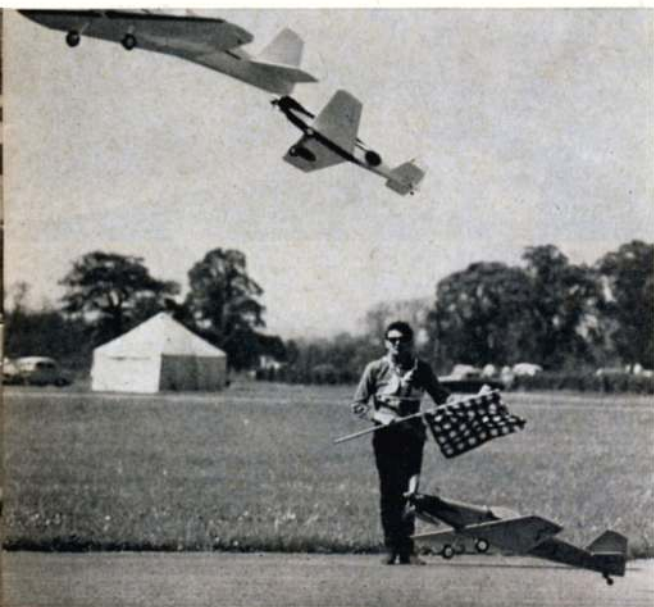
WAKEFIELD



WOMENS CUP



OPEN GLIDER



Away they go! Pylon trio grab for air, Frank Van den Bergh's model already up in the lead as the flagman waves off an exciting heat around the Mainstream pylons (see picture below).

'appearance' points was possibly one of the best rules ever introduced to model aircraft competitions if this event is anything to go by - perhaps it should be extended to other classes? Terry Taylor's beautiful *Corsair* was again in evidence, attracting much admiration, but it was Brian Dyke (St. Albans) with his immense *Stuka* who really drew the crowds. It is really incredible how well this semi-scale model flies, but his 9th equal position with 964½ points illustrates its ability! If anyone doubts the advantages of chasing these bonus points, remember that only seven points separated the first three competitors.

Despite the good weather, scores were a little lower than the previous year, and there were several surprise results. P. Tindall of Dagenham flew a very good pattern to finish with a

well deserved fifth place, and Brian Turner showed much improved style to clinch 6th spot. Mick Harvey (Three Kings) has had a poor year so far, and only achieved 8th position - well below his normal standard - with his 58 oz. (1) Yak III - powered by a six year old Super Tigre 35. However, at the top of the table it was the 'old firm' of Reeves, Mannal and Blake - plus Dave Day putting aside his R/C pylon racer and picking up his *Thunderhound*. After considerable checking and re-checking of the score sheets, it was found that victory went to Jim Mannal (who has not been seen around the contests much this year) and his *Nimrod* design, defeating Dave Day by just 2 points. Steve Blake and Mick Reeves continued their usual tussle, this time Steve being on top, again flying his *Nobler*.

Mention should be made of the very efficient organisation of this event, and of the very clear scoreboard, which also showed the name of the current flyer, plus the one in readiness and the one to prepare his model, thus keeping both spectators and competitors in the picture.

It was also good to see 'Pop' Warburton spectating at this area, who had brought a model for Frank Jnr. to fly in the contest, but unfortunately Frank was unable to make the trip due to business commitments (he was in Peru!). A great shame, as even without practice, he would no doubt have acquitted himself well. The continental influence of large models/motors has not been adopted at all - in fact, Mick Harvey made such a model and was most disappointed with its performance.

In complete contrast to the previous year when the spectators practically ignored the *Combat* event, this year's contest had a large following and rather a carnival atmosphere - no doubt due to the sun as much as the high standard of flying. The calm weather on the first day tended to illustrate quite how much some people rely on a stiff breeze to give their models a high airspeed, picked up during downwind manoeuvres. With the exception of a few *Ruter-ess* type designs, the contest was almost entirely between 'wings' - even the once popular flying tails were gone.

Frank Dowling modestly admitted to having the 'ultimate' in combat models with his very tightly-turning model which clocked 94 m.p.h. on an 8 in. x 6 in. Punctillio wooden prop. He achieves this ability to turn tightly by narrowing the root chord by ½ in. and setting the engine back into the leading edge by some ¼ in. to maintain C.G. position. A thick, 'true' wing section prevents the model from losing airspeed at the bottom of manoeuvres. It was certainly good, but unfortunately was damaged during an earlier bout.

An unusual feature at this Nats was the large number of top fliers who reached the fifth round. This may sound contradictory but it often happens at this major event that the better fliers are knocked-out by unknowns very early on during the proceedings. This naturally resulted in some really first-class combat, particularly during the semi-finals, by which time quite a large crowd had gathered.

The finals brought together Hunt (ACE) and Cowley (Northants). At the whistle it was Hunt first away, but Cowley was only a little slower. In his usual style, Hunt took on the offensive immediately, and seemed to be making mincemeat of his opponent, who although trying hard just could not get on to Hunt's tail. Halfway through the bout, with Hunt leading by four cuts, there was a line tangle, but both models were soon back in the air. At this point Cowley seemed to 'wake up' and really chased Hunt's model - both of which were turning incredibly tightly. Some really agile action by Cowley, who seemed to be permanently kneeling or sitting on the ground, avoided further line tangles, and he took two cuts in rapid succession. A free-flight model glided right through the circle, miraculously avoiding damage, or causing any. At the final whistle, the flying could not have been harder - but the result was another Nationals win for Hunt. The crowd enthralled with this, the best final for many years, clapped both opponents enthusiastically.

The event was run to the F.A.I. rules and no real problems seem to have arisen.

If there was one obvious factor in *Rat Race*, it was growing dominance of the light alloy pan equipped models, a feature which often results in quicker construction, better rigidity and a 'cleaner' overall appearance. Typical of this new breed of 'rats' were Dave Rudd's latest *Brats* - helmet cowed, faired, and very quick. The high rate of carnage in ratting is revealed by the number of new models to be seen - apparently few last long enough to look 'tatty'. Life expectancy is certainly short. Rudd later became involved in an incident when he caused a lot of no-good to Gerry Johnson's model, likewise another model ran into a model box left inside the circle (!) and yet another folded a wing in flight - a most effective cut-out, but how is it reset?

A very different model was flown by Chas. Taylor, long time Class 'B' team racer, flying a *Razzamachas* (what else) sans cockpit, and with a K&B 40 squeezed into the space originally intended for an ETA 29 - now renamed *Ratamachas*.

Frank Bradley's *Dive Bomber* now with the engine cowl faired laterally with the wing to give rather a 'flat fish' appearance was equipped with a spring tensioned bellcrank connected to a fuel switch - allowing a richer mixture at high speeds when there is greater centrifugal force. This gave really rapid take-off acceleration, and this model was probably the fastest one present. Fastest heat time was Rudd/King's 2:46 - which will be claimed as an



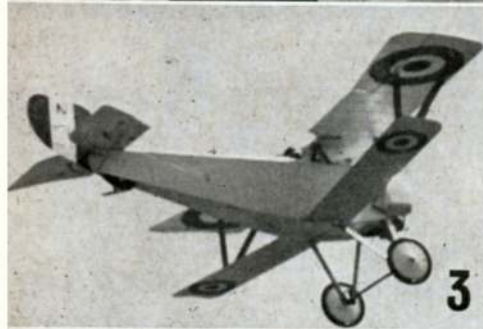


1

SCALE

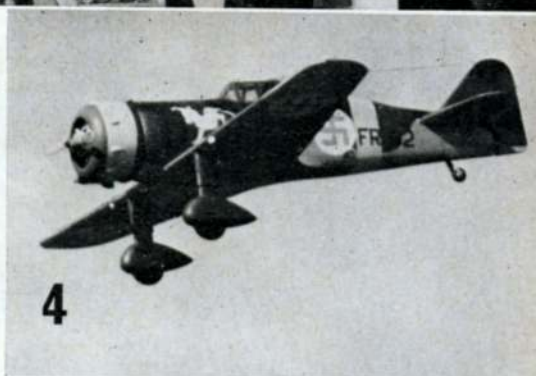


2



3

1. Roy Scott's metal fuselage covering on the Ryan PT 20 was much admired. 2. Tony Lunt showing his fine Chilton to Cdr Sproule who owned the real A/C for many years. 3. Robin Lehman's Nieuport XI, a fine flyer. 4. Jack Morton's Fokker DXXI deadsticks. 5. Most appealing surprise entry, David Vaughan's Miles Master. 6. Bob Iivan's C/L Ju 87 (no, the wing isn't broken! it disappears off our negative). 7. Smart Vickers Viscount by R. J. Tidder. 8. Well finished Pfalz DXII by D. Goddard for C/L. 9. W. B. Cordwell's unusual choice of a Grumman Duck. 10. Large Glos Airtourer by D. Foskett almost lost its hood in flight. 11. Jim Watson's Mitsubishi A6M5 'Zero' R/C. 12. Den Bryant's Condor, beautifully detailed, one of many HP 61 powered scale entries.



4



5



6



7



8



9



10



11



12

official record—one not being established at present.

The final brought together Dixon/Smith, Dell/Bradley and Taylor/Gray and promised to be fast.

First away was John Dixon, but the others were close behind, Bradley's model being the quickest. First to cut was Dell—with a very fast, one flick pit. Next down was Gray, with a slow landing but a quick stop—Dixon too having a quick stop. After landing for his second stop, Dell struck trouble as his motor first refused to start, and then caught fire when pitman Frank Bradley's fuel bottle burst. Frantic efforts extinguished the flames, and the model was eventually released, but was very slow and shortly cut. After more rapid flicking, the motor was off again but their chances had gone. Meanwhile Dixon was building up a lead which he kept to the end, while Gray/Taylor made a third, slow stop.

Appearing to be rather in the doldrums lately, the 1/2A Team Race event attracted some 30 entries, and of these only 19 teams actually flew. Practice flying showed that the standards of flying varied widely, and that favourites Turner/Hughes of Wharfedale were well in the running to make this their sixth-in-a-row victory.

The first round indeed confirmed this view, as they set a new British record of 3:32, whilst flying against Heaton/Ross who suffered a cracked crankcase. By flying as near as possible to the maximum permissible height with his (by now) slow model, Derek Heaton aided Dave Hughes to establish this record, as thus obliged to continually overtake he was 'legally' flying high.

Times in general were rather poor, only two sub four minute times being recorded, and the majority nearer five. Brown/Frye qualified for the final, but their tank was found to be oversized at 6.3 c.c. so their place was taken by Campbell/Perkins (Hinckley). The other finalists were Turner/Hughes (3:40.6) and Harknett/Smith (4:04). At the start it was Turner/Hughes first away with a single flick, followed by the Feltham pair. Campbell/Perkins were unlucky to have their engine die, and they lost 5-6 laps restarting. First down was Steve Smith for a very quick stop, followed in a similar fashion by Dave Hughes at 48 laps. Both were similar in airspeed—thanks mainly to whipping

Innovation for 1970 was 180 x 40 ft. display and control tent for radio control where scale models were on show to visitors, a system to be repeated at the World Championships, Cranfield, August 29th, 30th and 31st.

by Smith rather than to equal engine performance! In retaliation, Hughes too began to whip a little, and to lead the model when overtaking—for which he received a warning. At the 90 lap stage the Feltham model cut for another quick stop, but on take-off Steve whipped the model hard for two whole laps—giving him his first warning. Losing some laps on this tank, the Wharfedale pair also landed at 90 laps, for an equally fast pit. All this time Campbell/Perkins were circulating steadily but much slower, despite judicious whipping. Conduct in the centre was getting quite rough. At the next stop, Smith was slower landing, taking an extra for the glide, and Tony Harknett needed some five flicks to restart the motor—the team then receiving a second warning when Smith yet again whipped for too long on take-off. Brian Turner also had a slower stop, the motor sagging and then picking up. The result was a fast time of 7:56.6 for the *Aquarius 3* of Turner/Hughes, with Harknett/Smith unexpectedly slow at 9:03, while Campbell/Perkins trailed behind at 10:01.

Surprisingly, the potentially most complex class of racing, F.A.I., still attracts the greatest entry of all the racing classes—this year being no exception with 52. In practice, Place/Haworth had been recording 102 m.p.h. for 37 laps with their new model, powered by a Haworth ETA. This model features a thin, large diameter nylon wheel, buried within the fuselage so that only a small segment protrudes—thus giving a very clean front profile, with no leg or axle bolts, etc. in the breeze. This model was used in the heats, but the motor picked up some dirt and lost its edge, so they used their spare model with the Haworth designed and built motor in the semi-finals onwards. Turner/Hughes had less luck, breaking a big end in their motor in the morning. Only two models used cut-outs (Place's and Heaton's), although Brian Turner's model had one fitted, but it was not yet in use.

The heat times were not impressively fast, although they were close, mainly around the five minute mark. Harknett/Smith were right out of luck—in the first round their motor cut at 97 laps, and Steve whipped the model round the next 3 laps—action which, of course, resulted in disqualification. In their second flight they recorded a very poor time following a missed catch.

The semi-finals saw Place/Haworth record the fastest time of the day (4:38.6), closely followed by Turner/Hughes with 4:40.8. Third qualifiers were Heaton/Ross with 5:04—the remaining semi-times being very slow.

At the start of the race all models

became airborne together, with the Place/Haworth model fastest, and the Heaton/Ross's motor missing badly, although it later picked up. Dave Hughes came in first to land, but Brian Turner missed the catch. At this instant both Place and Heaton came into land. Hughes' model, having failed to be arrested by his pitman was opposite Malcolm Ross's segment, just as Derek tried to land his model. As the Hughes' model obstructed his own, Malcolm was forced to let his glide by. Unfortunately the two models shortly collided, without damage, and the Turner/Hughes machine ran into the circle. All this while, the Place/Haworth team were lucky to be out of the mêlée and they continued on their way to a comfortable win—the Heaton/Ross team being severely slowed by this mishap, and Turner/Hughes disqualified.

At first glance, the Handicap Speed event seems to have received an enormous upsurge in interest with 40 competitors, but the 'evidence' in the form of the result sheet, lists just fifteen placings. Despite this, there is no doubt that this year's event saw the greatest amount of flying for quite some considerable time—the circles being almost continually occupied.

Most interest seemed centred around the 5 c.c. category, where the record has stood still for some time. Brian Jackson flying his K&B 29 powered, 20 oz. model was going well at 144.3 m.p.h. but was eclipsed by fellow North Sheffield club member, John Penton, who recorded a shade over 150 m.p.h. with his first official flight. The motor, a Super Tigre 29 with the head modified in the Aldrich fashion, is very near standard and has received little running. Using 40 per cent nitro fuel the motor shed part of its 7 in. x 9½ in. Top Flite prop during this run, and it was obvious that this speed could be bettered. A later run confirmed this, when he achieved 153.3 m.p.h. to claim a new British record. The model, with an external mono-line unit is not the 'cleanest' shape, and when the motor is further developed would seem to have plenty of potential!

In second place came Mike Billington, also of North Sheffield, flying his immaculate, metal winged model with a Dooling 61—recording 165.7 m.p.h. (98.5%) with a beautiful run.

Very few piped engines were to be seen, competitors seemingly preferring to record runs at lower speeds, rather than gamble with the greater power but less reliability offered by such a fitting.

An unofficial F.A.I. speed event held on the Monday attracted only 2 entries, thus the contest was scratched and a second, impromptu handicap event staged.

FREE FLIGHT

reported by J. O'Donnell

The choice of Hullavington for four out of the last five Nationals has made it familiar to most regular contestants. Nevertheless, this still leaves the 'drome less than ideal as a free-flight site. The basic airfield shape, and the inevitable upwind location of the free-flight contest area, result in other events being overflown. Crops outside the airfield caused predictable difficulties with retrieving.

Those who treat the 'Nats' as a camping holiday must have found the weather almost ideal—especially after last year. From the free-flight viewpoint, the two days of blue sky, white clouds and bright sun were marred by wind for most of the time. Strong up and down draughts made the events very much of a thermal-catching contest.



As with all Nationals the standard of flying varied from one extreme to the other. There are still plenty of modelers who do not seem to appreciate that leaving models lying about in the sun is an open invitation to 'heat warps'. This probably explains some of the frequent crashes, not to mention off-pattern climbs, witnessed in the power events. Breakeage of glider wings on tow was also more common than I would have expected, and there were instances of the same complaint in power.

Calm weather on the Saturday afternoon and evening enabled much testing and check flying to be done - and must have led many people to hope for similar conditions on the next two days.

SUNDAY

Events were scheduled to commence at 10 o'clock and continue until 7 o'clock - with fly-offs beginning an hour later. The appearance of the event organisers was very last-minute - but there was no real hold up to getting the flying under way.

At the start the wind was quite light, perhaps 10 m.p.h., and far from steady. Maxes, and even flights substantially in excess of the three minutes, landed inside the 'drome. These conditions did not continue for very long, and the wind steadily picked up to almost 20 m.p.h. by the afternoon.

A good percentage of early flights were maxes, especially in rubber, but 'trebles' were slow to appear. Many fliers obviously hoped that the wind would drop towards evening - and left their final flights until late. In fact, the wind did not really decrease in time to help flights other than the fly-offs.

The potential hazards of the downwind crops were appreciated in advance as evidenced by a notice at Control warning retrievers to obtain permission from the farmer(s) before attempting to recover models from the crops. To be effective such requests require some positive action by the contest organisation in the way of direct negotiation with the landowners, so as to permit model recovery to be effected without complaint. Such did not appear to have been done - and I understand that relations with at least one farmer were 'strained' to put it mildly.

There was another hazard downwind. This was the presence of local children and youths anxious to pick up models as they landed. Whilst some of these 'retrievers' may have been genuinely helpful, many were simply touting for rewards. There were also instances of models being carried off downwind, hidden inside cars, and the like. In these circumstances inability to find a model is always accompanied by the suspicion of theft. Even with due allowance for the crops, sufficient models disappeared within a relatively short distance of the 'drome to support this belief.

To be fair, some models were handed in to the R.A.F. or contest organisation. Furthermore, there are still modelers who do not help themselves by flying models without address labels. I picked up one A/2 with no identification other than a club transfer and part of the holder's S.M.A.E. number. There was one priceless example of unwanted help. Dave Oldfield's model was picked up by a motorist who had just left the 'drome (where he had been spectating) and taken home to Gloucester before phoning back to Hullavington. This necessitated Dave making an 80-mile journey, and meant he missed the first round the next day!

Two events had been decided without the need for a fourth flight. The **Frog Junior** event for the under-16s, although run from a separate control

point, went almost unnoticed amongst the mass of open rubber/glider/power flying. First and second places were fairly close with R. Jones emerging as winner over power flier A. Chilton. Remaining scores were rather low - perhaps through distractions with the **Kit Contest**.

The tailless models flown in the **Lady Shelley** event were conspicuous enough for obvious reasons. The event was without its chief protagonist, John Pool, absent through illness - and this involved Ken Attiwell in running this event. Last year's winner, Henry Tubbs, lost his only rubber model on its first flight. His model has a very long motor run and relies on a stalling 'glide' instead of a D/T. This time it met too strong a thermal, and disappeared upwards.

All three places went to the Hayes club - flying a varied assortment of designs. John Wassell won with a large and extremely light rubber powered model - basically an enlarged version of the very small model flown last year. The big model has 312 square inches area, 47 in. span and a total weight of only 3 oz. (1.4 structure plus 1.6 rubber). The general layout should be apparent from the photos, but the two-blade pusher propeller feathers for glide and is stopped in the horizontal position for D/T purposes. So far the model has never been fully wound, its two maxes being made on only 800 turns on the 6-strand (6 x 1 mm. Pirelli) motor and the final flight (which only needed to exceed a minute) on even less.

Josh Marshall flew a power model to second place. This comprised his original 1947 or '48 fuselage and original Mills 1.3 engine, fitted with new wings. His clubmates thought it should have appeared in the Vintage event as well! John Gregory had a good weekend that began with third in tailless. His glider has a wing design derived from Pool's **Never Forget X** but with undercamber all the way to the tips. The model has sheet ailerons, tip fins, and a rudimentary profile ply fuselage. The whole thing was very light - under 1½ oz. without nose weight for about 360 sq. in. area. Tow was good - but the drop-off weight D/T remained unproven. The 'open' events all needed fly-offs.

Not surprisingly rubber was the largest, then glider, with power the smallest. Following previous practice the fly-offs had been arranged late in the evening so as to make them more meaningful by reducing the likelihood of strong lift. As the wind had decreased considerably by 8 o'clock the fly-offs had every promise of being interesting.

The recruitment of timekeepers had commenced early, and the **Glider** fly-off was first away - starting promptly enough. 15 minutes was allowed in which to fly and proved more than adequate. First to launch was Pete Jellis making a useful looking flight that was to prove sufficient for second place. Not long afterwards several fliers launched together, and looked well set - if not in real lift. The winner proved to be John Gregory flying (as befits a Hayes member) Jim Baguley's current A/2 design. Third place was secured by a junior, 13 year old David Barnes, flying an A.P.S. **Accipter**. That this was no fluke is shown by his also winning the glider section of the Junior Kit Contest (with a Mercury Swan). Whilst he undoubtedly has the advantage of an aeromodelling father, such 'teamwork' can only be praised.

The **Power** fly-off followed with little delay. John Mayes launched first flying a Cox TD 15 Mk. 1 powered version of the A.P.S. **Eureka** followed (not necessarily in order) by John Hook, Derek Wain (A.M.35) and Peter Ward (Eta

29). The last named over-ran, but none really impressed by virtue of height gained. Finally Roger Baggott and Dave Wiseman flew from well upwind - with good patterns and glide. The outcome was very close with Roger winning by just three seconds. His model is basically an F.A.I. one - but with an Eta 29 for power - and complete with auto-rudder and V.I.T. He was lucky to have it for the fly-off as his third max ended in a tree, eventually climbed by John West and Fred Boxall. 'Wiz' flew a piped F.A.I. model (if I can still describe it so) utilising a self-tuned G15 coupled to an E.D. 'Power Pipe'. He reached the fly-off through tactical flying, had some very rough motor runs (one down to 4 seconds), but found the tank leak responsible in time to rectify it before the fly-off.

Although Rubber was the last fly-off, it was the one with real lift! This is particularly ironic as rubber is the event for which the late fly-off was really intended. The eighteen participants were given the go-ahead at 8.35 and there was little hesitation in flying. One launch was almost immediate, and the rest followed in two distinct 'waves'. These drifted in noticeably different directions - but the air was distinctly helpful as should be apparent from the scores. The top positions were determined purely by visibility - first place going to Dave Hiperson's 310 sq. in. model. This is the same model used at Odiham and described in my report thereon. Again no D/T was used - but Dave had the model back the following day to be photographed! It had flown 11 miles in an hour and ten minutes, and Dave's home phoned forthwith by the finder.

Runner-up was Mike Duce with a model reminiscent of Brian Picken's 1969 winner. Its distinctive feature is the use of a single blade feathering propeller. Otherwise Mike's model is conventional enough. It was no light-weight and was only trimmed on the Saturday.

My third place was the end product of much trouble. My one and only open **Maxine** hit trees on both first and second flights, and emerged from the latter with the fuselage in two large and many small pieces. I then used and lost a Wakefield for a third mx. Returning at 6.30, I commenced a repair operation described by one on-looker as 'instant fuselage'. The result was far from neat, light or elegant - but flew as if 'o.k.'. With no time to re-rip the D/T system, I flew without, and lost the model o.o.s. into cloud. A farmer found it the next morning several miles away, in time for me to collect it on the way home!

In comparison Mike Fantham came fourth with a flight D/T'd in sight and watched all the way down to the skyline. Other people had their own troubles. Dave Digby had lost a model reaching the fly-off - yet managed nearly four minutes, with a completely untested 'bitsa' using the wing off his Wakefield.

My personal thanks are certainly due to all who assisted whilst I was repairing my model. Help included materials, liaison with the organisers and, subsequently, much information to augment my rather restricted view of the fly-offs.

MONDAY

The second day's events started and finished earlier. This is to suit those who camp on the 'drome and those who like to make a reasonably early start on their journey home. The holding of the F.A.I. in five rounds of 1½ hours each resulted in a 5.45 p.m. finish, following a 9.00 a.m. start.

Weather conditions followed a similar pattern to the preceding day, in that an initial light breeze rapidly strengthened. There was plenty of sun and, with variable cloud, plenty of lift. The wind direction was different, however. Whilst this alleviated vandal and farmer troubles, it introduced difficulties with over-flying the radio events and having models land in the main car park and hangar area beyond. This situation improved as the wind swung a little, and final flights drifted down one of the main runways where the only obstacle to recovery was C/L flying, commencing with the unfenced speed circle.

There were numerous maxes in the first two rounds, and the promise of high totals to come. Many well placed fliers, however, fell by the wayside as the day progressed. Some at least were victims of very treacherous air, with strong sink as well as lift. In consequence final scores were generally lower than might have been expected, and none of the F.A.I. events needed a fly-off.

Perhaps the most surprising fall-off came in F.A.I. power, the event with the most model performance and the best capability for coping with wind. There were a couple of Anglia members with trebles at the end of the third round - who subsequently failed to place. The eventual winner proved to be Roger Baggott, who, after several years of near misses in the power events succeeded in carrying off both the F.A.I. and open events. He had quite a substantial lead, despite flying his 'third-best' model because of the uninspiring recovery conditions. The model is of typical elliptical-tipped, pylon, rear fin layout, has an untuned G15 turning a 7 in. x 4 in. Top Flite nylon prop, a Tatone timer for engine, autorudder and V.I.T., and fuse for the D/T. Wing section is the Pimenoff one as used on Savini's *Fatal*.

Second was Ray Monks who per-

severed through downdraught troubles, and who survived a motor cut on launch with no damage other than a broken prop. Fred Chilton was third, just one second ahead of Mike Green who was regarding the event as mere practice for the Trials later this year, and who flew with short D/Ts so as not to risk his best model.

A/2 was the best supported of the F.A.I. events. Tactical flying was popular, if not too easy because of the wind in the later rounds. Certainly there were many who spoilt their chances by misjudging the moment, or by not releasing close enough to the model marking lift. Don Wyld's *Wichita* recorded the day's only perfect 5 max score to end in top position. Runner-up was Jim Punter, with the design described in his *Aeromodeller* articles. The next few places were only seconds apart, with M. Ellis, Gerry Pink (with an Elton Drew design) and Brian Picken (using a heavy fishing rod model) placing in that order.

Wakefield saw some surprising changes in position during the fifth round. Ian Kaynes slipped from first (at the end of the fourth round) to third with a very poor last flight attributed to a broken rear fuselage not repairing quite straight. His earlier flying had been based on the Croydon (or Jack North) 'bubble machines'. These are steadily being refined as experience is gained in their use and interpretation.

This left the field open for Laurie Barr to take the event with a final max - although at the price of losing one of his last year's World Championship models. Likewise I managed a final thermal flight to place just five seconds behind for second place. I flew tactically throughout, but dropped one flight rather badly when the model power-stalled at altitude and came out of lift. 'Butch' Hadland, now back in circulation, came fourth.

There was no processing of F.A.I. models during the contest - not even check weighing. Standard fuel was provided although it was not available until after flying should have begun. The eventual winners were asked to bring their models to Control after the events had been decided - but were not checked due to the non-arrival of the appropriate officer.

The $\frac{3}{4}$ A power event seemed to go very slowly. Russell Peers had finished (with two maxes and a 'hole' from his new, light and gadgetless model) before most entrants had thought of starting. It was late in the day before his score was exceeded by the eventual winner, Brian Spooner. There had been plenty of odd maxes recorded but a surprising inability to back them up. In mid afternoon the wind was sufficient to produce o.o.s. scores of under three minutes from these small models.

Last event to finish - by virtue of being the only one to need a flyoff - was the Ladies' event for combined rubber, glider and power. There were two trebles and several hard luck stories. Last year's winner, Mrs. Wendy Smith, started with a max, then apparently bunched the rubber motor to cause the second flight (and model) to end prematurely on the runway. Linda Byrd lost her $\frac{3}{4}$ A entry on its second max, and crashed another model attempting a third flight.

The flyoff was watched with much interest. First to go was Miss Wendy Wood (fiancee of control line flier Mike Fitzgerald), who cranked on a lot of turns with the assistance of Ken Attwell steadying the winder. She made a good launch into indifferent air to record about 2:20. Model was an *Expendible* built to plan apart from use of a single blade prop for 'ease of construction'. The other qualifier was Bruce Edwards' wife, Jennifer, flying a conventional open model of lightweight construction. She caught her hand in the propeller on launch, broke off one blade, and had the resultant vibration produce a complete mid-air disintegration and the wing, tail and fuselage collapsed in quick succession. Most spectacular and equally heart-breaking!

Vintage was run by the South Bristol club to their much discussed rules. These demand precision flying to a target of five times the first flight, and with error calculated on a percentage basis. There were a number of pre-war style power models present of impressive size but very marginal power. Their flights at low altitude through the A/2 launching area were the subject of rather mixed opinions.

Much safer, in all respects, were the flights from the more conventional (i.e. late 1940s designs) entries. There seemed a predominance of rubber models, and a marked absence of gliders. With this type of contest it is the last flight that really matters, and interest is thus sustained throughout the day.

The winner proved to be Gordon Hannah, flying a *Filibuster*, and quick to point out that it was designed by a St. Albans member (Ted Buxton). Second was vintage enthusiast John Mayes with an *All-American* powered by an O & R 23 operated on glow. Next, with his third place of the meeting, was John Gregory, despite being forced to fly a Keilkraft *Gypsy* through breaking a *Raff V* a few days before.

Mention must be made of the vintage prizegiving, at which the three winners shared a tankard and two plaques. This was a 'private venture' by the South Bristol Club, and is in marked contrast to the S.M.A.E.'s decision not to award monetary prizes at the Nationals.



SMAE Chairman Norman Couling (left) introduces free flight modeller Barry Halford to Air Marshal Sir Lewis Hodges, Air Officer Commanding Air Support Command (right).

R/C Multi (S.M.A.E. Trophy)	Pts
1 D. Hammant (Grimsby)	2580
2 M. Birch (Hillingdon)	2538
3 T. Doust (Bristol)	2428
4 D. Spreng (Buckaneers)	2117
5 G. Bradley (Lincoln)	2033
6 T. Cooper (Sutton Coldfield)	1970
7 K. Jones (Sutton Coldfield)	1873
8 E. Johnson (Flying Druids)	1865

Pylon Racing F.A.I. (Finalists)	
1 F. Van den Bergh (Bromley)	2:35
2 K. Jones (Sutton Coldfield)	2:55
3 S. King (Cotswold)	2:58
4 P. Pilsworth (Reading)	3:00
5 D. Marlow (Cotswold)	3:02
6 C. Foss (Sussex)	3:09

Formula 1 Pylon Racing	
1 C. Wall (Cotswold)	2:23
2 D. Beaumont (Bradford)	2:27
3 T. Cooper (Sutton Coldfield)	2:33
4 R. Nicholls (N. London)	2:37
5 G. Franklin (Leicester)	2:40
6 J. Ralph (Cotswold)	2:55

Frog Junior Trophy	
1 R. Jones (E. Grinstead)	8.05
2 A. G. Chilton (Crookham)	7.44
3 M. Foulkes (Portsmouth)	5.08

Tailless (Lady Shelley)	
1 J. Wassell (Hayes)	8.01
2 J. Marshall (Hayes)	6.58
3 J. R. Gregory (Hayes)	6.31
4 M. Page (Peterborough)	4.07

Open Rubber (Model Aircraft Trophy)	
Fly-off times	
1 D. Hipperson (Croydon)	+8.05
2 M. Duce (Liverpool)	+7.22
3 J. O'Donnell (Whitefield)	+7.11
4 M. Fantham (Croydon)	+7.10
5 B. Picken (Liverpool)	+6.45
6 D. Wotton (Hayes)	+6.34
7 J. West (Brighton)	+6.11
8 F. Sharp (Norwich)	+5.50
9 H. Tubbs (Baildon)	+5.45
10 J. Boon (Congleton)	+5.42
11 J. Cooper (Northampton)	+5.14
12 F. Boxall (Brighton)	+5.12
13 D. White (York)	+4.43
14 D. Digby (North Surrey A/M)	+3.56
15 C. Hadland (R.A.F.M.A.A.)	+3.14
16 C. Champion (Northampton)	+1.12
17 G. Welsh	+1.04
18 L. Barr (Hayes)	+0.10

JA Power	
1 J. Spooner (Croydon)	8:50
2 B. R. Peers (Congleton)	8:03
3 G. Fuller (St. Albans)	7:56
4 M. Duce (Liverpool)	7:55
5 G. L. Head (Brighton)	7:45
6 P. R. Harris (Evesham)	7:12

Sir John Shelley Cup - Open Power	
Fly off times	
1 R. J. Baggott (Birmingham)	+3:48
2 D. I. Wiseman (Birmingham)	+3:45
3 J. Hook (Southampton)	+3:12
4 J. B. Mayes (S. Bristol)	+2:48
5 D. J. Wain (S. Bristol)	+2:01
6 P. B. Ward (Torbay)	O'Run

Wakefield	
1 L. Barr (Hayes)	14:00
2 J. O'Donnell (Whitefield)	13:55
3 I. Kaynes (Croydon)	12:42
4 C/T Hadland (R.A.F.M.A.A.)	12:28
5 R. Wootton (Hayes)	12:25
6 M. Dixon (Birmingham)	11:41

Open Glider - Thurston Cup	
Fly-off times	
1 J. R. Gregory (Hayes)	+2:50
2 P. T. Jellis (Croydon)	+2:40
3 D. Barnes (Jr) (Liverpool)	+2:32
4 Sgt. C. Hart (R.A.F.M.A.A.)	+2:31
5 S. Phillips (Spitfires)	+2:30
6 J. W. Summer (Sheffield)	+2:10
6 D. C. Miatt (B. & W.)	+2:10
8 G. Ferer (Swindon)	+2:00
9 J. B. Pottinger (Northampton)	+1:20
10 D. T. Newton (Swindon)	+1:09
11 M. Musgrove (York)	+0:52

Adam Mabey, aged 10, winner of best built model prize with his 'Swan' in the Junior Kit Contest.

RESULTS (Provisional)



Control Line Aerobatics (Gold Trophy)

	Pts
1 J. Mannall (Lincoln)	1126½
2 D. Day (Wolves)	1124½
3 S. Blake (Buckaneers)	1119
4 M. Reeves (W. Essex)	1056
5 P. Tindal (Dagenham)	1002
6 B. Turner (Wharfedale)	995

Handicap Speed

1 J. Penton (N. Sheffield)	153 m.p.h. (5 cc) 100%
2 M. Billington (N. Sheffield)	165.7 m.p.h. (10 cc) 98.5%
3 I. Roffey (N. Sheffield)	162.1 m.p.h. (10 cc) 96.4%
4 B. Jackson (N. Sheffield)	144.3 m.p.h. (5 cc) 94%
5 R. Gould (R.A.F.M.A.A.)	142.5 m.p.h. (10 cc) 92.8%

13-year-old David Barnes lost his Junior Kit winning 'Swan' glider, and was 3rd in Open Glider with his 'Accipiter'.



6 W. Firbank (N. Sheffield)

138.8 m.p.h. (5 cc) 91.16%

JA Team Race (R.A.F.M.A.A. Trophy)

1 Turner/Hughes (Wharfedale)	7:56.6
2 Harkner/Smith (Feltham)	9:03.6
3 Campbell/Perkins (Hinckley)	10:01.2

F.A.I. Team Race (Davies 'A' Trophy)

1 Place/Haworth (Wharfedale)	9:47.6
2 Heaton/Ross (Leigh)	10:44
3 Turner/Hughes (Wharfedale)	retired

Rat Race

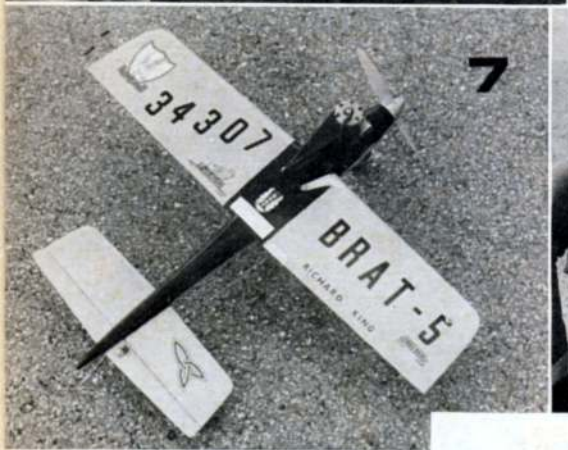
1 Dixon/Smith (Feltham)	5:53
2 Gray/Taylor (Feltham)	7:09
3 Dell/Bradley (Feltham)	7:34.6

Combat

1 V. Hunt (ACE)
2 R. Cowley (Northants)
3 S. French (Scunthorpe)
3 S. Andrews (Elliot)

John Neate (9) gets youngest contestant prize from World Champion Elton Drew (left).





1. The winning Rat Race team - John Dixon the pilot in the centre, with Martin Radcliffe (left) providing the 'sparks' and Steve Smith the sore fingers! 2. John Penton won the handicap speed event with his balsa winged, plywood fuselaged model, powered by Super Tigre 29. 3. Don Haworth and Dick Place, F.A.I. team race winners yet again, this time using their own engine. 4. A familiar face! 'Pop' Warburton displays his attractive 'Pivert' design. 5. Double-hat trick in the 1/2A Team Race event for Brian Turner and Dave Hughes. Some record! 6. Very simple speed design by A. J. Macnair is powered by Super Tigre G15 F1 but still needs the 'bugs' sorting out. 7. Typical of the current breed of Ratters is this Super Tigre equipped 'Brat' by Rudd/King, very quick at around 130 mph. 8. Combat winner yet again was Vernon Hunt (white shirted), seen with his very efficient pit crew. 9. M. Keeling (Highgate) flew very well with his manoeuvrable wing - typical of those present. Own modded Oliver used. 10. Lift off for Mick Reeve's tremendously successful 'Turbulent' flies as well as many sports control-liners. 11. Richard King pits Rudd's K & B powered 'Brat'. Scar on rear fuselage is the result of collision with another competitor earlier on.





S.M.A.E. Fellow R. F. L. 'Bob' Gosling aids ultimate winner Grahame Lucas of Chichester with his 'Mentor'.

used the most popular models generally. So the message is clear for you to see—lots of practice and get those models trimmed correctly—they will fly well if you let them. Provided there are no warps and reasonable building care has been taken, the trimming makes more difference than anything else (in fact one of the top ten had his wing ribs out of square by almost 5°!) so it is well worth spending a few weekends experimenting with bits of 1/32" sheet packing here and there.

There will be a contest again next year and roughly the same rules will be used unless the organiser gets some suggestions for alterations (of the 120 or so people writing to the organiser only a handful of these were among the actual 50 entrants—was there some common reason for the writers not entering? It could be important for next year).

The choice of kits may well be different next year so wait until you see the details in *Aeromodeller* or your local model shop just before Christmas.

Keep trying—the winner of the youngest entrant prize was only 9 years 1 month old and he also came 3rd in Glider!

A total of 21 valuable prizes were shared among the top ten entrants (apart from the TV appearance for the top two). Prizes were kindly donated by:— Society of Model Aeronautical Engineers (the organisers); M.A.P. Ltd., Keil Kraft, Mercury, Veron (Kit Manufacturers), plus Solarbo.

JUNIOR KIT CONTEST RESULTS

Rubber (30 entries): 1 G. J. Lucas 344 + 314, 2 D. G. Tanswell 370 + 194, 3 R. Green 163 + 180; 4 N. Watson 125 + 133; 5 F. Rushby 126 + 69; 6 A. G. Wells 113; 7 J. Buskell 103; 8 B. Yearley 99; 9 B. Sims 98; 10 S. Short 85; 11 M. Child 74; 12 D. G. Chambers 70; 13 J. J. Mercer 69; 14 D. Baker 66; 15 S. Gavins 65; 16 R. Wilson 45; 17 I. Holton 28; 18 M. Wilson 25; 19 M. Drube 22.

G. J. Lucas won the C. Hamley Cup for the highest placed S.M.A.E. member.

Glider (20 entries): 1 D. Barnes 130 + 224; 2 A. Mabey 264 + 135; 3 J. Neate 200 + 134; 4 R. Flett 195 + 68; 5 M. V. Lowe 125 + 51; 6 T. Findley 123; 7 D. G. Chambers 121; 8 K. Monaghan 115; 9 J. B. Abbey 44; 10 R. Child 28.

A. Mabey won the prize for the best built model.

J. Neate won the prize for the youngest entrant (age 9 years 1 month).

Vintage

- 1 G. Hannah (Fillibuster)
- 2 J. Mayes (All American)
- 3 J. R. Gregory (R.A.F. V)

Women's Cup

- 1 Miss W. Wood (Halifax) 9:00+2:21
- 2 Mrs. Edwards (Richmond) 9:00
- 3 Mrs. K. Allen (Brighton) 8:15
- 4 Mrs. Miller (Cambridge) 6:29
- 5 Mrs. J. Duncan (Wigan) 4:40
- 6 Mrs. L. Bennett (Anglia) 3:41

A/2 Glider

- 1 D. A. Wylds (Crawley) 15:00
- 2 T. J. Punter (Hayes) 14:27
- 3 M. Ellis (E. Grinstead) 13:42
- 4 G. C. Pink (S. Bristol) 13:40
- 5 B. Picken (W. Lancs) 13:39
- 6 J. C. Wright (St. Albans) 13:38

Franklyn Rushby (13) sends his 'Senator' off.



F.A.I. Power

- | | |
|------------------------------|-------|
| 1 R. J. Baggott (Birmingham) | 14:35 |
| 2 R. Monks (Birmingham) | 12:45 |
| 3 F. Chilton (Crookham) | 12:08 |
| 4 M. H. Green (C/M) | 12:07 |
| 5 J. Allen (Brighton) | 12:02 |
| 6 R. Johnson (St. Albans) | 11:55 |

JUNIOR KIT CONTEST

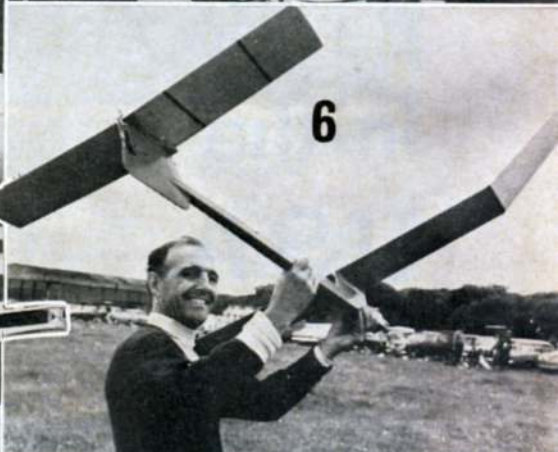
Exactly 50 young aeromodellers managed to get to R.A.F. Hullavington on 24th May, 1970, to enter the Junior Kit Contest—so, for the first year, this is considered quite a success. There were 30 entries in Rubber and 20 in Glider, although only 19 in Rubber and 10 in Glider actually recorded contest flights. The reason for this difference between entries and actual contest flights was only too plain to see—nearly all entrants brought along only one model and a lot of them learned (the hard way) that breakages do occur (surprise!) and even the simplest repair jobs can become impossible in the middle of a field when working against the clock.

The wind was a little tough on some entrants but certainly still well within the 'flyability' of the models. (Only one model was lost, but there were a lot of sweating brows after retrievals!)

A detailed review of the score sheet shows that there was a startling difference between 'average' and 'good' performance. Firstly all the top five in each section managed at least one flight over 60 seconds whereas very few of the other entrants achieved 50 seconds for any flight. Secondly, the 'top ten' managed eight flights of over 120 seconds between them (3 of which were maximums, i.e. over 180 seconds). This difference was not due to the choice of model because the 'top ten'

Robert Green (11) with his 'Senator', one of many in evidence though all eligible kits were to be seen in this successful contest.





1. Visiting Canadians D. Surry and P. Allnut with A/2 gliders. 2. R. Mayes releases 'Eureka' in fly off. 3. Gordon Hannah collects Vintage Trophy from S. Bristol Chairman J. Down. 4 Peter Jellis, 2nd in Glider. 5. C/T Hadland, back after a year in hospital and happily still 'on form'. 6. Jack Allen shows off his Rieke style tail - easier on trim. 7. Hayesmen, Jim Baguley and Jim Punter (2nd in A/2). 8. Smart Wakefield by Dave Digby. 9. C. J. Chapman of Torbay releases in open rubber fly off. 10. One blade gone and thrashing to disintegrate Jennifer Edwards' model a split second later. 11. Gregory's Tailless glider, placed 3rd. 12. John O'Donnell making massive reconstruction job before coming 3rd.



SPEED ENGINE development in the U.S.A.



THE SIMULTANEOUS arrival of a letter from Charlie and Mike Fitzpatrick, and the personal appearance in our offices of Jack Frye, brings us up to date on the current American speed scene.

Jack Frye brought with him his own-built .29 motor, with which he won the Class B speed event at the '69 U.S. Nationals at 167.4 m.p.h. This Schnürle port motor is beautifully engineered and bears a close resemblance to Bill Wisniewski's original T.W.A.15 in both design and construction, with the exception that it is of the ABC type (i.e. aluminium piston with brass, chrome plated, liner) and uses a Meehanite Dykes ring piston. In truth, it's not literally 'ABC' - the piston being from dural and the chrome plated liner is made from bronze. This engine in fact utilises a K & B crankshaft and Super Tigre backplate, although the complex fuel system is entirely Jack's brainwave, and is one of the major factors in his consistent motor runs. This consists of a fuel cut-off, high speed needle valve, low speed needle valve and centrifugal-force operated switch.

His larger motor, a .65 as permitted under A.M.A. rules, follows the same layout and shares the fuel system of the 29, but uses Rossi front and rear ends, as well as a Rossi crankshaft. Rather on the heavy side at around 24 oz. Jack has now built a version with a magnesium crankcase which is some 3 oz. lighter than the normal one, machined from 2024T6 dural bar stock. Although the b.h.p. of the motor is not known, it is reputed that when bolted to a pair of $\frac{1}{4}$ in. square hardwood bearers, the bearers visibly bent downwards when the pipe 'came in'! On a 9 $\frac{1}{2}$ in. x 12 in. reworked Steegens propeller it revs to 21,000 r.p.m. in the air, but it is calculated to have a potential of 23,000 - the glow plug being the present limiting factor. Already recording times of 193.7 m.p.h. the magic '200' must be obtainable as soon as a plug can be found which will maintain its seal at the higher speeds.

The resonant pipe that he and his team mate Jerry Roselle have developed is turned down from solid stock, the two cones being joined by epoxy resin. An interesting feature of their pipe, apart from the 'flat' centre piece - presumably necessitated by the use of nitro fuels - is the threaded header pipe, which enables fine adjustment of this critical portion to be made. The fuels used have increased from 40 to 50% nitro methane content over the past year, and as such are still relatively mild. Until recently soya-bean oil was used, being less prone to varnish formation than castor oil, but now one of the synthetic 'plastic' oils (*not* Ucon) is employed with the percentage being as low as 12 $\frac{1}{2}$ %.

The results obtained from his engines have been so encouraging that Jack is seriously considering marketing them on a commercial basis. An initial batch of one hundred 60/65's are planned, provided that they can be made at a reasonably economic price and a few of these would be distributed to top flyers in control-line and radio control spheres to gauge their reaction - plus of course attendant publicity should any new records be obtained. Also envisaged are a range of 29's and 40's sharing a common crankcase.

The biggest of them all - the Frye .65, seen here without the fuel switch. The carburettor on this engine differs in detail from his others. Note how the tank filling vent is sealed by a 'blind nipple' on the test stand. The tuned pipe, which is reckoned to account for at least 25% of the power, is sealed to the exhaust port with an 'O' ring. Rossi front and rear ends are used, as well as a Rossi crankshaft, although the motor is based on a T.W.A. - Clear?

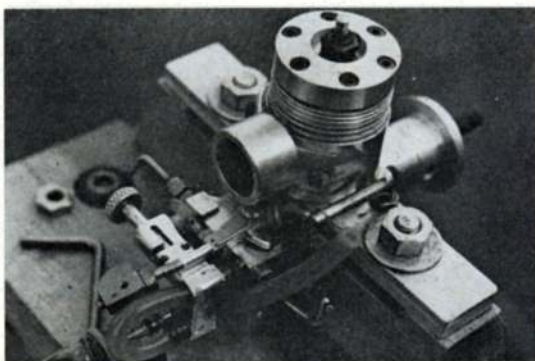
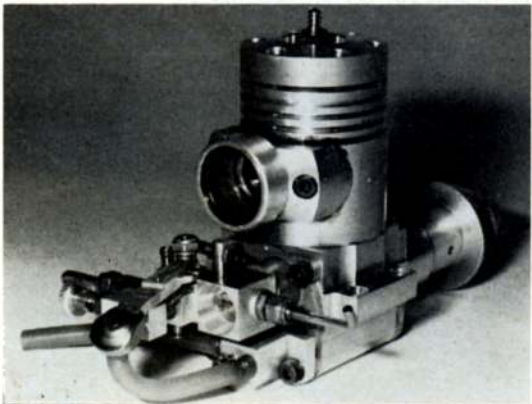
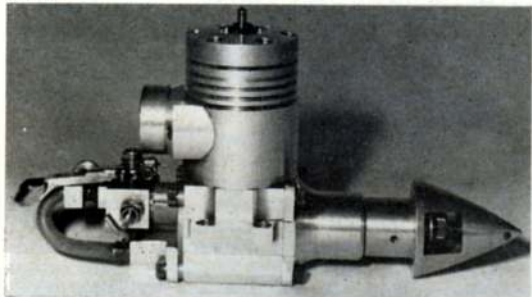


Jack Frye hand starts his .65 powered model while Jerry Roselle holds. Hand starting is used to avoid loading the bearings on this precisely set-up motor.

The Roselle/Frye flying procedure is particularly interesting as it reflects their methodical and painstaking approach to the subject. Firstly, their reworked flying propellor is fitted to a Super Tigre 60 of known performance, and the propeller used only if the engine peaks out at the correct r.p.m.

The model is fuelled whilst completely assembled. To achieve this the cut-off is opened, the pen bladder tank filled, the cut-off snapped shut again and the filler pipe sealed by fitting over a blind nipple. Any air in the tank is expelled by tilting the model downwards and briefly opening the cut-off, thus allowing it

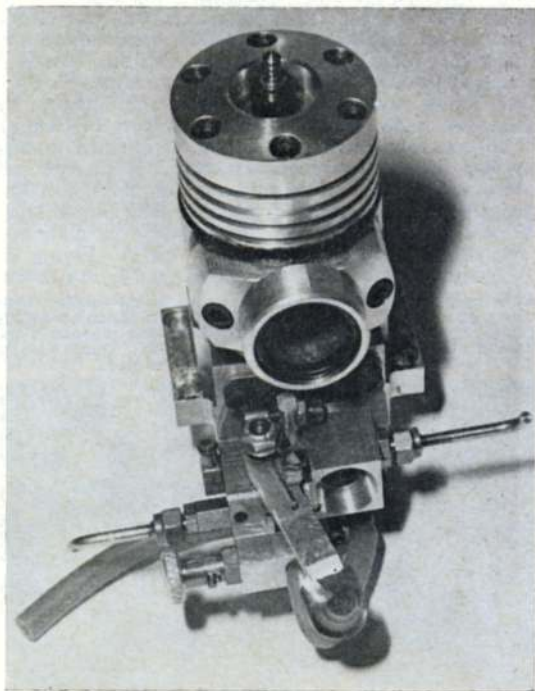
Below, two views of Jack Frye's engine, using K. & B. crankshaft and Super Tigre backplate. The bulk of the motor is obvious, accounting for its relatively high weight. Note the attention to detail, such as the wiring on of all the fuel pipes, etc., and the machining of the bob-weight on the fuel switch to achieve the correct opening of the high speed needle.



Another development, Frye's 2.5 c.c. speed motor on test, but no performance figures yet available. A scaled-down version of his larger engine, the fuel system is identical in principle, although at this stage relatively crude.

to escape via the venturi. Knowing that the pipe 'comes in' at around 120 m.p.h., the centrifugal fuel switch is set to open the high speed jet at this speed. This is done by calculating the centrifugal force acting on the bob-weight of the switch at this speed, and checking the spring tension with a spring balance. The flying prop is then fitted, and the low speed needle adjusted until the engine runs smoothly. Next a test prop is fitted, which is known to reproduce the air r.p.m. on the ground - this is a large diameter paddle-blade type of prop cut down to size. Using this airscrew, the high speed needle is set - the slow speed jet still being open.

Rear view of Jack's motor reveals the fuel system. The knurled knob on the left is the fuel cut-off, and beyond it the low speed needle valve. On the right is the high speed needle. Note the spring loading of the centrifugal-force operated fuel switch.





Massively built, like his engines, Jack proudly displays his finely engineered .29 in the AEROMODELLER offices. The threaded leader pipe allows adjustment of this critical portion simply by loosening the knurled ring.

All of the above procedures take place *away from the contest circle*. When completed, the model is put away until the contest director calls the pair to the circle, where the motor is refuelled, hand started and the model released as quickly as possible. No 'final adjustments' are made, and no test flights flown – these being considered unnecessary, and judging by their consistent results, they can support this claim.

In complete contrast to Jack's engine, though bearing some resemblance externally, is Charlie and Mike Fitzpatrick's .29, built as it happens, to compensate for a large drop in speed of their Super Tigre 29 RV model caused by the increase in monoline wire diameter introduced by the A.M.A. Flying on .022 wire, they upped their speeds to 176 m.p.h. but now being widely used in the States is the unique test-stand designed by Charlie and Mike Fitzpatrick, and prevents the pipes from cracking – the partially hollow wooden block allows use of pen-bladder tank. Use of this stand enables electric or inertia starters to be used.



when the new rules made a .024 line mandatory, the speeds fell back to 171 m.p.h., with the additional (and unexpected) drawback that this extra drag overloaded the engine. This resulted in at least 80% of their flights ending over-lean due to the glow plug element burning out – and at the '69 Nationals this occurred on *all* their flights, despite which they secured second place.

Unusual for these days, their motor is not of the Schnürle type – in fact it appears to be based on a Super Tigre liner turned through 90° so that the bypass tunnel is to the front, and the exhaust meeting the current fashion of being rear-facing, making tuned pipe attachment easier. The lapped 'supercast' iron piston is another uncommon feature for a modern racing motor, but their own designed centrifugal fuel switch and use of high and low speed needles is in line with current thinking. Best time recorded to date (though unofficial) is 184 m.p.h. using a Top Flite 7 in. x 10½ in. prop.

The twins also point out the frequently erroneous comparisons between speeds obtained in Europe and the U.S.A. – these are very misleading unless the wire diameter is taken into account, and the A.M.A. insist on heavier gauge wire than most other national bodies. As an illustration of this line/speed ratio, from their own personal experience and observation they have tabulated the results as follows.

	Monoline	
5 c.c. (.29 cu. in.)	.018 dia. =	183 m.p.h. (60 ft. line)
Same engine	.022 dia. =	175 m.p.h.
Same aircraft	.024 dia. =	170 m.p.h. (Current A.M.A. size)

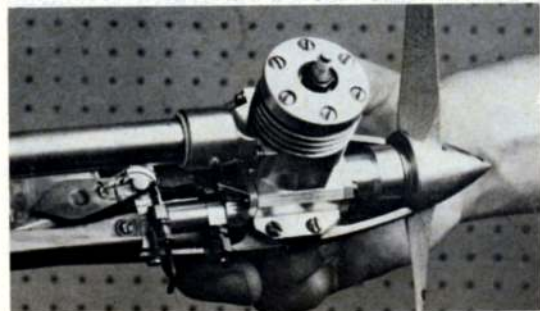
	Monoline	
10 c.c. (.60 cu. in.)	.024 dia. =	190 m.p.h. (70 ft. line)
Same engine	.028 dia. =	184 m.p.h.
Same aircraft	.031 dia. =	179 m.p.h. (Current A.M.A. size)

On this basis, the speed of 196 m.p.h. achieved by the Russian Kouznetsov in 1962 on a .016 line would represent approximately 167 m.p.h. on the current A.M.A. .031 line. Similarly Winfried Holle's recently recorded speed of 190 m.p.h. on .024 would fall to 179 m.p.h.

The current U.S. record held by Jack Frye, is 197.7 m.p.h. – flown on .031 monoline, 70 feet long.

In case of difficulty in visualising the thickness of these American wires, the nearest equivalent to their 29 class wire (.024) is 23 s.w.g., and for the 60's (.031) 21 s.w.g. As a comparison under our own S.M.A.E. rules, 26 s.w.g. and 23 s.w.g. respectively are *recommended* for monoline use, but any thickness which survives a 30 G pull test is permitted.

C. & M.'s Super Tigre based .29 reveals long induction tract and use of high and low speed needles. The spring strip tensioned bob-weight used to operate the high speed needle is a very neat, lightweight unit.





EDGAR T. WESTBURY

TWO APPRECIATIONS OF THE CREATOR OF MODEL AERO ENGINES AS WE KNOW THEM TODAY

His 5 c.c. 'Kestrel' was the first small engine to have a rotary induction valve.

'During World War II he developed a number of small petrol driven generators for use in the armed forces, and one of these, driven by a 15 c.c. 4-stroke engine, provided 50 watts and would run for eighteen hours on two pints of fuel.

'Much is owed to Edgar Westbury by all concerned with model engineering. His great capacity for successful design of all forms of power plant, combined with consummate skill in the use of hand and machine tools made him the most eminent model engineer of his time. His prolific writings in the model engineering press will remain as the source of sound technical information for many generations of future model engineers. There are many people who have benefited from his kindly advice and those who have wisely followed it have achieved success. Edgar also gave credit where it was due, even to his closest rival. His wit was greatly appreciated particularly during after dinner speeches, when many an anecdote produced a humorously burning ear.' - Alwyn Greenhalgh

And from Col. Bowden.

'It was with deep and genuine regret that I heard of the sad death of my old friend and early collaborator Edgar T. Westbury, or "Edgar T", as I used to know him many years ago when I first met him. In those days around the early Thirties I had an ambition to make a petrol engine model aircraft fly with reliability and stability which had not genuinely been achieved up to that time. Edgar T. Westbury was the top line "great name" in model i.c. engine development, and a trend setter with his writings in the "Model Engineer". He had produced a noted and unique, small for the times, 50 c.c. petrol motor with flywheel

ignition for Flight Lieut. Comper's trial model aircraft at the R.A.F. Training Establishment where Westbury was an instructor.

'I visited him at Halton, for I had not met the great man before, and after due discussion he decided to produce for me a modified 28 c.c. Wall two stroke motor with a suitable ignition system, and switch gear for throttle control after a set period, weighing around 2½ lb. with a noble propeller of 24 in. diameter, which I have today and which still runs splendidly. Whilst he worked on the motor, I got down to the stable aircraft side of the project in the form of the biplane 'Kanga'. The combined exercise captured an officially observed record at Fairey's Great West Aerodrome.

'Under Westbury's mechanical genius it was a great event for a model aero engine to run with useful power for more than a few seconds. *Kanga* flew with great reliability, taking off long grass without argument whenever required to do so, and a film was made of her by Pathé Gazette rising from Hounslow Heath. Our combined success led to a desire for a smaller aircraft and the necessary engine to power it, and so "Edgar T" produced for my new model aircraft of a mere 7 ft. span (a baby in those days) his famous "Atom Minor", which, when subsequently developed a little, brought me a series of long record flights "out of sight" into the clouds, and a close collaboration and friendship between Edgar T. and myself. There is no doubt in my mind that his Atom Minor set the scene for smaller aircraft motors in the country, and also great activity in model power driven aircraft in those early and exciting pioneer days. With one of those engines suitably hotted up I later managed to capture the "C" Class model hydroplane record with my very light streamlined balsa hull "*Jildi-Junior*". Westbury subsequently broke this with a new motor and a replica of my hull then called '*Golly*', which was another happy collaboration, but on water this time.

'Westbury was a genuine constructive enthusiast, and absolutely straight down-to-earth with no humbug whatsoever, and therefore a fine friend to have. Unhappily for me I have seen little of him in recent years and all that remains are some of his splendid engines and very happy memories of a very nice man.' -

Claude Bowden.

'THE PASSING of Edgar T. Westbury leaves an inestimable void amongst his many friends, and in the Model Engineering fraternity particularly. It ends an era in which he was the prominent figure in the acceptance, design and operation of the small internal combustion engine. In addition, his work with other forms of prime mover was equally profound.

'Edgar Westbury designed and built his first small petrol engine whilst serving in the Royal Navy in the First World War, but he was much better known amongst aeromodellists as the instigator in the United Kingdom of the power driven model aircraft as we know it today.

'In the late 1920s, whilst an instructor at R.A.F. Cranwell and later Halton, he was designing an engine of 15 c.c. capacity which later became known as the *Atom Minor*. Its weight, including propeller, was 15½ oz. and it produced ½ h.p. at 4,500 r.p.m.

'Despite much opposition from prominent aeromodellists of the day, in 1932 Edgar co-operated with C. E. Bowden who built an airframe to carry an engine. As his Atom Minor engine was not quite ready, he modified one built by his great friend Elmer Wall. This engine was fitted in the biplane '*Kanga*' and on its first flight it amply justified Edgar Westbury's confidence and foresight. Later in 1932 the Atom Minor was installed in C. E. Bowden's '*Blue Dragon*' and it was most successful. A later version of 6 c.c. capacity was also very popular and on which much of Edgar's work on small magnetos was conducted.



Another challenge

AIRCRAFT DESCRIBED No. 195

MORANE SAULNIER 35 EP₂

described & drawn
by F. Pawlowicz

THE MONOPLANE Morane - Saulnier 35 EP-² (école premier two-seat), primary trainer, was built at the French Works *Aeroplanes Morane - Saulnier* at Villacoublay near Paris, and was the last design of this configuration. Many different versions of the Parasol had given considerable operational service during the First World War. It was a monoplane of typical contemporary construction and the wing was braced with steel rigging wires. MS-35's were used between 1922 and 1932 in many European countries as a training and liaison aircraft combining all the good flying characteristics which were required for this type of aircraft. It was built entirely from wood, with the exception of the ailerons and tailplane, which were of welded steel tube.

The wing, with a thin undercambered section, had two main spruce spars connected together with steel tube struts braced with diagonal wires. The ribs were basically made of birch plywood and were interspaced with riblets forward of the front spar.

The fuselage was of a circular section changing aft of the cockpit to a rectangular one. Its structure was built up around four spruce longerons, connected with bracing wires, forming a space truss. The undercarriage legs were made of profiled steel tubes, filled-in with hardwood. Each wheel had its individual axle, the two pivoted at the 'V' strut attachment. The axles were attached to the undercarriage legs with bungee cord to provide the necessary springing—on compression the bungee cord stretched, thus allowing the axles to pivot upwards and absorb the shock.

The tail skid was also made of wood but had a spring leaf and steel foot connected to its tip. The tail skid shock absorber was of rubber bungee, and the whole unit was coupled to the rudder to provide better ground manoeuvring of the aircraft. The MS-35 was equipped with a French made Le Rhône 80 HP 9-cylinder air-cooled rotary engine (with fixed crankshaft and rotating cylinders) weighing about 248 lb. This engine was developed before 1912 by the Séguin brothers of Paris, and its different variants were successfully used after W.W.I. The Levasseur type airscrew of 7 ft. 8 in. diameter and 7 ft. 3 in. pitch was made of laminated wood. As a training aircraft the MS-35 was equipped with instruments in the trainee pilot's cockpit only, which were placed so that they were visible through a hole cut in the bulkhead in front of the instructor.




The Morane-Saulnier Works were founded by one of the leading pioneers of aeronautics Leon Morane in 1911. In a short period of time they grew into a big aircraft production plant. L. Morane also held two world records; the speed course of 66.19 m.p.h. at Reims, France (on 10th July 1910) and the altitude of 3.46 miles (on 3rd September 1910) at Deauville. Its name was perpetuated right up to Nationalisation of the French aero industry and is still well remembered for the outstanding designs, of which the MS-35 is perhaps the least appreciated.

Reprints of this feature plus 1/24th scale dyeline prints of the drawing are available as Plan Pack JH 2908, price 5/- plus 6d. post, from AERO-MODELLER PLANS SERVICE, 13-35 Bridge Street, Hemel Hempstead, Herts.

Top: The all-green fabric and natural finish dural panels of the parasol winged trainer make a bold colour contrast. Right, above is an MS 35 used as a liaison aircraft for the 6th Regt. at Krakow in 1925, and at right, a trainer of the same Regt. landing at Lwow.



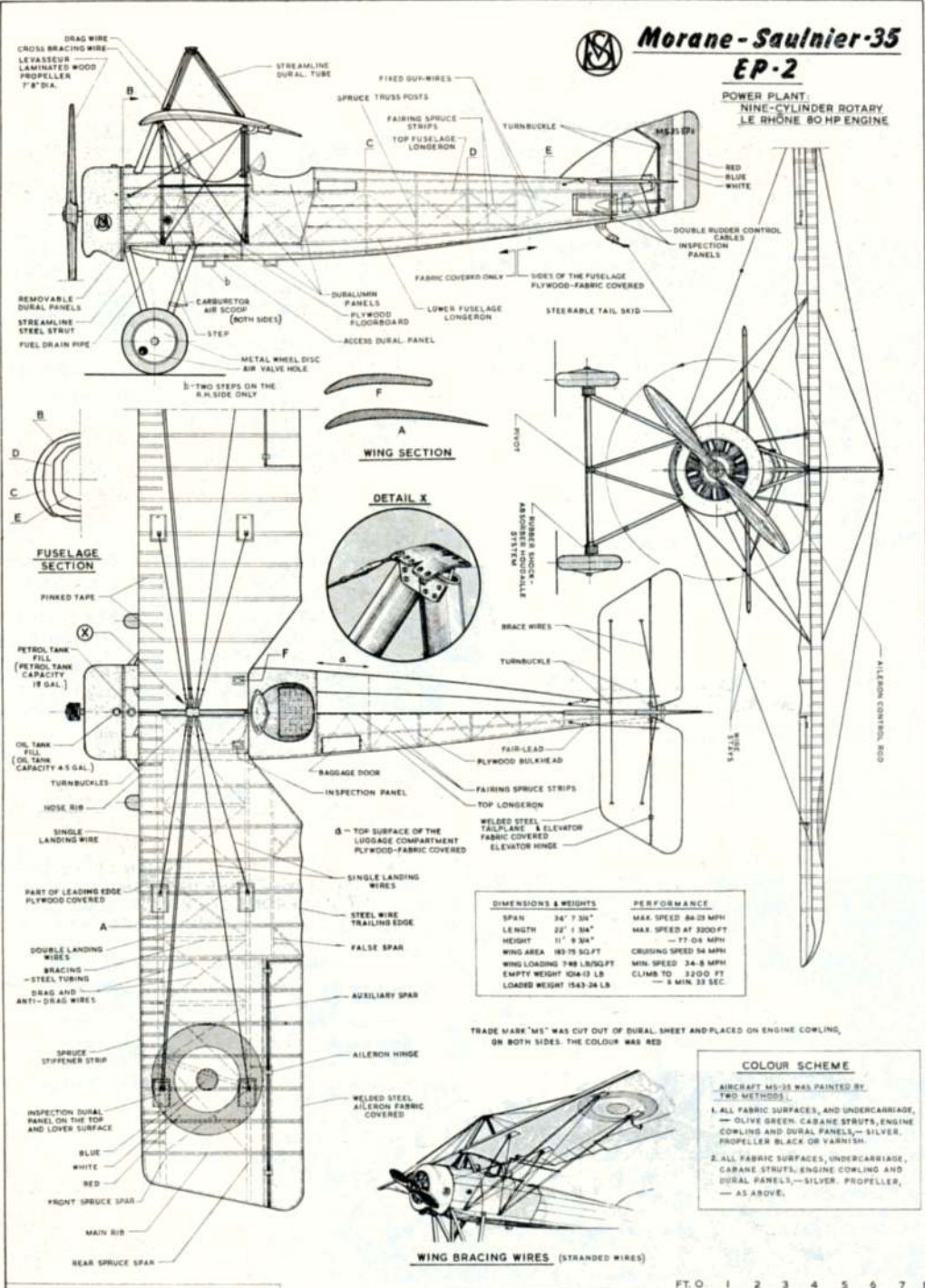
Challenge for the flying scale modeller



Morane-Saulnier-35

EP-2

POWER PLANT:
NINE-CYLINDER ROTARY
LE RHONE 80 HP ENGINE



DRAG WIRE

CROSS BRACING WIRE

LEVASSEUR LAMINATED WOOD PROPELLER 7" DIA.

STEERABLE DURAL TUBE

FIXED GUY-WIRES

SPRUCE TRUSS POSTS

FAIRING SPRUCE STRIPS

TOP FUSELAGE LONGERON

TURNBUCKLE

MS35 EP1

REMOVABLE DURAL PANELS

STREAMLINE STEEL STRUT

FUEL DRAIN PIPE

CARBURETOR AIR SCOOP (BOTH SIDES)

STEP

METAL WHEEL DISC

AIR VALVE HOLE

DURALUMIN PANELS

PLYWOOD FLOORBOARD

ACCESS DURAL PANEL

FABRIC COVERED ONLY

SIDES OF THE FUSELAGE PLYWOOD-FABRIC COVERED

LOWER FUSELAGE LONGERON

STEERABLE TAIL SKID

DOUBLE RUDDER CONTROL CABLES

INSPECTION PANELS

RED

BLUE

WHITE

WING SECTION

DETAIL X

FUSELAGE SECTION

PINKED TAPE

PETROL TANK FILL (PETROL TANK CAPACITY 19 GAL.)

OIL TANK FILL (OIL TANK CAPACITY 4.5 GAL.)

TURNBUCKLES

NOSE RIB

SINGLE LANDING WIRE

PART OF LEADING EDGE PLYWOOD COVERED

DOUBLE LANDING WIRES

BRACINGS - STEEL TUBING

DRAG AND ANTI-DRAG WIRES

SPRUCE STIFFENER STRIP

INSPECTION DURAL PANEL ON THE TOP AND LOWER SURFACE

BLUE

WHITE

RED

FRONT SPRUCE SPAR

MAIN RIB

REAR SPRUCE SPAR

WELDED STEEL ALLECON FABRIC COVERED

WELDED STEEL TAILPLANE & ELEVATOR FABRIC COVERED

ELEVATOR HINGE

FAIR-LEAD

PLYWOOD BULKHEAD

FAIRING SPRUCE STRIPS

TOP LONGERON

INSPECTION PANEL

RAIDAGE DOOR

BRACE WIRES

TURNBUCKLE

NUMBER SOCKS - PINNACLES

LOAMY

ALLECON CONTROL ROD

DIMENSIONS & WEIGHTS	PERFORMANCE
SPAN 34' 7 3/4"	MAX. SPEED 84.03 MPH
LENGTH 22' 9 3/4"	MAX. SPEED AT 3200 FT
HEIGHT 11' 9 3/4"	— 77.06 MPH
WING AREA 183.75 SQ. FT.	CRUISING SPEED 54 MPH
WING LOADING 748 LBS/SQ. FT.	MIN. SPEED 24.8 MPH
EMPTY WEIGHT 1041.3 LB.	CLIMB TO 3200 FT
LOADED WEIGHT 1543.24 LB.	— 8 MIN. 37 SEC.

COLOUR SCHEME

AIRCRAFT MS-35 WAS PAINTED BY TWO METHODS:

1. ALL FABRIC SURFACES, AND UNDERCARRIAGE, — OLIVE GREEN; CABANE STRUTS, ENGINE COWLING AND DURAL PANELS, — SILVER; PROPELLER BLACK OR VARNISH.
2. ALL FABRIC SURFACES, UNDERCARRIAGE, CABANE STRUTS, ENGINE COWLING AND DURAL PANELS, — SILVER; PROPELLER, — AS ABOVE.

WING BRACING WIRES (STRANDED WIRES)

THIS DRAWING IS BASED ON INSTRUCTION I.B.T. No. 42/1924

DRAWN BY F. FRAWLOWICZ - MELBOURNE

FT. 0 1 2 3 4 5 6 7 8

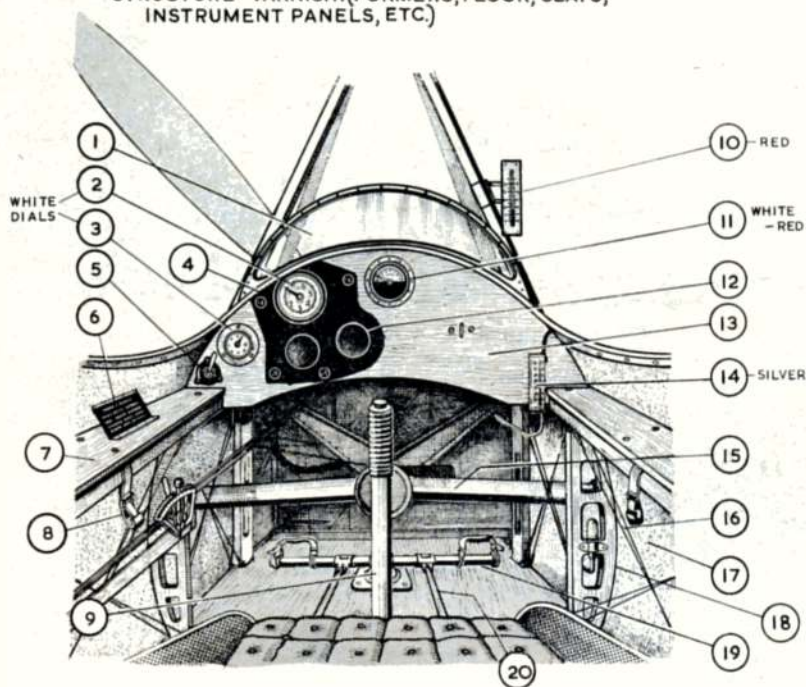
This feature plus
outline prints of
are available as
2908, price 5/-
st. from AERO-
PLANS SERVICE,
Street, Hemel
oad, Herts.



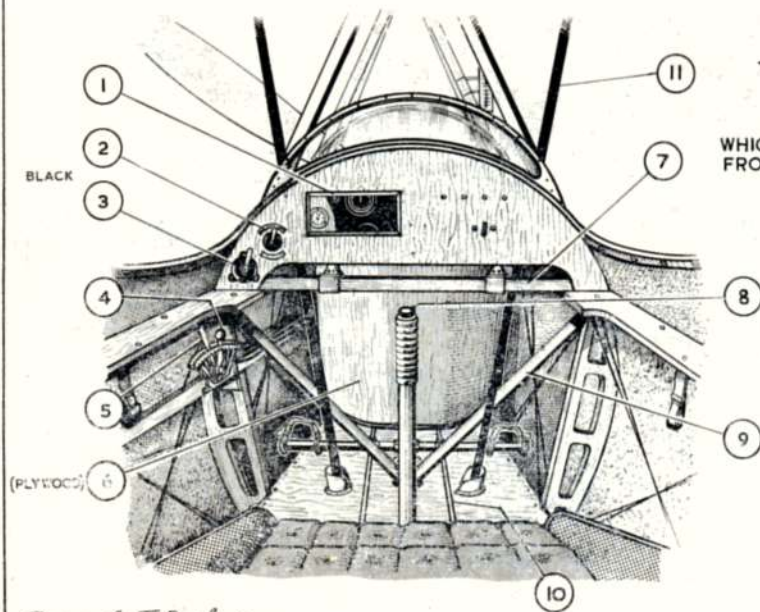
MORANE - SAULNIER - 35 EP2

INSIDE - ALL ELEMENTS OF FUSELAGE WOODEN STRUCTURE - VARNISH. (FORMERS, FLOOR, SEATS, INSTRUMENT PANELS, ETC.)

FRONT COCKPIT



1. PLEXI WINDSHIELD
2. ALTIMETER
3. TACHOMETER
4. EBONY PANEL (BLACK)
5. IGNITION SWITCH
6. INSTRUCTION PLATE (BLACK)
7. WOODEN BEARING
8. SAFETY STRAP HOLDER
9. CONTROL STICK
10. INCIDENCE INDICATOR
11. FUEL GAUGE
12. TWO HOLES FOR OPTIONAL INSTRUMENTS
13. PLYWOOD INSTRUMENT PANEL
14. OIL INDICATOR
15. CARBURETOR AIR PIPES
16. GUY WIRES
17. DURAL PANEL
18. WOODEN FORMER
19. RUDDER BAR
20. RUDDER BAR CONNECTION CABLES



REAR COCKPIT

1. AN OPENING THROUGH WHICH THE INSTRUMENT PANEL IN FRONT COCKPIT CAN BE SEEN DURING SOLO FLIGHT

2. CONTACT BREAKER
3. IGNITION SWITCH
4. THROTTLE
5. MIXTURE CONTROL
6. FRONT SEAT
7. SPRUCE TRUSS
8. PUSH BUTTON SWITCH
9. STEEL TUBING OF CONSTR.
10. RUDDER CONTROL CABLES
11. AILERON CONTROL ROD

Drawn by F. Rowland

Topical Twists

by Pylonius, illustrated by 'Sherry'



Holding On

Long before the first model aeroplane flew those first elephantine few feet, our old childhood companion, the kite, was soaring over London and Peking as happily as a Chinese Sputnik. But if you think kiting is just kid's stuff, then take a trip to one of London's famous parks to see grown-ups, yes grown-ups, kiting like mad over the wet rooftops. No chance of sonny having a go here, for the pull of half a mile of twine would be enough to take the little perisher into orbit.

One of the main satisfactions of high kite flying is the obstruction it causes to those blithering people who will fly noisy planes over the metropolis on a Sunday afternoon. And the blighters have the cheek to complain about it, although the kites were using the air space long before Bleriot had down on his chin, let alone down on his elevator.

Skin-Heads

Talking of not-so-little perishers, the most sought-after people in this swinging age are the teenagers, and I don't necessarily mean the ones in the mini-skirts. Everywhere you turn there are the do-gooders of this world clamouring to get the under 20s out of their coffee bars, discotheques and youth clubs, and on to the flying field.

One reason an infusion of young blood is needed is that most of model flying going on these days is very much fortified by the over forties. Mostly, these flyers are from an earlier generation who have generally outlived their usefulness as domestic handymen and child minders and come back to the flying field for a last fling, as it were. Obviously this gallant *Dad's Air Force* can't go on for ever; if model flying is to have a future we must have more than a sprinkling of tousle heads among the grey and balding craniums. And this is why there is such a frantic scramble going on to extend model flying to the young in years as opposed to the young in heart.

Hobby Horses

Those of us not deeply imbued with the herd instinct like to get away from it all on our own desert island of a flying field. But what do we meet up against there? Why, the other sort of herd: the cud chewing kind. What annoys me particularly is the way the mass always gravitates towards you; never in the other direction. You never know when its safe to fly; always on the horns of a dilemma.

Horses have much the same attraction for model flyers; both the mounted and unmounted variety. I was just about to launch my model on the local common the other week when I found myself confronted by a horse and rider doing a bit of dressage. In no time at all I was surrounded by whole schools of equestria, so I moved over the common a bit only to be charged at by a sort of Steptoe nag—fortunately a C/L type which was pulled up short on its tethering line. There's something in model flying that brings out the beast . . .



'It's Smith. He's still fighting the Council over the club flying field.'

No Winding Up

If the model world is in the melting pot, then all I can say is that it is a long time melting. Ever since someone started winding up a rubber model with a hand drill the Jeremiads have been foretelling doom for any flying objects under eight-foot wingspan, including the birds and the bees. They had a field day when the first wing-on-a-string model gave it's handler a touch of the swivelling collywobblers. This glorified toy, they warned, would put paid to all that tiresome old chuck-it-and-run flying, quite apart from the all too evident fact that the way things were going on the bricks and mortar front you would be lucky to find room enough to give pussy a few wing-overs, let alone the elbow room for a chuck glider.

When Radio came in they wailed louder than a four-minute warning. In fact, the finger was now truly on the button. Not only was free flight as dead as the Dodo, but every other form of model life soon would be. King of skies would be the reddi-made plastic radio toy; the modern equivalent of the Edwardian kite. And certainly the true modeller would rather be dead than fly one of these over-the-counter contraptions. In fact, the way most people fly then it could be a means of achieving that very end.

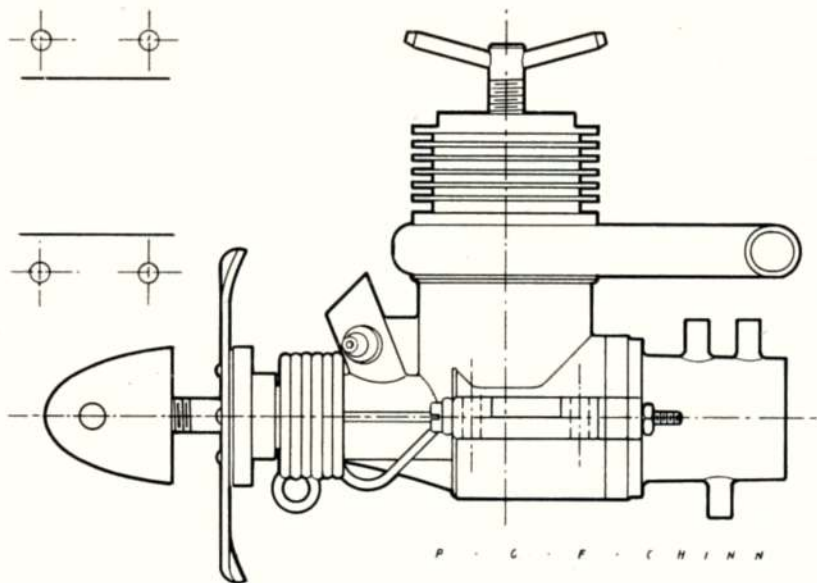
True, a lot of horrible things have happened in the model world since the A-frame pusher posed the first real threat to the security of the stove pipe hat. Everything has got wilder and noisier—particularly the model flyers. I have never quite believed in the model doomsday machine, but the nearest I got to a feeling of desperation was when I saw a model flyer walk on to the flying field in a boiler suit—and he wasn't a chinaman. Up to that time my idea of model flying was a pleasant means of keeping out of the way while the Sunday dinner was being cooked—way back in those days before do-it-yourself was invented. Now I could see the mechanised forces of flying field destruction really meant business. If there was any cooking in the new set up it was the cooking of our goose. Even so, in spite of all the omens of doom the gentler arts of aeronauting have shown a tenacity for survival that any nine-life moggy might well envy.

Considering the public attitude, which has generally regarded the model plane as very much a nursery toy, and even now only gives a grudging acceptance to the more rampagious sort of radio model, its a wonder that anyone with a flying machine less dramatic than a multi pylon racer would dare venture on to any open patch of ground. If, then, he continues to court public ignominy with his elastic band model or glider on a string, then the aboriginal model flyer is a much more enduring proposition than the pundits would have us believe.

ENGINE TEST

by Peter Chinn

D. C. SABRE



OVER the past few years, there has been a sharp decline in the number of diesels sold on the U.K. market, due, largely, to the vastly increased popularity of radio-control and the consequent trend towards the throttle-equipped glowplug engines more appropriate to this branch of the hobby. Nevertheless, there remains a steady demand, particularly among juniors, for low-priced diesels of up to 1.5 c.c. capacity suitable for beginner-type control-line and free-flight models. With the recent withdrawal from production of the M.E. and A.M. diesels, this will obviously focus greater attention on the remaining engines obtainable in this group.

Whereas the majority of glowplug engines sold in the U.K. are imported, the reverse is the case with diesels, and the bulk of these come from the Davies-Charlton company in the Isle of Man who, in addition to their own 'D-C Quickstart' range, also make the well-known 'Frog' engines for the Lines Bros. organisation. The present Quickstart line numbers four diesels (in watercooled marine as well as air-cooled versions) plus one glowplug motor, all

between $\frac{1}{2}$ c.c. and $1\frac{1}{2}$ c.c. piston displacement. For our report this month, we have chosen the largest of these, the 1.49 c.c. Sabre model.

This engine has the distinction of being the lowest priced 1.5 c.c. diesel on the market and has also enjoyed one of the longest production runs of any British engine to date. It first appeared nearly 15 years ago as the *Allbon Sabre*, having been designed by Alan Allbon, whose Allbon Engineering Company Ltd. manufactured many fine small diesel motors in the early fifties.

The Sabre has changed very little over the years and is of very simple construction. The body of the motor is a pressure diecasting in LM.2 aluminium alloy and comprises the crankcase, lower cylinder housing and crankshaft bearing. It extends upwards to just above the level of the exhaust ports, where it is widened so that the flange on the otherwise plain cylinder liner drops down inside until arrested by an annular seating in the casting. The finned cylinder jacket, which has an external thread below its bottom fin, is loosely fitted over the cylinder and screws into the top of the crankcase so that its lower edge clamps the liner in place at the flange.

The crankshaft runs directly in the crankcase material and uses a plain, non-counterbalanced crank disc. The back end of the crankcase is sealed by a diecast backplate which is secured by nuts on to two long 6 BA screws passing through the beam mounting lugs. This backplate is very deep so that, despite the fact that it is held at only two points, it is sufficiently rigid to resist any tendency to distort and cause leakage.

Cylinder porting is via radial slits, with a very long exhaust period (approximately 170 degrees of crank angle) and very short transfer period (approx. 90 deg.). A flat topped piston is used and is coupled to the crankpin by a forged high duty aluminium alloy conrod. The piston is an unusually hefty affair, almost solid, in fact, with a skirt and crown approximately $\frac{1}{4}$ in. thick. This rather disagrees with theory about keeping reciprocating parts as light as possible, but has the advantage of offering increased bearing area for the gudgeon-pin, improved crankcase depression and better heat conductivity with no risk of distortion. This latter point may be of some value in this particular design in view of the fact that heat transference to the cooling fins is bound to be



rather poor due to the cylinder jacket being in intimate contact with the cylinder only at the exhaust flange and via the compression screw.

All aircraft type Sabres produced during the past few years have been equipped with the D-C Quickstart starting device. This consists of a 17 swg wire coil spring surrounding the crankcase nose and anchored by the left hand crankcase screw. The free end of the spring is formed into a loop to engage a dural cam behind the prop.

The crankcase screws are also used to retain the standard fuel tank with which the engine is supplied. This is of a translucent plastic type and, giving about half-a-minute's running time, is adequate for free-flight work. Obviously, for control-line, a larger, separate tank is required.

A desirable yet inexpensive extra for the Sabre is the Quickstart silencer/manifold. This modest device consists of a U-shaped aluminium tube, suitably cut away at the centre, where it is wrapped around the upper part of the engine casting to cover the two exhaust outlets. It is secured with a 6 BA screw and nut and the two tailpipes thus formed are packed with steel wool to form absorption type silencers. If preferred, the unit can be utilized, instead, as a manifold to which extended tailpipes can be added.

This silencer was used in the course of our tests and its effect on power output is illustrated in the performance graph. The degree of power loss caused is quite modest and applies to the silencer in clean condition and not too densely packed. It is well worthwhile to occasionally remove old packing (in which oil will tend to congeal if the engine is put aside for a time) and to clean and lightly repack the outlets with fresh steel wool.

Typical prop rpm achieved with the Sabre when fitted with the silencer, included 6700 rpm on a 10x3½ Top-Flite wood prop, 7300 rpm on a 9x4 Keilcraft nylon, 7700 rpm on an 8x6 PAW Trucut wood, 9600 on an 8x4 Top-Flite nylon, 9700 on an 8x4 PAW Trucut wood, 9800 on a 7x5 PAW Trucut wood, 10,600 on a 7x4 Tornado nylon and 11,800 on a 7x3 PAW Trucut wood. Despite the Sabre's heavy piston and lack of counterbalancing, its vibration level on these props was not significantly greater than for the average 1.5 c.c. diesel.

The engine was easy to start both with and without the aid of the starter spring. It was helpful to prime the engine (directly into the exhaust port when the silencer was not used) for a first start from cold but choking the intake for one or two flicks were adequate for an immediate warm restart. Both con-

trols were easy to adjust and non-critical. If the engine was underpropped (e.g. 7x3 or 7x4) there was a tendency, on our test engine, for the compression control to run back, and starting was also less pleasant. However, on the most useful prop sizes (e.g. 8x4, 8x5, 8x6, 9x4) handling and running qualities were good.

The Sabre is no record-breaker performance-wise but has adequate power for the type of models for which it is intended, is easy to handle, robustly constructed and very reasonably priced.

Power/Weight Ratio (as tested):

0.37 bhp/lb (with silencer)

0.46 bhp/lb (less silencer)

Specific Output (as tested):

59 bhp/litre (with silencer)

68 bhp/litre (less silencer)

SPECIFICATION

Type: Single-cylinder, air-cooled, reverse-flow scavenged two-stroke cycle, compression ignition. Crankshaft type rotary-valve induction. Plain bearings.

Bore: 0.525 in.

Stroke: 0.420 in.

Swept Volume: 0.0909 cu. in. = 1.489 c.c.

Stroke/Bore Ratio: 0.800 : 1

Checked Weights:

92 grammes - 3.24 oz. (bare engine).

106 grammes - 3.74 oz. (with starter assembly, fuel tank and silencer).

General Structural Data

Pressure diecast LM.2 alloy crankcase and unbushed main bearing unit with detachable rear cover. Nickel-chromium steel crankshaft with disc web, 9/32 in. dia. journal, 5/32 in. dia. crankpin and 9/64 in. bore gas passage. Hardened steel cylinder, flanged at exhaust belt and located by annular seating in crankcase. Machined aluminium alloy finned cooling jacket, colour anodised red and screwed into crankcase to secure cylinder assembly. Lapped Meehanite piston with flat crown and ¼ in. dia. solid gudgeon-pin. Forged RR.56 alloy connecting-rod. Machined aluminium alloy prop driver fitted to taper on crankshaft. Machined aluminium alloy spinner-nut. 18 swg aluminium alloy starter pawl. 17 swg steel wire starter spring. Brass spraybar needle-valve assembly. Combined beam and two-point bulkhead mounting lugs. Detachable transparent fuel tank.

Optional extra

Absorption type silencer/manifold. (Weight: 5.3 grammes - 0.19 oz.)

TEST CONDITIONS

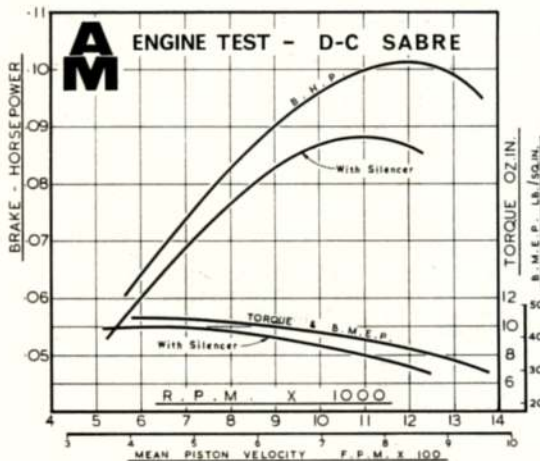
Running time prior to test: Approx. 2 hours.

Fuel used: 30 per cent ICI technical ether, 30 per cent Castrol 'R', 40 per cent kerosene, plus 2 per cent amyl-nitrate.

Air Temperature: 46 deg. F (8 deg. C)

Barometric Pressure: 29.90 in. Hg.

Silencer: Maker's 'D-C Quickstart' absorption type.





**A SPORTS FREE-FLIGHT
FOR .5-.8cc (.049cuins)
BY COLIN READ**

ISABEL

**Easy construction and doc
characteristics makes this**

OVER THE PAST 10 to 15 years the design of sports flying powered model aircraft has not changed to the extent of its big brother, the contest-type model. We utilise domestic items bought over the counter of any model shop, and indeed still use the well-tried 'box' fuselage type of construction which has been with us for so many years. *Isabel* was designed around items easily obtainable, and to suit the many engines in the 0.5-0.8 c.c. range, diesel or glow.

Construction is quite easy and straightforward, and is begun by cutting out all the fuselage sides and formers from good quality medium-hard balsa sheet. Do not select anything softer for the fuselage sides as with hard usage they may break. It should be mentioned here that careful selection of wood is very important, and this, combined with accurate construction, will result in a much longer 'life'. The designer's original model, and quite a few of his other designs published in *Aeromodeller*, have been around for up to eight years now, and still manage to look clean and in one piece.

Now bend to shape the 14 s.w.g. undercarriage wire, then bind it to former F3, cementing it well, and using two applications of cement. Formers F2 and F3 will be seen to have cut-outs for engine bearers to suit the D.C. Dart .5 c.c. diesel - other engines can be used but first check the width of the engine crankcase and vary the cut-outs to suit if necessary. The remaining formers may now be cut to size, noting the grain direction.

Mark the positions of the formers on the fuselage sides, then using a set square, cement formers F2-6 in position on one side. When dry, add the opposite fuselage side, checking for trueness. Next, cut the bearers to length and use an epoxy resin to cement in position. Join the sides together at the rear, then add the remaining formers (F7-11) checking the fuselage carefully for accuracy. Place on the drawing at regular intervals for checking the straightness. Glue the wing platform in position. Now drill the holes for mounting the engine, and insert the four 8 B.A. bolts. A piece of wire soldered between the slots of each pair of bolts will prevent them from turning. Add the fuel tank and upper cowling block followed by the cowl sides and F1. Sand to shape and then thoroughly fuel-proof the engine compartment. This is most important as one of the author's oldest designs, after some nine years of flying, completely folded its undercarriage despite its being bound and glued and really fitting tightly. Not enough fuel-proofer had been applied to the engine bay with the result that over the years the fuel seeped some 3 in.! Five or six coats of clear dope followed by two coats of fuel-proofer are ideal. Cover the top

and bottom of the fuselage with 1/16 in. sheet, cross-grained, sanding to a final smooth shape when dry. Add the ply tail mounting and 1/16 in. dowel for the retaining band.

Retain the wheels on the axles by using 6 B.A. washers, soldered in position. Any good quality wheels can be used but they must be rubber and not plastic. Fitting the spinner will greatly improve the appearance - sanding the cowling lines to match its contours.

Commence wing construction by making the right-hand wing panel first. Select from pre-shaped balsa the L.E. and T.E. and pin these and the 1/4 in. x 1/4 in. spar over the plan.

Cut out W1 and W10 templates from 1/16 in. ply, and, using the sandwich method, cut out all the ribs. Add the ribs, trimming them to length as necessary. Add the top spars and ply dihedral braces followed by all the 1/16 in. sheet gussets which will greatly increase the strength of the wing. When dry, remove from the board and build the other wing half in an identical manner, less, of course, the dihedral braces. When this has dried, assemble on a flat surface, checking that each tip has the same amount of dihedral, and glue the dihedral braces. When completely dry add the L.E., T.E. and gussets of the centre section, and cover the top and bottom with the 1/16 in. sheet.

Sand the completed structure to a smooth surface and lastly add soft 1/4 in. x 1/4 in. wing tips. Use a good soft balsa here and carve and sand to shape.

When you are satisfied with the finished wing, sand it again, this time with a really fine grade of sandpaper. To obtain the finishes that one sometimes dreams about - only hard work and lots of sanding will do it - all joints must be smooth, and no ridges or bumps.

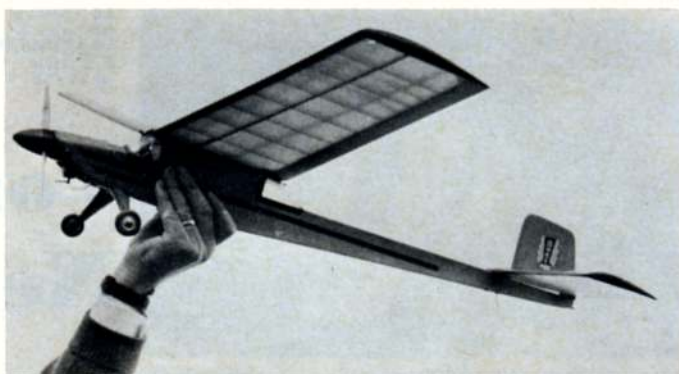
The tailplane is built flat on the building board in the same way as the wing. Sand the completed structure and add soft balsa tips, sanding to shape. Special attention must be made to the space between the ribs T1 as the fin slots in tight, but is not a force fit. Lastly cut out and sand the 3/32 in. sheet fin.

Before covering the model, assemble and check to ensure that all surfaces are true and free from bumps and the odd lumps of cement that can so easily happen!

Cover the entire model with lightweight tissue, and apply at least three coats of thin dope to seal the surface. Trim may be black tissue doped on - which gives a very pleasing effect without adding weight. The go-ahead modeller could dye his own lightweight Modelspan with Drummer or Dylon dyes to any of, say, 30 different colours!

HT DESIGN ENGINES

File flight an ideal first power model



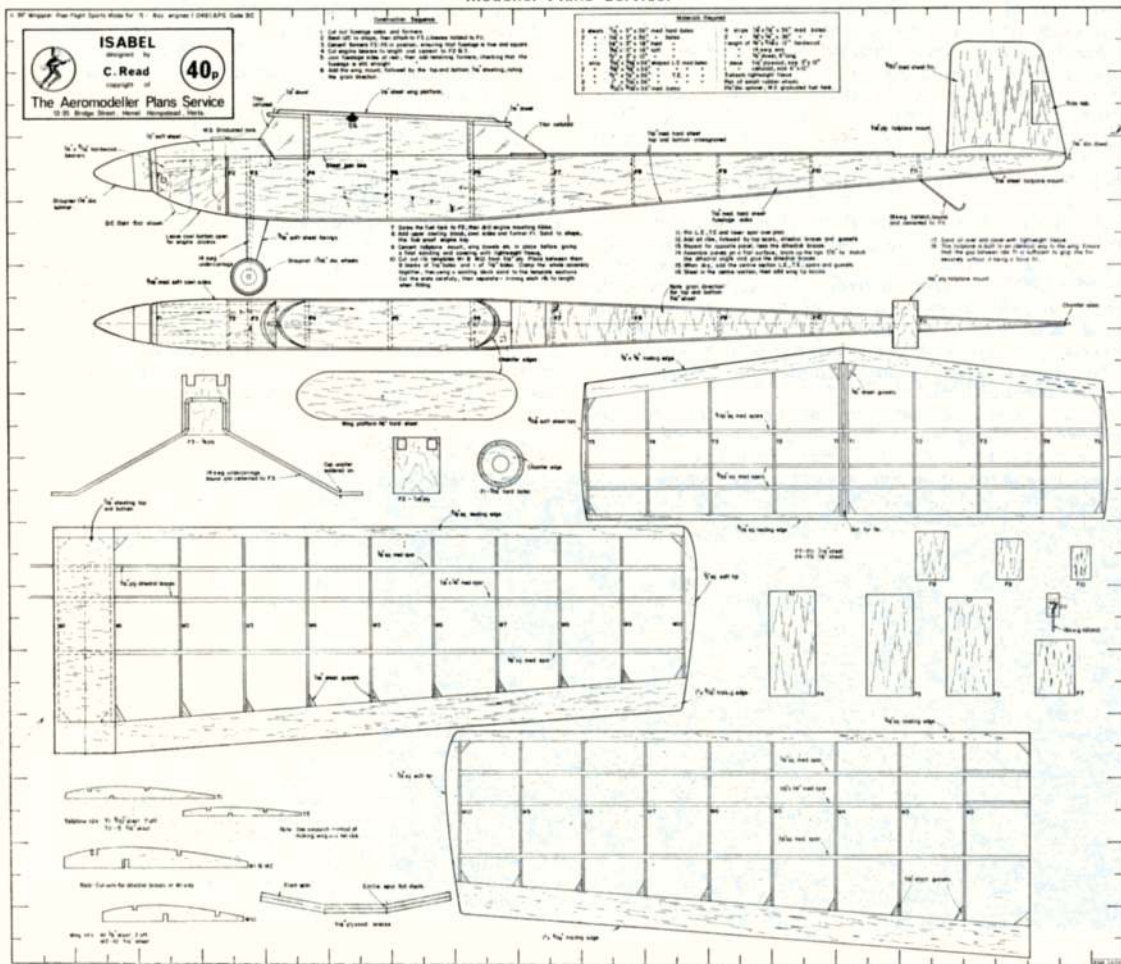
Now that the model is finished, add the pilot and thin celluloid windshields, plus the undercarriage fairings of scrap balsa sheet. The original used a Graupner pilot which was a little on the heavy side, but the head-and-shoulder type could be used. Woolworths is a wonderful place for such types and they only need a little trimming and painting.

It is far easier to leave these items until the model is finished as a 'tidy' cockpit appearance is well

worth while. Trim the windshield outline in black and you are ready for flying.

Check that the centre of gravity is in the position shown and test glide, adjusting rudder if required. A wide left turn under power, quite fast, is the correct flight pattern - a little right rudder offset was all that was needed on the original model, flying in all but the worst of weather.

Full size copies of this 1/6th scale reproduction are available as Plan No. FSP 1070 price 8/6d., incl. post from Aero-modeller Plans Service.





FOLLOWING REPORTS that several speed flyers were experiencing difficulties controlling their F.A.I. models on two lines, we received a letter from Basil Menges, well-known all-round (!) control-liner from South Africa, which we reprint below as it gives much useful advice.

We have been on the two-line system all along and have no trouble in grooving a model in the pylon. I have noticed at various competitions in South Africa that quite a number of modellers have this problem of 'overcontrol' in an otherwise stable model.

If a speed model is found to be oversensitive, the first thing to do is de-sensitise the handle. We fly on a handle with a line spacing of 2 in. Our control system in the model consists of a bellcrank gearing of 1 in. (pulley) with the pushrod 3/16 in. from the centre (see Aeromodeller, November '68, page 580). The control horn is 7/16 in. between centres (small Veco horn). This gearing gives enough movement of the elevator to fly a speed model under any conditions.

A number of modellers think that a sensitive control system will get them out of trouble when they get into an oscillation—it won't! The elevator on a speed model is merely a trim tab and has very little effect on full up when a speed job is on the downward part of an oscillation. I was surprised to see several 'top' speed flyers get into oscillations at the 1968 World Champs in Finland, and prang their models through this.

If a model gets into an oscillation this can be stopped by giving down control as soon as the model starts rising from the low side. Just a quick 'full down' movement straightens it out immediately. Most flyers try to give 'up' when the model dives, but this doesn't help. This applies to two-line or monoline systems.

As far as running around the pylon is concerned, this is not necessary on two lines, as the fastest speeds recorded so far are in the low 140s. Anyone seeing Nicklas Sebestyen in the pylon well know what I mean. In Helsinki he did 150 m.p.h. without running.

The idea is to set the pylon height at the level you would normally hold a handle to your chest, as in Team Racing. Get right behind the pylon with the handle in the yoke and keep it near your chest. That means you should not be more than 6 in. away from the pylon. This way you will not have to run around the pylon, but will be able to walk around it smoothly, and without disturbing the trim on a model, even if it is sensitive.

Hoping these points will help someone, as they have served me very well.

Ed Sweeney (editor of American Aircraft Modeler) fires up his purple radio-controlled 'Nobler'. The tail moment is lengthened, but flaps are connected to the elevators in true C/L style—with of course the addition of ailerons. Power is an O.S. 40 R/C, for a total weight of 5lbs.

Control-line News

Gieske on Stunt

An interesting article in the *A.M.A. Competition Newsletter* contains comments by Bob Gieske (a U.S. stunt team member in two C/L World Championships, as well as 1968 National winner) about the differences between A.M.A. and F.A.I. stunt model requirements. He finds that a model designed for A.M.A. contests is ideally suited to F.A.I. elimination trials, because the judges are American, and their interpretation of the F.A.I. pattern is likely to be close to the A.M.A. pattern which they are used to judging. (The main differences between the two sets of regulations is that the A.M.A. give appearance points, and that the points for the various manoeuvres are scored in a different manner—F.A.I. rules weighting them for difficulty by introducing a 'K' factor.)

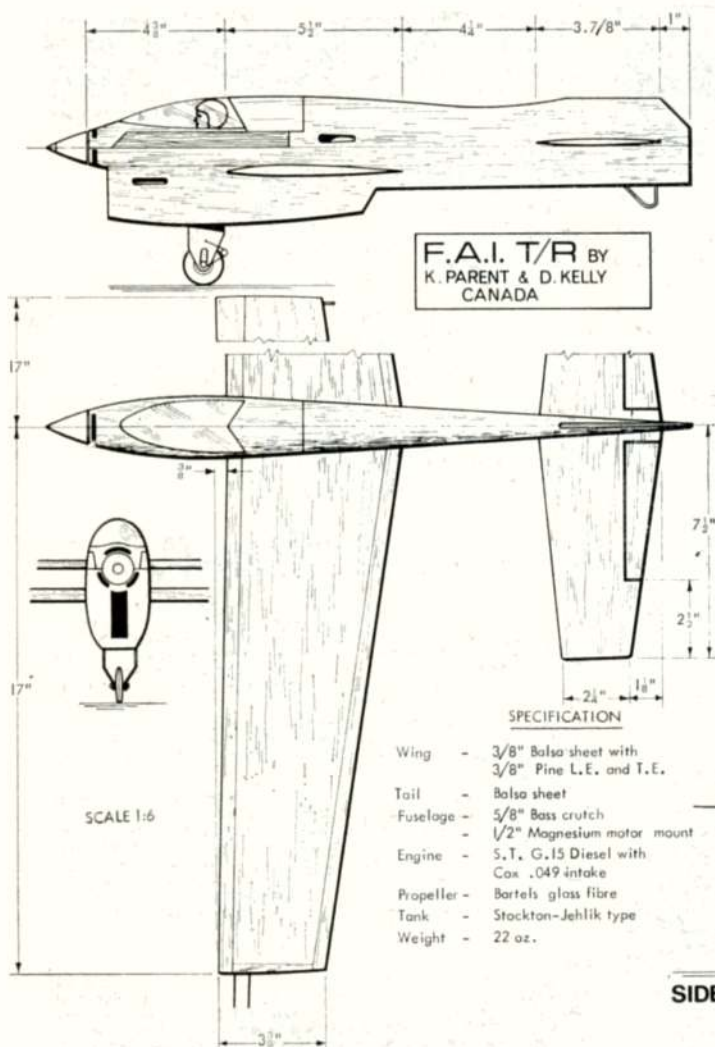
Apparently, American judges are rather lax over the five-foot radius corners required, preferring to see a smoother pattern at the expense of sticking rigidly to the rule-book, but this situation does not exist in Europe, where the radius is closely watched, as is the 45° altitude specification.

This is illustrated by the way Bob used his regular A.M.A. model to gain a team position, and then built a new, more responsive model for the World Championships. He flew this model at the Nationals (which he won) and a typical comment was 'your ship is turning tighter than the five-foot radius'—this despite the fact that he was letting-off on the corners!

Griffon III explained

Since publishing a sketch of Regine Curt's unusual team racer (see February *Aeromodeller*) we have received a letter from her explaining some of the features of her model (see also *Readers' Letters* in this issue)—a brief translation of which is as follows:

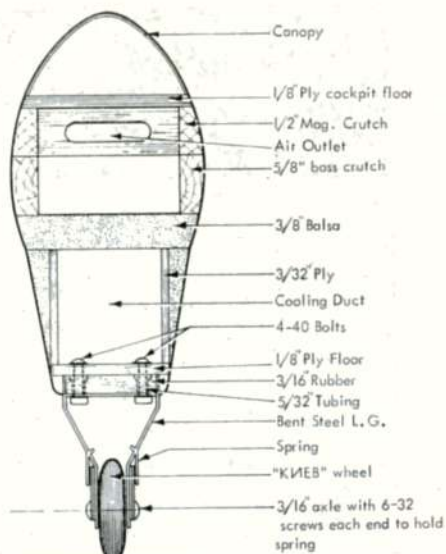
My partner Jacques Valery had been flying team racers for some time before we decided to form a team. The 'Griffon' which opens up a new era, is a series combining a number of practical advantages, including quick access to the bellcrank, push rod and the undercarriage (which may be raked backwards or forwards). The anhedral has many useful features, making re-fuelling easier as the fuselage is kept more upright when the lines are on the ground—this also relieves the worry of raising the tip off the ground during pitstops, which can result in disqualification. Anhedral makes the model easy to identify in the air. There are many new developments coming, and although my partner is also occupied flying in the Wakefield class, we will continue to practise flying and developing the racers.



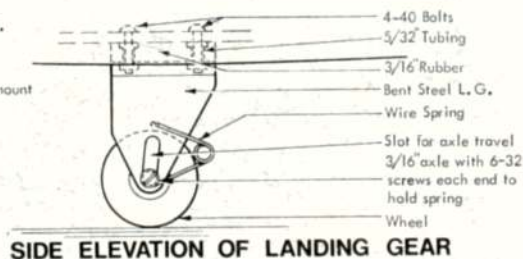
F.A.I. T/R BY
K. PARENT & D. KELLY
CANADA

SPECIFICATION

- Wing - 3/8" Balsa sheet with
3/8" Pine L.E. and T.E.
- Tail - Balsa sheet
- Fuselage - 5/8" Bass crutch
1/2" Magnesium motor mount
- Engine - S.T. G.15 Diesel with
Cox .049 intake
- Propeller - Bartels glass fibre
- Tank - Stockton-Jehlik type
- Weight - 22 oz.



CROSS SECTION THROUGH
LANDING GEAR



SIDE ELEVATION OF LANDING GEAR

The highly polished Parent/Kelly racer sits upon an equally highly polished car bonnet. The engine is extremely well ventilated both through the lower fuselage and the top block - giving plenty of air for the S.T. G15 D rear induction motor - extensively modified by pit man Ken Parent. At last year's Canadian Nationals the pair recorded a finals time of 9:11 - very quick indeed.





Left, K. Attiwell with his own designed towline pull tester - constructed from Dexion, Meccano, a spring balance, micro switch and an indicator lamp from an Austin A.30. The unit can be adjusted for calibration with standard 2 kilogram weights. When a 2 kilogram pull is applied the light comes on, and could be very useful as a standard towline tester for all Area and National events, etc. A 12v. car battery is used to stabilise the unit.

FREE FLIGHT COMMENT

by John O'Donnell

'all flying must cease at 6 p.m. Fly-off times (where necessary) will be announced . . . being interpreted differently by event officials earlier in the day. There was apparently an R.A.F. stipulation that flying should have finished by 6 o'clock.

These changes had repercussions in that some contestants failed to complete their three flights (including at least one with a double max), or even had to miss out an event.

Mention *must* be made of the close proximity of the free-flight and radio events. Part of the pylon race course was immediately up wind of the free-flight launching area in mid-afternoon, and glider fliers failing to find immediate lift could and did continue towing 'through' the pylon race. The dangers of this are not confined to the *models* involved. I, for one, would consider that responsibility for any resultant accident is primarily that of the contest organisation and only secondarily that of the fliers.

The 13 trebles recorded in glider were more than I expected, even considering the several mass launches into 'marked' lift that I witnessed. Certainly it is a measure of the success of the tactical approach, now both popular and accepted. In comparison the half dozen perfect scores recorded in each of the other two open events are a reflection on the standard of power flying and of the numerical

FEW WOULD DENY that free-flight events are dependent upon both weather conditions and on the facilities, especially space, available. These two factors had a marked influence on this year's Southern Gala.

The day got off to an inauspicious start with an overcast sky and intermittent rain. The wind, although not particularly strong, was in an awkward direction. The initial gathering point for free-flight contestants and organisers would have given timekeeping difficulties with models going over Odiham's 'hump'. Moving round the perimeter track (to a better compromise between visibility and length of 'drome') delayed the start of the contests well past the 10 o'clock announced.

Actual flying was then slow to start - and stopped when the rain restarted. A return to the original choice was then required by the R.A.F. so as to keep noise away from their 'married quarters', and models away from the main hangar area.

When the rain eventually stopped - between 1.30 and 2.00 p.m. - it was calm and warm. There was a strange lull before the predictable rush to fly commenced. Surprisingly, the sky cleared and the remainder of the afternoon was very pleasant with some blue sky, bright sun, and plenty of lift. The wind remained light, although its direction continued to change, with maxes usually being well within the airfield.

As this was an S.M.A.E. centralised meeting, the usual pre-entry stipulations applied. This made field entry expensive for those without contestant's licences. (I heard of one associate member who had not appreciated in advance that it would cost him £2 to enter on the day!). Those who had these licences naturally entered events as they wished to fly. The calm weather meant that several fliers had opportunity for another class - and some discovered late in the afternoon that an unexpected and unannounced 3 p.m. limit on taking entries had been introduced. Having decided to 'switch horses', this affected me, but with the advantage of much experience I made a successful official protest on the grounds of insufficient warning.

Even later it became known that the contests were to close at 5 o'clock - despite the programme statement that

Russell Peers poses with the Pannett Memorial Trophy which he won with a perfect score at the Topcliffe meeting on May 3rd. This power event was the best supported class with 15 entries.



Two views of K. Harrison's ETA 29 powered original open power model, also flown at Topcliffe. The high thrust line mount provides plenty of frontal side area - note how in addition to the underslung fin, tip plates are used on the tailplane.

interest in rubber.

A further move round the airfield preceded the one-flight contest that we call the fly-off. Fortunately, radio appeared to have finished, so posed no complications. The weather was still calm, but the drift direction had swung so much that re-location was necessary.

Glider was the first class to be flown off. Naturally, the recruitment of 26 timekeepers was a lengthy business - but eventually all was ready, with all participants located well downwind of the cars. First to launch was Elton Drew - but not into air good enough to precipitate a mass following. Subsequently, there were a couple of better looking flights that encouraged most of those waiting to fly. In contrast, Jim Baguley made a lengthy tow well upwind, and produced a very useful flight from his 8 ft. Open model (used for the fly-off only, after maxing out with an A/2). There was no 'obvious' winner - and the closeness of the results can be seen from the results list.

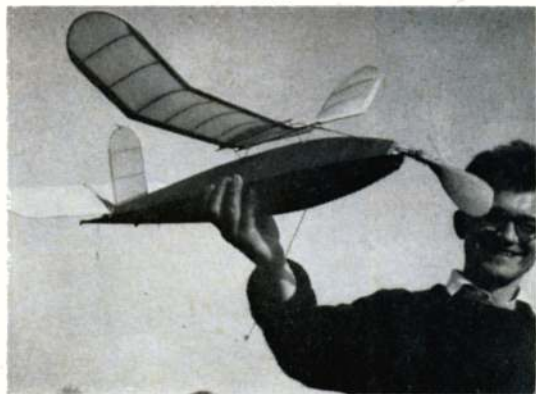
Winner of glider proved to be Elton, with a very new looking A/2 that I presume is the sister ship to his actual Championship *Lively Lady*. Description by now should be superfluous! Terry Dilks secured second place with Mike Reeves' unfashionable *Humphhound* design - recently drawn up in *Free-Flight News*. Distinctive design features are a completely underslung fin and an ultra short nose.

Next event away was rubber - with self provided timers! The cloud cover broke up conveniently and lift was not unexpected. It proved to be widespread if not particularly strong. Dave Hipperson launched quite early - when I was half way through winding - and hit lift about three minutes later. I got my *Maxine* away to a good climb - but it had caught up with Dave's model by the time both reached the end of the 'drome'. We met in the downwind village, minus models, and thought we had the top two places. However, we subsequently found that Bill Gravett had come between us with a flight D/T'd well in sight and at some considerable height. It was some consolation that he had seen my model down, and thus helped its retrieval.

Dave was top - for the second year running, and with the same model. It was seen for over 12 minutes, actually did about 13:45, and was flown without D/T on the flyoff. Dave considers that this type of contest is worth the risk. His model is of quite conventional layout, being diamond fuselage, low pylon, polyhedral, square tips, 2 blade folder, etc. - but is of large size and very light construction. Wing area is 310 square inches, while the fuselage has 3/32 in. sq. longerons, 1/16 in. square spacers and 1/32 in. x 1/16 in. diagonals. Even more striking (to me) was the sparse amount of dope used on the Esaki Jap covering. The whole wing and tail covering was slack and baggy - but this is claimed to be trouble free under normal flight conditions. Certainly the model is practical, as it not only won, but survived a rooftop landing and subsequent retrieval with only minor damage.

Being downwind, I didn't see the power fly off - but it was convincingly won by George Fuller, flying a brand new Eta 29 powered 'stretched' (more span) *Dixielander*. (This is a replacement for the similar model used last year but which suffered at the hands of Chobham vandals in mid-winter.) George was the only one to catch real lift, recording over

Winner of the Topcliffe Vintage event was John Pool, seen here holding his Buxton 'Collector', with which he recorded 8:03.



seven minutes o.o.s. with a 12-minute D/T setting, and returned surprisingly quickly with model. Dave Bailey came second, despite not getting much altitude - but making up for it with good air. The next three found little or no help - whilst Trevor Payne folded the wings of his K & B 40 (Rat Race Special) model under power. It had shown compression marks on the top spars earlier, and presumably the repair didn't hold.

The 1/4 A event had a two way flyoff - but one qualifier had lost his model and was attempting some hasty and very last minute trimming of his reserve immediately prior to the fly off. Unfortunately, his efforts were in vain, leaving the way clear for Bob Bailey of St. Albans to take the event with a nominal 1:55.

The only S.M.A.E. organised chuck glider event of the year attracted some twenty-two entries. Patchy lift was available for those who could find it, and there was little between the top five scores. No 'full houses' were achieved - winner being M. Ellis of East Grinstead with a total of 3:51.

RESULTS

Chuck Glider (22 entries): 1. M. Ellis (E. Grinstead) 3:51, 2. A. Crisp (FACCT) 3:47, 3. A. Falhers (FACCT) 3:32. **1/4 A Power (25 entries):** 1. R. Bailey (St. Albans) 9:00+1:55, 2. H. Hutchings (East Grinstead) 9:00, 3. R. Baggott (B'ham) 7:08. **Open Rubber (34 entries):** 1. D. Hipperson (Croydon) 9:00+12:05, 2. E. Gravett (Brighton) 9:00+9:55, 3. J. O'Donnell (Whitefield) 9:00+9:12. **Open Power (41 entries):** 1. G. Fuller (St. Albans) 9:00+7:22, 2. D. Bailey (Swindon) 9:00+4:39, 3. R. Monks (B'ham) 9:00+4:35. **Open Glider (82 entries):** 1. E. Drew (Bristol & W) 9:00+3:11, 2. M. Dilks (Spitfires) 9:00+3:02, 3. L. Rogers (Swindon) 9:00+2:56.



Luton M.F.C.'s Slope Soaring Meeting, Ivinghoe - April 19th

FORTUNATELY for the host club, this year the wind direction was in a favourable direction, permitting them to make use of the best slope. To offset this, however, the wind strength continually varied from calm to 25 knot gusts, whilst the sun and rain clouds also played hide and seek!

The **Magnet Steered** class entries were down on the previous year, with only four fliers. A most notable absentee was Trevor Faulkner, who succumbed to illness. The wind provided additional complications by changing direction several hundred feet from the slope, which made rudder adjustments critical. Despite this, flying was to a high standard, R. Sutton, from Leck, achieving first place with an aggregate of 12 minutes 43 seconds. His best flight of over nine minutes duration held its position into wind so well that it landed only a short way from the launch points. Many people expressed great interest in these models, finding them very simple in principle, and much less complex than the graphic representation of them appears!

Peter Lang's tail-less slope soarer has geodetic structure and is covered in nylon and MonoKote, weighing 39 oz.

A. Fynn prepares to launch his magnet steered glider, uses sheet covered wing - thinned NACA 64009.

Nigel Ince flew this lightweight, fast flying glider in the multi event. No rudder used.



Left: P. Mason's fine Gloster Gladiator has full cockpit detail and sliding canopy - modified from the commercial unit. Below: Brian Dyke's beautifully Solarfilmed stunter in red and gold.

RECENT RALLIES

The **Single Surface** class, attracting some twenty-three competitors, consisted of a spot landing contest, with nominated duration - and the landing to be made within a roped off area, situated on the 'dead' section of the hill. Unfortunately, the many spectators proved to be a bit of a hazard, as when landing the pilot had to run along the ridge, peering over their heads to see the landing area. The changing conditions again provided difficulties over the amount of nose-weight required - last-minute changes of C.G. being commonplace. Due to the still conditions around mid-day, a bungee launch was made available, but only one competitor made use of it.

The most unorthodox model in this event was Peter Lang's tail-less, own designed soarer, equipped with Staveley proportional equipment (one servo only being used, for the rudder). Using a Göttingham 797, 16% section for the centre section, and 16% symmetrically sectioned tips, this model flew very well, favouring the windy spells. He was unlucky to experience a sudden drop in windspeed just at the moment of launching for his second flight.

It was the **Multi Aerobatic** models that showed the biggest change in model design since the previous meeting, when there was just one low-winger present. This time there were many of this configuration, whilst 'T' tails and all-moving tailplanes were also much more commonplace. The 'Phase 2', design by Chris Foss, showed its capabilities by performing well in all wind conditions - its wide speed range and smooth flying were most impressive, as were its tight turns.

The multi event began in a period of calm, but after a few flights the wind freshened and the contest re-started in fairness to these competitors. Even so, fortunes were largely related to wind strength - many flying in a calmer period finding it impossible to regain altitude after the first manoeuvre.

Single Surface

1. J. Fellows
2. G. Bushell
3. N. Webb

Multi Aerobatics

1. K. Binks
2. J. Marden
3. C. Foss

Southern Gala R.A.F. Odiham - May 10th

MARRIED TO A large extent by the bad weather - mainly dull and overcast with some really heavy rain - this year's Gala still attracted a fair attendance.

Control line **Aerobatics** had eleven entries and produced quite an assortment of models. Particularly eye-catching was Brian Dyke's own designed ship, covered in red and gold Solarfilm - chequerboard style. First place was a straight fight between Mick Reeves and Steve Blake - this time in



Above: D. Robertson (Sheffield) with his magnet model - uses 'Hanger' fuselage with 'Empress' flying surfaces. Solarfilm covered. At left, combat finalists S. Andrews and V. Hunt.

Mick's favour, but there were only a few points in it. Some way behind this pair came the rest of the field with remarkably close scores headed by a 'new name', A. J. Davy of Grantham flying a design by club-mate L. C. Robinson, known as 35/53. Why? Simple, engine size and wingspan! Attractively finished in red, white and black.

What the scale event lacked in numbers, it made up for in quality. P. Mason (Three Kings) produced a fine *Gladiator* built from the Complete-a-Pac kit, and converted to control-line. The Merco 61 and silencer were completely enclosed within the glass fibre cowl, and the exhaust ducted away via a pipe in the correct scale position. With an all-up weight of around 8 lb. and using a 14 in. x 6 in. propeller, flying was rather heartstopping - the machine being very slow in flight and a little reluctant to take-off, though once airborne it looked really majestic. Another impressive model was R. Tidder's *Vickers Viscount* (built from A.P.S. plans) using two P.A.W. 2.49's in the inner nacelles and P.A.W. 1.49's in the outer ones. Unfortunately he forgot to bring his scale documentation, and thus could not qualify for full scale points. Winner, however, was Mick Reeves with his *Turbulent* yet again, scoring highly for its flying and scale accuracy, despite now beginning to show its age!

F.A.I. team race was rather late in getting under way and indeed, once started, the heavens opened, washing away the chalk circle markings! The times, no doubt, partially due to the damp atmosphere, were very slow - only two teams (Harknett/Smith and King/Rudd) bettering five minutes, with 4:44 and 4:55 respectively. With the notable absence of three well-known teams, the contest was perhaps more open than normal, but even so the top names were quite familiar! The final could not be run as the event exceeded the time-limit for engine running on the airfield, imposed by the R.A.F. It was therefore agreed to run the final at Hayes the following weekend, but as one of the qualifiers (Dell/Wooding) could not get to this venue, they stood down and let Bedford/Allen take their place. The conditions for this race were vastly improved - resulting in a respectable time of 9:36 for Harknett/Smith, over a

minute in front of King/Rudd.

The **JA team-race** suffered in a similar fashion, and it was decided to save time by flying just one round, with two semi-finals, the fastest three going forward to the finals. Again the times were not startling, Harknett/Smith emerging fastest qualifiers with 4:10, then went on to yet another victory with a final time of 8:22, nearly a full minute in front of Lambert/Radcliffe.

Relatively unaffected by the weather, and with a fairly good entry (32), **Combat** was the best supported control-line event. With most of the 'names' absent, the lesser known fliers had a field day, but the result was, rather inevitably, another Vernon Hunt benefit, when he fairly convincingly beat S. Andrews (Southampton) in the final. He had with him a new model 'Bumblebug' - a complete change from his present design, but although very hot, it did not suit his flying style, so it looks as if 'Warlords' are here to stay - for a while at least!

The event was again run to the old S.M.A.E. rules, in lieu of the newly adopted F.A.I. rules - a decision reached by the competitors themselves.

(F/F events reported in 'Free Flight Comment')

RESULTS

C/L Aerobatics (11 entries) 1. M. Reeves (Wanstead) 1191 pts., 2. S. Blake (Buckaneers) 1173 pts., 3. A. Davey (Grantham) 1036 pts. **F.A.I. T/R** (22 entries): 1. Harknett/Smith (Feltham) 9:36, 2. King/Rudd (Feltham) 10:39, 3. Bedford/Allen (Feltham) Retd. **JA T/R** (16 entries): 1. Harknett/Smith (Feltham) 8:22, 2. Lambert/Radcliffe (Feltham) 9:19, 3. Brown/Fry 9:39. **Combat** (32 entries): 1. V. Hunt (ACE), 2. S. Andrews (Southampton), 3. Wallinger (Nuneaton) and 3. Headworth (St. Albans). **C/L Scale** (5 entries): M. Reeves (Druine Turbulent), 2. P. Mason (Gloster Gladiator), 3. D. Morbin (Kittyhawk P.40). **R/C Aerobatics** (25 entries): 1. M. Birch 4905 pts., 2. D. Hamant 4795 pts., 3. T. Cooper 4685 pts. **R/C Pylon Race** (13 entries): 1. J. Wright 2:24.6, 2. P. Pilsworth 2:26.2, 3. C. Foss 2:33.8.

CONTEST CALENDAR

June 28th	ST. ALBANS SUMMER GALA. Open R/G/P. to be flown in rounds. Vintage, Chuck glider 10 a.m. start at Chobham Common.	July 11th/12th	SHEFFIELD S.A. TWO-DAY SLOPE SOARING RALLY.
June 28th	FINCHLEY M.A.C.'s CONTROL LINE GALA. A & B Combat, Stunt, Rat-race, at Glebelands, Summers Lane, Finchley. Pre-entry 4/- to J. Goodwin, 77 Gallants Farm Road, East Barnet, Herts.	July 12th	SUTTON COLDFIELD R/C PYLON RALLY. Formulae I, F.A.I. & Open at Frsley, Nr. Lichfield.
June 28th	BURTONWOOD CRITERIUM. F.A.I. T/R JA T/R H'cap speed Combat, Stunt, R/C Open Pylon, R/C Multi Stunt. Pre-entry (R/C) D. Broadley, 13 Bowden Close, Culceth, Warrington, Lancs.	July 12th	S.M.A.E. AREA CENTRALISED MEETING. Team glider. Open power, Coupe D'Hiver. Area venues.
July 5th	ELLIOTT M.E.E.C. RALLY. C/L Stunt, Profile Goodyear, F.A.I. T/R, Combat. Pre-entry 2/6 to C. Atkins, 12 Hillcrest Road, Chatham, Kent.	July 12th	S.M.A.E. R/C & C/L SCALE TRIALS at R.A.F. Little Rissington, Glos.
July 5th	CROYDON F.A.I. GALA. F.A.I. R/G/P 7 Rounds, commencing 12.00. Augmented prize list. 4/- entry at Chobham Common.	July 12th	S. MIDLAND AREA BURNS-BROWN COMBAT RALLY at New Barn Farm, Weston-on-Green, Bicester, Oxon. (Off A.43).
July 5th-19th	CHELTENHAM M.A.C.'s POSTAL EVENT. Open glider, 5 flights and progressive fly-offs. Entry forms and rules 3/- from J. Andrews of 106 Churchill Grove, Tewkesbury, Glos.	July 19th	LONDON AREA C/L CHAMPS. Combat, F.A.I. T/R, JA T/R at Charville Lane, Hayes, Middx.
		July 19th	TYNEMOUTH F.A.I. F/F GALA. F.A.I. R/G/P 5 Rounds and Progressive fly-off. Many trade prizes. Best junior prize: 5/- Pre-entry (6/- field) to B. Martin, 14 Hilda St., Gateshead, Co. Durham. Venue R.A.F. Ouston (10 miles West of Newcastle on A69, take left fork at Heddon-on-the-Wall - B6318).
		October 4th	INTERNATIONAL POSTAL 1,000 LAP F.A.I. T/R EVENT. Details D. Heaton, 41 Cedar Avenue, Sutton Weaver, via Warrington, Lancs.

**CAMPIONATUL MONDIAL
AEROMODELE "INDOOR"**

EDIȚIA V-A

FAI.

1970 ROMANIA

SLĂNIC PRAHOVA 9-12 APRILIE 1970



INDIVIDUAL RESULTS, 1970 INDOOR WORLD CHAMPIONSHIPS

Pl. Entrant	Nation	1st	2nd	3rd	4th	5th	6th	TOTAL BEST 2
1. Jiri Kalina	Czech.	<u>37:52</u>	34:13	15:55	<u>36:25</u>	26:44	34:58	74:17
2. JAMES RICHMOND	U.S.A.	5:34	<u>32:04</u>	31:54	<u>32:10</u>	00:14	00:27	64:14
3. Aurel Popa	Romania	25:16	21:40	<u>32:50</u>	00:07	<u>30:23</u>	21:58	63:13
4. Andras Ree	Hungary	<u>28:21</u>	<u>31:28</u>	21:08	00:11	00:08	18:27	59:49
5. Vilim Knoch	Yugo.	<u>24:36</u>	<u>29:04</u>	27:21	<u>27:55</u>	20:30	11:07	56:59
6. CLARENCE MATHER	U.S.A.	24:13	27:10	22:45	<u>27:12</u>	<u>28:28</u>	15:53	55:40
7. Edward Chlubny	Czech.	<u>25:55</u>	00:00	08:11	<u>28:20</u>	19:02	22:08	54:15
8. Karol Rybecky	Czech.	00:00	00:21	<u>25:44</u>	<u>27:42</u>	00:11	21:29	53:26
9. Gyorgy Buzadi	Hungary	18:10	24:25	<u>25:55</u>	<u>04:58</u>	<u>25:54</u>	22:47	51:49
10. Esko Hamalainen	Finland	<u>23:47</u>	<u>27:48</u>	02:12	18:54	06:55	11:52	51:55
11. Carlo Cotugno	Italy	<u>24:18</u>	<u>23:45</u>	00:34	26:21	20:57	13:57	50:59
12. PETE ANDREWS	U.S.A.	<u>27:52</u>	<u>22:11</u>	17:03	13:41	16:41	18:52	50:03
13. Nicu Bezman	Romania	<u>22:43</u>	<u>27:17</u>	18:24	19:57	00:16	00:52	50:00
14. Pentti Nore	Finland	00:13	13:56	00:38	<u>23:20</u>	<u>24:48</u>	07:45	48:08
15. Otto Hints	Romania	20:22	21:16	<u>23:50</u>	21:40	<u>24:11</u>	13:10	48:01
16. Antal Egri	Hungary	12:57	<u>23:01</u>	19:21	<u>24:07</u>	<u>22:58</u>	00:09	47:08
17. Werner Wetzel	W. Ger.	<u>23:04</u>	20:22	20:09	13:55	<u>23:04</u>	00:38	46:08
18. Kurt Vogel	W. Ger.	10:48	00:00	<u>21:41</u>	00:09	<u>19:27</u>	17:33	41:08
19. Gabriel Leopold	Yugo.	<u>20:43</u>	19:52	07:25	07:22	<u>19:53</u>	14:28	40:56
20. Germano Masciullo	Italy	00:45	00:26	15:00	<u>16:42</u>	<u>12:25</u>	<u>22:23</u>	39:05
21. Piotr S. Bombol	Poland	13:23	17:55	00:18	<u>18:20</u>	<u>18:06</u>	17:52	36:26
22. Edward Ciapala	Poland	<u>18:19</u>	15:06	09:23	<u>13:59</u>	<u>18:06</u>	00:27	36:25
23. Guy Cognet	France	11:01	05:53	15:36	12:25	<u>19:34</u>	04:58	35:10
24. Hans Beck	W. Ger.	18:39	00:30	01:09	16:07	<u>13:53</u>	00:00	34:46
25. Ryszard Czechowski	Poland	<u>13:17</u>	09:43	00:58	<u>21:02</u>	00:16	00:17	34:19
26. Egizio Corazza	Italy	10:00	<u>16:47</u>	03:17	<u>16:19</u>	07:42	11:36	33:06
27. Teodor Strasberger	Yugo.	07:17	00:50	<u>19:19</u>	11:06	07:09	<u>12:53</u>	32:12
28. Jean C. Sauveton	France	05:39	09:01	09:43	10:15	<u>11:35</u>	<u>15:10</u>	26:45
29. Harri Raulio	Finland	00:20	09:54	10:26	00:02	<u>12:35</u>	<u>11:58</u>	24:33
30. Daniel Degaugue	France	00:00	00:00	00:00	00:00	00:00	00:00	00:00

TEAM RESULTS

1. Czechoslovakia	181:58	3. Romania	161:14	7. Italy	122:50
2. United States	169:57	4. Hungary	158:46	8. West Germany	122:02
		5. Yugoslavia	129:47	9. Poland	107:10
		6. Finland	124:16	10. France	61:55

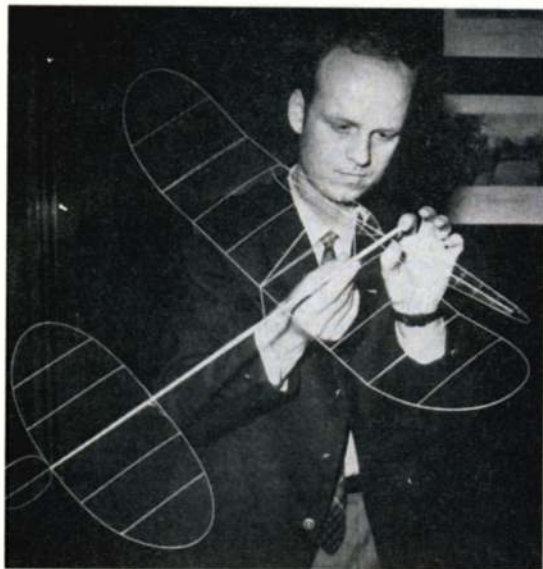
WITH A CEILING height of 177 ft., width of 105 ft. and more than 330 ft. length, the flying site used by the Rumanian Model Federation for indoor flying in the salt mines, 400 ft. below ground level was, without any doubt, one of the most interesting flying sites anywhere in the world for indoor enthusiasts. After a 25-second descent by lift (usually used for the salt mining) one is in a big, deep hall, which looks rather like a quiet, very old cathedral. The only unpleasantness is the fairly low temperature - it varies from 50° to 55° F.

This unique site had previously been used for ten Rumanian National competitions and also three international contests. Experience on each occasion showed that there is almost no draught in the hall, and this was the main reason why the organisers decided to hold the 5th Indoor World Championships so early - from 9th to 12th April, 1970.

During this period the best conditions for flying could be expected. Unfortunately a draught mysteriously made its presence known just at this time, perhaps due to more people, more light, perhaps even because the outside temperature was much warmer than usual. Let us say that this was the only thing which was not in accordance with the organisation schedule. Everything else was done to a very high standard with a very friendly reception; pleasant atmosphere, good organisation and attentive hospitality for all the participants. Thirdly, contestants from 10 countries made this the biggest Indoor Champs yet.

Jiri Kalina prepared many models in a cool cellar atmosphere to acclimatise his preparations for the subterranean contest. He dominated the 5th Championships from start to finish.

Nearly all the teams utilised the two test flying days because the conditions were so different from the majority of other places. It was especially difficult to get altitude. Most of the models reached only half of their normal altitude and then drift carried them into the walls, so conditions in the hall during the



World Championships were not as good as normal, and thus the times were correspondingly lower.

At noon on the Friday, after a short opening ceremony, the **first round** began.

Thirty minutes was scheduled for each flight, but only one did over 30 - Jiri Kalina from Czechoslovakia with 37:52. At this time nobody knew that this was to be the best time, not only during the first round, but for the whole competition. Jim Richmond from U.S.A., the World Champion from 1968 in Rome, finished his first flight on the wall after 5:34, and not even Hans Beck from Germany succeeded in putting up a competitive time. Only A. Ree from Hungary with 28:21 and R. Andrews from the U.S.A. with 27:52, could have been really satisfied.

The **second round** was flown the next day - on Saturday morning. Initial nervousness soon disappeared. Kalina did 34:13, which earned him the first place, which he kept till the end of the competition. Richmond made 32:04, when, after a slow climb during the start, he ended his flight in a thermal which made the time all the more interesting. His model was well trimmed so it could make use of the opportunity. Another man with over 30 minutes was A. Ree from Hungary, which gave him 2nd place. Andrews achieved 'only' 22:11 with his flight terminating on the wall. V. Kmoch from Yugoslavia did 29:04 which pushed him into 3rd position. Surprisingly none of the Rumanian team, which knew the conditions very well, and easily exceeded 30 minutes during the test flights, made a decent score in this 2nd round.

This round was also the first one for the unhappy Czech K. Rybecky. He had broken five of his six models on the way to Rumania. The only alternative was to go back and repair the models during the two extra days. The only flight from Prague to Bucharest which could bring him back in time was then cancelled due to dense fog! Finally he arrived at midnight on Friday when the first round was over! He also scored zero on his second flight due to poor trim of his model after the long trip.

The **third round** opened immediately after the second one. The best member of the Rumanian team, Popa Aurel succeeded with 32:50, which was to be the best time of this round. Richmond tried very hard, but unfortunately his model slid down more than 50 ft. from the very top of the hall, then continued in flight; but finished on the wall again about 50 ft. above floor level. The time was still 31:54 and this showed that Richmond was the only serious competitor for Kalina. Kalina's flight also finished on the wall. Another Czech, Chlubny was still in trouble. His model climbed well after release but finished on the wall. The same applied to H. Beck.

The **fourth round** was the last one on the Saturday. The conditions were very good and 50 per cent of the competitors made one of their best two flights during this round. Kalina did 36:25, Richmond 32:10, Chlubny 28:28, Kmoch, Mather and Rybecky over 27 minutes. The Czech team was now leading with the U.S.A. in second position.

More than 11 hours were spent underground and when everyone 'surfaced' it was dark again. Three rounds in one day was really a maximum, not only for the competitors, but especially for the timekeepers and other participants.

The **fifth round** was flown during Sunday morning. The only one over 30 minutes was again young

Popa from Rumania, who used the best tactics of flying before the draught materialised. Mather (U.S.A.) made 28:28. Kalina finished his flight on the wall after 26:44.

Richmond had worked right into the night. He wound his rubber for a 40-minutes' flight, but the model could not stand the very strong torque moment and the model 'tucked under' after 14 seconds! E. Gorazza from Italy had one of the ultra lightweight models of under half a gramme (!) but this was obviously no advantage.

The last and **sixth round** was just the opposite of the last round at the 1968 Championships in Rome. At that time nobody believed that this round could have changed anything, but, in fact, it changed *everything*. Some could still expect some changes, but there were none. Richmond's flight was very similar to his 5th round flight. The model was not strong enough to hold so many turns and it collapsed after 27 seconds in flight. Kalina was still very much on form and did 34:58. His flight was the last one at this meeting. Using only his 3rd and 4th flights for final results he could still have won by more than a 5-minutes' margin. Third place for the young Rumanian, Popa, showed great promise for him in the future.

Another Indoor World Championship was over. It was bigger than the others, but still some well-known names were not on the entry list. Participants expected at least teams from Great Britain and Austria. This would make it a possible 12 countries for the next World Championship in 1972. *Where?* There were many happy reminiscences of Cardington. Come on the S.M.A.E.!



Legendary Salt Mines have a foreboding exterior and treacherous interior. 80 out of 150 models present were destroyed on walls!

CLUB NEWS



Left, a very professional – and stylish – display arranged by the Leicester Model Aero Club for the 'Leisure 1970' exhibition, reveals the wide variety of interests within this club.

BACK IN FEBRUARY, the Stevenage Model Aviation and Marine Society held an exhibition in order to publicise the club's activities to the good people of new town Stevenage. Altogether, the impressive total of 500 exhibits was mounted, from the lively ladies of the waterways to equally sprightly queens of the air. There were paddle steamers cheek by jowl with rubber duration models and activated displays of many kinds to stimulate public interest. And by way of featuring the model world of the open skies, there was a film show of flying field sequences and 1969 Torquay Offshore Power Boat Race. Considering the coldness of the day and the distance of the college site from the town centre, the tally of 1,500 visitors in five hours was most encouraging.

Success by the Bridlington & D.M.A.C. at the Youth Arts Festival. Stephen Midgley took first prize in the Model Making class with his Scale R/C *Aeronca*. And, what's this? The club also got through to the semi-finals of the four-a-side soccer team event. Wanted, then, more juniors to keep up this good work – to be on the ball in more ways than one. Achievement: by minibus to Topcliffe for the March meeting, and back in one piece. Main attraction for the Bridlington members was the multi radio. All the fun of the fair, with pylon pranging as the main dramatic interest, and a spot of flour bomb dropping as a sideshow. Good news on the flying field front. A further lease of life on Danes Dyke and the acquisition of a field for the Radio boys. Only snag about the latter amenity are the visitations of the lowering herd – could mean no flying in the summer months.

Plenty of paper members on the books of the Motherwell M.A.C., but only 20 paid up ones, sad to say. Still, that's not such a bad tally; quite enough, in fact, to keep a goodly measure of activity on the boil. A fair bit of flying room around Motherwell, too. There is a nice patch of waste ground near the Church Hall meeting place, suitable for C/L and close-reined R/C, a cricket pitch in Clyde Park (not much used for bat and ball) and a tidy bit of treeless farmland at Bonkle, which, in spite of its ominous name, gives ample scope for normal free flight and Radio with free flight tendencies. Report from J. Glen, Secretary.

At least I know now that I'm not the daddy of them all, for down Southampton way they have a number of perfectly preserved specimens of early modelling man still making the scene. In fact, two present members of the Southampton Model Aeroplans Club (title given in full in order to savour ye olde English 'Aeroplans') were there at the founding of the club way back in 1936, when balsa wood was looked upon with the same misgivings as we now have for expanded polystyrene. I do, however, know from experience that the club's oldest member, Mr. C. A. Rippon, saw the possibilities of balsa right from its introduction, for, as he may be interested to learn, I built his sturdy old *Duraplans*, and also one of the first post-war powered models, his elegant, Mills powered *Quicksilver*. Two other Southampton names to conjure with are Power Champ man of the early fifties, Silvio Lanfranchi and Pete Cock, one of the first of our C/L Stunt flyers. All these people got honourable mention in an informative, unsensationalised write-up in the local press. Also referred to in the article was the club F/F Gala to be held at Beaulieu on 26th July. Like so many clubs these days it has become attached to the local community centre, and by so doing can now offer members improved facilities. Meetings are held on most Fridays at Redbridge Secondary School, Cockmere Lane, Millbrook, Southampton at 7.30 p.m. New members welcome.

Very complicated this, but the report from Secretary Nigel Robson informs us that his club, now called Hemel Hempstead M.F.C., was hitherto known as Apsley M.A.C., and that the new club works in association with Rotax M.A.C. Got it? Membership is around the 30 to 35 mark, and interest, though right across the model spectrum, is basically rooted in the fly-for-fun philosophy. Even so, club comps are put on for most categories of flying, with always a special one thrown in. This year it is to be Jetex. New members wanted, repeat members, not opportunists in search of flying space. Mr. Robson's address is 7 Coniston Close, Leverstock Green, Hemel Hempstead.

Transplant specialist of the Three Kings Aeromodellers is Ken Gardner. From his operating theatre-cum-workshop has emerged his latest twosome in oneness: a 28 in. *Hellbat* (a cross between a *Hellcat* and a *Wildcat*). This, in case you may not know, is a profile Navy Carrier job, and is complete with U.S.N. markings and the necessary arrester landing gear. He also has two Grumman Guardians equally embellished. New club secretary is Dave Woods, of 133 Ravensbury Road, Southfields, S.W.18. Telephone 01-947 0752.

People whose modelling interests range over more than the single element of air may wish to know of the Annual Model Engineering Exhibition to be held by the British Aircraft Corporation on 27th June at the Sports Ground, Kingshead Lane, Byfleet. All types of models on show and demos of radio boats and steam locos to be given.

The Leicester M.A.C.'s newsheet for April opens with the names and addresses of the ten new members acquired this month. This is the sort of personal touch that goes down well with members, old and new. Another touch of personal cross fertilisation is listing the names and addresses and particular expertise of those senior club members whose services can be called upon by the less experienced. But what has the club to offer the new member in the way of flying space? Well, the two club fields, Arnesby and Wymesold seem well institutionalised, but members must need tread warily; observe the all-important silencer rules and not leave litter around. New members will also be able to avail themselves of the services of a Dyno labeller at around 1d. per letter.

Chairman of the York M.A.S. is Bob Amor, who, if I remember correctly, was one of the old Fairlop flyers. He was recently returned to the post of Chairman at the Club A.G.M., together with Dave White as Secretary/Treasurer and Colin Wells as P.R.O. Dave Hambley, who was elected Comp. Sec., gave a slide show and talk on his visit to the World F/F Champs. Much appreciated by Radio and C/L enthusiasts as well as the free fighters. The A.G.M. report seems to indicate quite a good year for the club, with membership maintained at a fully paid-up 39; the bulk of whom have carried their membership over from the previous year, thus maintaining a continuity of familiar faces. Plenty of work going into this year's York Rally which, it is hoped, will be the biggest and best ever.

The prominence of the Congleton M.A.C. on the Area contest result sheet is evidence enough of its away fixture effort, but it also puts up a lively show on its home ground. The well-printed Programme of Events pocket card lists a club contest per month throughout 1970 and a special something on every fortnightly club meeting. These latter include a paper dart romp, a Bring and Buy, a Hot Pot Supper, and not so common, a Photographic Competition for model aircraft subjects. Contests so far this year have mostly been held in the teeth of our special British brand

of cold, battering winds, but were run off nevertheless. Only the April R/C Single Channel comp. had to be postponed because of high winds and high trees (all around the club field). Matter of fact, all this clutching arboreal fungus that lays siege to the club field has earned the club the nickname of the *Cheshire Tree Dwellers' Association*, but the fact that they keep smiling in spite of it gives them something in common with a Cheshire Cat. Let us hope the weather, too, keeps smiling for the 1970 Congleton Rally. Report from Dennis Allman.

1,500 square inches of wing area might well suggest something outside the realms of model flying, but it isn't a bloke on a bike up in front of this spreading flying surface but what is described in *The Satellite*, the voice of the **San Valeers of California**, as a Rossi 60. Proud builder of this scaled-up 1/4A model is Bill Hunter, and obviously the proud owner, too, of something large in the way of transport. In contrast, the same Bill Hunter exhibited his latest in A/1 Gliders: a 2-ounce effort requiring a heavy dosage of lead ballast. Surprise that the San Valeers should claim the end of the day fly-off as an innovation. Usual procedure over there, it seems, is for the flyer to make his fly-off as soon as he has collected the requisite number of maxes. One reason why we in this country favour the terminal fly-off is that thermal activity is not so intense in the cooling evening air. Good news is that F/F is again allowed at Sepulveda Basin, but strictly no drifting: all models must be equipped with D/Ts regulated to wind speed. Bad news is of highway robbery on the grand scale when further motorway construction will wipe out F/F and R/C flying in the Sepulveda oasis of modelling.

Latest thing in trophies mentioned in the **Christchurch (New Zealand) M.A.C.'s Torque** is a large-size bottle opener. Awarded on condition that the recipient demonstrates its utilitarian properties after the contest! Several references to thermal soaring in the newsletter suggests that the sport is finding increased favour with the islanders. It certainly does seem the ideal way of combining F/F aeronauting skills with the obvious advantages of electronic control.

If only dear old Ireland could do as well in the International model arena as she does in the European Song Contest, then the **Model Aeronautical Council of Ireland** would not be calling for a more intensive effort in the World Champ. stakes. Trouble today is that standards are so high - and costs outsoaring models - that you need a quite professional approach even to be reasonably competitive. Again, the off-putting weather in these islands is hardly conducive to the training of champions. However, the possibility of stimulating interest by holding a F/F international at Curragh in September 1971 is being looked into. Some raising of the contest fever has been achieved by an agreement with the S.M.A.E., wherein Irish F/F contesters can fly in Area Centralised contests. The Curragh Area has been designated for this purpose, but would-be entrants must first obtain a competitor's licence.

The usual excellent coverage of the free flight scene in the May issue of *Free Flight News*. A nostalgic item that caught my eye was a letter from an Illinois reader requesting info on Jetex designs and techniques from that golden age of British Jetex around 1950. Several designs and articles featured in the model mags of that era, and would be useful if you could dig back that far. Come to think of it, I have three 1950 Jetex Duration models stuck away in the loft. The reader reminds us that Rocket, or Jetex, has still got quite a following in the States: 102 entries in the Nationals. He is, however, worried about leaking motors. It used to be quite a bogey back in the old days, too. A Wakefield plan published in the magazine is *Pollux 3a*, a design which took third place at the 1969 World Champs. I liked the fully detailed prop layout.

Indoor is not so much a class as an attitude of mind is

the way the **Richmond & D.M.A.C.** introduces its very comprehensive treatise on the construction and flying of those nearest things to non-tangibility, indoor models. Information has been obtained from many sources, and the compilation covers just that sort of gen the aspiring indoor flyer needs to perfect his art. Recommended that you cadge, scrounge or otherwise obtain a copy.

Just what a fly-for-fun session at the Baldock flying ground of the **North London Radio Control M.F.C.** is all about is best illustrated by a direct quote from the club newsletter: . . . Paul Telco practising the triple roll with the ex Robin Lehman twin engine *Skyvan*, Adrian Robinson practising the take-off and ground loop, Roy Scott the spin from 3 ft. with the *Stuka*, Hans Edwards the spin and no recovery with the late *Aeromaster biplane*, Melvin Goodman the 'Banzai' (a Kamikazi manoeuvre consisting of a high-speed, vertical dive with locked on down elevator) and myself (Geoff Love, P.R.O.), the spectacular stall turn immediately on take-off with a symmetric 61 power on a just-completed and now totally finished twin . . . Well, it did say a fly for fun session!

If you are a Shropshire lad you may be interested to know that the **Coventry Gauge & Tool Model Club** has now expanded into a full-blown model aircraft club, and will now be known as the **Telford M.A.C.** The Secretary is Mr. G. H. Carter, 55 Pool Meadow, Hadley, Telford.

Usually when the hard core flies it is for the building over of yet another flying field, but according to the **Sheffield S.A.** report it is the hard core of the slope soaring section that is to be seen on the ridge overlooking Hope Valley (a name to tempt providence) like a line of Apaches in a Western film. And there they perch, undaunted by the fury of the climate that belabours them. But they are not alone; overhead soar the full-size sailplanes, looking down rather disdainfully on the 'tiddler' size models but not too proud to share a spot of lift with them. Indeed, on one occasion no less than eleven sailplanes and six slope soarers were seen to be milling around in the same up-draught. Cold winds also blowing across the club's indoor flying activities. The local Council, in a fit of modern-style rationalisation, has decided to levy a full 'economic' rent for their hall instead of the nominal educational fee previously asked. The increase is in the region of 2,500 per cent, and this, in basic financial terms, means looking for a new hall. A good show, though, at the Annual Sheffield Models Exhibition, where the club put on display an impressive range of 38 models of all denominations. Cyril Slater took first Concours prize in Scale Power with a well-finished *Mustang*. And guess who took first in Rubber? No other than the ubiquitous J. O'Donnell, and just to make it a complete family victory his good lady, June, helped him to clean up the Photographic section. Jeff Palmer placed first in Glider and Roy Thomas in Slope Soarers. Model that attracted much attention was Jack Rose's near-scale Catalina. It was awarded a special prize.

The editorial of *Nitro*, Newsletter of the **Belfast M.F.C.**, enthuses on the delights of cutting spacers for Open Rubber fuselages; something, it suggests, that will continue, though new-fangled methods come and go. Personally I am now too old and lazy for the delicate work and do only sheet fuselages. Not much performance difference and a lot easier to handle. Problem for the club is how to convert meeting room pow-wow into flying field action. A situation not unique to Belfast; the number of regular flyers in any club is usually on the sparse side - and they are often the people who do all the donkey work as well as the flying! I only wish I could offer Mr. Bertie Wright an encouraging solution to this bedevilling problem, but all I can suggest is that he keeps faith with the faithful nucleus and sees that they are not worked into the ground by the demands of a plethora of paper members.

The Clubman.



the Midlands' leading model shop
S. H. GRAINGER & CO

CALDMORE MODELS

108 Caldmore Rd. Walsall. Staffs. WS1 3RB

1 Mile from M6 Motorway Junction 9. Tel. Walsall 23382

NO DEPOSIT TERMS AVAILABLE ON ALL GOODS

£25 - 9 months at 58/- £50 - 18 months at 62/- £100 - 24 months at 98/-, etc.

Complete R/C Outfits (Kit, Engine & R/C) at Discount Prices. £25 Aero Outfit. £25 Boat Outfit. £40 S'het Outfit
ENGINES: MOST AVAILABLE IMPORTED & BRITISH ENGINES IN STOCK. KITS NOT ALL - BUT ALL THE BEST. TRUE LINE WING CORES

FIBRE GLASS MARINE MODELS, INCLUDING THE POPULAR SCALE 'SURFURY'

Part Exchange - by return service - Goods or Letter same day

World-wide Service for the Modeller - Mail Order Catalogue 1/-

APPOINTED R/C AREA AGENTS FOR:-

MAINSTREAM - GEM - SIMPROP
SKYLEADER PROPORTIONAL EQUIPMENT
REMCON QUANTUM 6 & VERSATILE KITS
MacGREGOR and FUTABA

All the Best
in Radio Control



40th Great Show!

MODEL ENGINEER EXHIBITION

SEYMOUR HALL, LONDON, W

December 29th, 1970 – January 9th, 1971

ENTRIES

Entry forms are being prepared. You still have six months to get your entries to exhibition standards. May we hope that you will be supporting us with your very best! Classes for every kind of model . . .

Over twenty trophies, over £300 in prizes, plus the pleasure of displaying your efforts and seeing those of other people.

Details from the Exhibition Manager.

Once again we shall be taking Seymour Hall for what is our FOURTH and 40th EXHIBITION in all.

The popular radio control boat pond introduced last year will be there again.

The S.M.E.E. railway track will be in operation; a car circuit will be working throughout the show, this time in the larger Bryanston Room

to provide space for a bigger track and better spectating.

Special features will include model soldier and militaria displays, plus products of our latest member of the team, WOODWORKER.

Finally, space is being made for a small hall to be available for film shows and talks on our special subjects.

MODEL & ALLIED PUBLICATIONS LTD.

13-35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.

Profile salutes the Stringbag...

Aircraft Profile No. 212

Fairey Swordfish

Enlarged edition—28 pages including cover extra two pages of colour side-views.

Only 5s (25np) from your local book or model shop or 6s (30np) including post and packing from the Publisher.

To follow in July

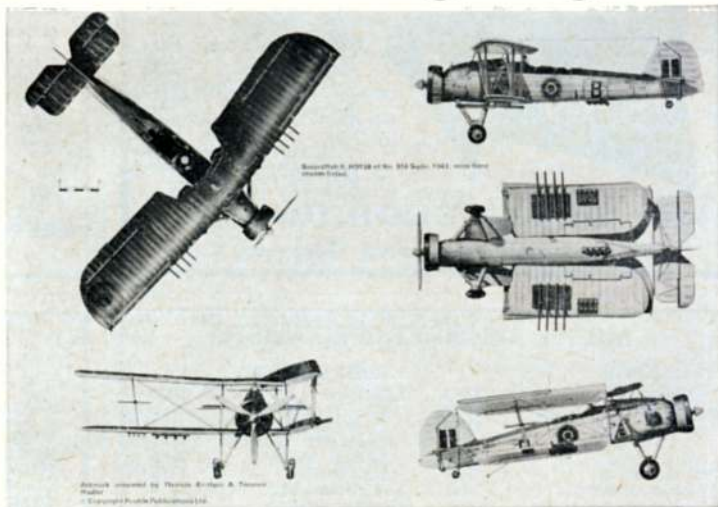
No. 215 Arado Ar 234 Blitz

No. 214 Grumman TBF/Eastern TBM Avenger

(Another enlarged edition)

Profile continues successfully to publish monthly - Aircraft, AFV and new Loco Profiles - perpetuating the high standards demanded by a discriminating readership.

For full details of all Profile parts and volumes published in the Aircraft, AFV, Loco and Car Series, write to:



Department (AP/AM)

PROFILE PUBLICATIONS Limited

Coburg House, Sheet Street, Windsor, Berks, England

AUSTRALIA'S LEADING DISTRIBUTORS FOR O.S., GRAUPNER, PILOT, BILLINGS BOATS



GRAUPNER AIRCRAFT

Clou	\$38.05
Foka	\$33.25
Kwik Fly III	E46.65
Taxi	\$28.80
Amateur	\$17.25

PILOT AIRCRAFT

Pilot Quick Star 109-15 ...	\$21.00
Pilot Quick Star III 30-40 ...	\$35.00
Pilot Cessna 177-100 09-19 ...	\$19.00
Pilot Cessna 177-400 30-50 ...	\$34.00
Pilot Aero Subaru 09-19 ...	\$21.00

GRAUPNER BOATS

Holiday 34"	\$29.85
Dachs 37"	\$37.15
Theodore Hess	\$29.85
Police Boat 35"	\$36.75
Collie 28"	\$17.35
Elke	\$16.20
Nautic	\$14.05
Commodore	\$22.55
Gracia	\$30.50

BILLINGS BOATS

Norske Love	\$82.30
Progress	\$47.40
Drage	\$18.30
Blue Nose	\$37.50
Hjejlen	\$21.30
Bohuslan	\$42.40
Neptune	\$28.60
Danmark	\$56.45

O.S. DP.2 Set	A.\$199.00
O.S. DP.3 "	A.\$299.00
O.S. DP.4 "	A.\$399.00
O.S. DP.6 "	A.\$550.00
O.S. Pixie "	A.\$45.90
O.S. Stick Assm. Each... ..	A.\$25.00
O.S. D.P. Aerial	A.\$5.30
O.S. S103 Servo	A.\$16.45
O.S. S104M Servo	A.\$14.65

The Model Dockyard Pty Ltd. 216-218 SWANSTON STREET
MELBOURNE 3000 AUSTRALIA

**look!
low prices**

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

DIESEL and GLOPLUG AERO ENGINES

DC Bantam .8cc	40/-
DC Merlin .76cc	52/10
DC Spitfire 1cc	66/-
DC Sabre 1.5cc	66/6
PAW 1.49cc	80/-
PAW 2.49cc	100/-
PAW 19D 32cc	94/1
Taipan 2.5 R/C Glo	134/4
Taipan 2.5cc	111/8
Taipan 1.5cc Glo	63/3
Merco 61 Mk.III R/C	306/-
ETA Elite Mk. 2	160/-
Cox Medallion 049	94/10
Webra Winner 2.46cc	112/8
Webra 61 R/C 10cc	550/-

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

RUSS

QUALITY MODEL AIRCRAFT
PRODUCTS BY ALL LEADING
MANUFACTURERS

ENGINES

Merco 29 R/C	E9.19.9	Merco 61 R/C	E19.7.0
A.M. 10	101/2	McCoy 049	70/-
Fuji 35	176/8	Fuji 19 R/C	172/2
VERON		KEIL KRAFT	
Concord R/C	301/1	Gyron	89/6
Big Eagle Glider	208/4	Ladybird	38/3
Cardinal	28/-	Mini Super	127/11
Mini Robot	63/11	Caprice Glider	25/3

FULL STOCKS OF MERCURY KITS
AND ALL CONTROL LINE ACCESSORIES

RUSS, 101 BATTERSEA RISE, LONDON, S.W.11
Telephone: 01-228 6319

MODEL AIRCRAFT SPECIALISTS

GLIDERS		POWER MODELS	
Contest Inchworm	33/8	KK Snipe	30/1
Empress	46/8	Cessna 170	38/3
KK Topper	17/10	Piper Super Cruiser	38/3
Invader	13/7	Luscombe Silvaire	38/3
Caprice	25/3	Slicker Mite	20/3
Minimoa	15/4	Ladybird	38/3
Conquest	12/2	Southerner Mite	22/1
Cadet	9/4	Mercury Magna	20/2
Soarer Baby	10/10	Tiger Moth	49/1

ALSO FULL RANGE OF ENGINES, RADIO CONTROL
ALWAYS IN STOCK

JOHN W. BAGNALL LTD.
18 Salter Street, Stafford

Est. 1936

Tel. 3420

BERKSHIRE'S R/C CENTRE

FOR LARGE STOCKS OF R/C EQUIPMENT
ACCESSORIES AND KITS

SPRENGBROOK 4 PROPO	E160.0.0
MACGREGOR CODERMATIC SUPERHET	E24.4.6
FUTABA CODEMASTER SUPERHET	E31.17.6
STAVELEY TONELOCK	E27.10.0
COMPLETE RANGE OF SERVOS FOR S/C	From 69/6
SINGLE CHANNEL BY MacGREGOR, FUTABA, RIPMAX and STAVELEY	

No Deposit Terms by PAYBONDS on all orders over £25

READING MODEL SUPPLIES
5 Chatham Street, Reading

Early Closing Wed.

Tel. 51558

OUTSTANDING VALUE



STALLION 35

only

£6.11.6 incl. P.T.

R/C version
£8.15.0 inc. P.T.



ALSO AVAILABLE AT YOUR MODEL SHOP

KB 19 R/C	£10 14 3	KB 15R R/R	£12 6 0	Veco 19 BB	£11 16 3
KB 35	£8 10 9	KB 29R R/R	£15 10 6	19 BB R/C	£14 9 0
KB 35 Combat	£9 1 6	KB 35 F/R	£12 6 0	Veco 35 stunt	£10 14 3
KB 35 R/C	£12 6 0	KB 35 F/R R/C	£13 8 0	Veco 35 R/C	£12 6 0
KB 45 R/C	£14 19 0	KB 40 F/R	£14 9 0	Veco 50 R/C	£21 10 0
KB 35 Stallion	£6 11 6	KB 40 F/R R/C	£16 12 0	Veco 61 R/C	£29 19 6

Still offered at an exceptionally low price despite the current spate of rising costs, the KB Stallion 35, built to the same exacting standards that KB incorporate in their internationally successful range of 40's, is a must for many modellers.

Ideal for beginners and for the more experienced, and also an R/C version is available to suit sports type models.

Fully machined silencers now in stock for the above and for many other of the range above, at 35/-.

FULL SPARES AND REPAIR SERVICE

Trade enquiries invited

IRVINE ENGINES



31 The Fairway, New Barnet, Herts.

Have you got what it takes to be a High Flyer?



Go on. Make something that will really do justice to your talents. If it's only the cost that's worrying you then you should know about Paybonds. It's the new, flexible credit scheme that's specially geared for the aeromodelling enthusiast. You could have £25-£300 to use now on the things you need. And up to 2 years to pay.

So write for full details without any obligation. Go on—Spread your wings!

Paybonds

Paybonds Ltd.,
P.O. Box 430
51, Cannon St.,
London E.C.4



Men and Machines Series

A series that has gained the reputation of a 'must' for all deeply involved in aircraft.



British Bombers, World War II, Volume 1 by Philip Moyes. Has the complete development history of the Avro Lancaster and Manchester, and the de Havilland Mosquito. Also covers the Consolidated B-24 Liberator, Douglas Boston and Fairey Battle.

British Bombers, World War II, Volume 2 by Philip Moyes. Tells the story of the famous Handley-Page Halifax. Other aircraft include Boeing B-17C Fortress I; Bristol Blenheim; Handley-Page Hampden; Lockheed Vega Ventura and the Vickers Wellesley.

British Fighters, World War II, Volume 1 by Francis K. Mason. Contains six coloured drawings of the Supermarine Spitfire. Also details of Bell P-39 Airacobra; Gloster Gladiator; Gloster Meteor; North American P-51 Mustang and the Westland Whirlwind.

American Fighters, World War II, Volume 1 by Dr. Rene Francillon. Gives the history of the P-51 Mustang with excellent five-view drawings of this historic aircraft. Other fighters in this volume are Bell P-39 Airacobra; Boeing P-26; Grumman F-4F Wildcat; Grumman F-6F Hellcat; Lockheed P-38 Lightning and the Northrop P-61 Black Widow.

Japanese Bombers of World War II by Rene Francillon. New information on Carrier-borne Torpedo and Dive Bombers; Development of Naval Aviation in Japan, Land-based Bombers; Technical Appendix; Aichi D3A1-2; Mitsubishi G3M1-3; Mitsubishi G4M1-3; Nakajima B5N2-B6N2 and the Yokusaka D4Y1-4.

Other World War II titles available in the series include German Bombers Volumes I & II and German Fighters Volumes I & II.

Stocks exhausted—reprints now available at your local bookseller or model shop price 35/- (£1.75) each or from the Publishers at 38/6 (£1.92½) inclusive post and packing

Hylton Lacy Publishers Limited,
Coburg House, Sheet St., Windsor, Berkshire, England

CLASSIFIED ADVERTISEMENTS

PRESS DATE for July issue, 1970, June 22, 1970.

Private Minimum 18 words 6/- and 4d. per extra word.

Trade Minimum 18 words 12/- and 8d. per extra word. Display box rate £2.10.0 per single column inch.

Box Numbers to count as six words when costing.

Box replies to be sent care of Advertising Department, 13-35 Bridge Street, Hemel Hempstead, Herts., England. Copy received after first post on June 22 will be held held over until the next issue, unless cancelled in writing before 15th of the following month. There are no reimbursements for cancellations.

B.D. ENGINE MART

We buy good used Model Engines and urgently require Vintages and Post war engines, etc. Post your unwanted engine to us for valuation by return. S.A.E. and 6d. for list of secondhand bargains, part exchange on any new engine with pleasure. Write to:

B.D. Engine Mart, 15a Long Drive, East Acton, London, W3

FOR SALE

P.A.W. 15, little used 65/-. Baby Bee 35/-. PeeWee 15/- (damaged lug). Frog 500 (lug drilled) 20/-. Wanted: Atwood 49/51 Bambi Amco 87, early Frogs, radial mount Elfins. Moseley, 37 Springmead Drive, Garforth, Leeds.

Merco 29 (E5) Mint, Mills 1.2 (two) £3 each (perfect), 7 c.c. Taplin Twin (W/C) £12 (mint), Kay's 5 c.c. diesel £3 (good), Enya 15 50/-(good). Aviette kit (new in original box) Ambassador £15, 47 Blackbrook Park Avenue, Fareham 2580 (after 6 p.m.). U.

ME Snipe, 2 Elmic Conquests and 1 Rising Clockwork Actuator. Sell or exchange for 225 DEACs or smaller engines. Coles, 26 Roberts Road, Barton St. Winchester, Herts. U.

Rep 3+1 radio outfit, brand new and unused in makers box. Gives rudder/elevator/engine from two Elmic escapements, £15. Box No. 869 (Hertfordshire), Aeromodeller Offices, 13/35 Bridge Street, Hemel Hempstead, Herts. U.

For Sale, E.T.A. 29, Merco 35, Paw 19D, all not run in. Offers, 2 volt accumulator used £1. Single channel Tx. and Rx. £2.10.0; also props, etc. 01-529 2834 weekends, 7 Suffed Road, U. Chingford, London, E.A.

Special department for aeromodelling, ship model building, and radio control equipment. MAIL ORDER Send for our catalogue, price DM 3.50 (7/- inc. postage)

Spielzeug-Rasch

2 Hamburg 1,
Gerhart-Hauptmann-Platz 1,
Germany

O.S. Jet engine type II for sale. Used once, complete with spare intake valve, and instructions. £20, write to: A. Milston, 2 De-Vesci Court, Dun-Laoghaire, Co. Dublin, Eire, or ring 804637 from 5 p.m. onwards.

Oliver Tiger III and silencer 55/-; Cox TD 049 and silencer 55/-; Rivers Silver Arrow 40/-; Frog 150 15/-; 18 assorted props 15/-, all o.n.o. Carlson, 9 Wellgreen Close, Hale, Cheshire, 061-980 3618.

For Sale, 'Aeromodeller'. Various 1962 to 1969 3/- each including postage. Enquiries S.A.E. D. Northcott, 11 Thornberry Terrace, Penzance, Cornwall. U.

Complete control liners, 40" stunter-veco 19, Peacemaker - AM 25. Both excellent. 2V. ACC + Charger, unused. Any reasonable offer. 83 Main Road, Oldham, Lancs. U.

McCoy 3.5 £2, E.D. Racer 1.49 £1.15.0d. Cox 049 £1. Also Frog 15 £1 and old E.D. 1 c.c. 10/-. Both minus fuel pins. J. Evans, 11 Tensing Road, Southall, Middx. U.

Merco 35 R/C, near new, in unfown Coy Kat C/L Stunt with coupled flaps. Model completely covered with Solarfilm. Bargain £10. Vine, Skelgill, School Lane, Ashurst Wood, East Grinstead, Sussex. U.

Super Tigre G20/15 glow literally unrun, highly tuned, very fast. £10.0. G. Veck, 24 Chate Close, Rowner, Gosport, Hants. U.

R.S. & V. ENGINES

will purchase all types of good second-hand engines. Send your used or unwanted engine to us for best valuation by return. Send for our list of quality used engines, Oliver, E.T.A. S/Tigre, O.S. Merco, D.C. and many others always in stock. Part exchange on any new motor with pleasure.

RACING, SPORT & VINTAGE ENGINES
32 Alston Road, High Barnet, Herts.

R.C.S. Digisig with 4 Orbit mini-servos, just thoroughly checked by manufacturer. Offers around £100 to Hewitt, 21 Clarendon Road, Redland, Bristol. U.

Galloping Ghost radio equipment for sale plus extras £30 o.n.o. Phone: Watford 22614. U.

A.M. 15+ silencer run-in only, v.g.c. Two props, two tanks £3 lot o.n.o. David Storer, 83 Somerset Road, Southall, Middlesex. Tel: 01-578 5617. U.

Collector's items: Unique Russian Vetrok 1.5 c.c. Diesel, and E.D. Pap 0.8 c.c. Diesel. Both unused, boxed, and with instructions. Also excellent Cox Medallion .09 R/C, little used A.M.15, good Cox Babe-Bee, and immaculate Cox Q-Z 049 £22 the lot, or individual offers. Box No. 868, Aeromodeller Offices, Hemel Hempstead, Herts. U.

American-made 3 channel proportional gear single stick with additional motor control. In excellent condition, all-up flying weight 23 oz. Ideal for sport power model, and sailplane flying. £30, or with slop soarer, £38. 1 sailplane fuselage and 1 low wing power model fuselage in fibreglass, weight 19 oz. - 25/-. each. Hulme, 139 Green Lane, Vicars Cross, Chester. Tel: Chester 20339 evenings. U.

D.C. Spitfires, little used 60/-. Cox 0.20, 90/- Cox Fiedling C.L. with 0.49, 95/-. Baxter, 3 Kelvon Close, Glenfield, Leicester. U.

PLANS

BY 'PAISLEY SCALE'

53in. HALBERSTADT CLII.

Suits S/C or F/H R/C.

Two Sheets 20/-

54in. CESSNA 170.

Suits F/F to Inter R/C.

One Sheet 15/-

36in. CAUDRON 1910.

Suits F/F or S/C.

One Sheet 10/-

J. DOVE, 10c Woodneuk Court,
Paisley, Renfrewshire

For Sale, KeilKraft 'Super 60' 5' 4" wingspan. 4ft. fuselage. Very robust and handsome aircraft, meticulously constructed. Nylon covered, Suitable R/C. Unpainted. Requires wheels and engine. Send offers please. Advertiser, 8 Rosedale Road, Stoneleigh, Ewell, Surrey. U.

Hardly used stunt model and combat model with silenced motors. Guaranteed Merco 35. Many accessories. Telephone Blackburn 21615 (Lancashire) after 4 p.m.

GEM 5/C Transmitter, Pixie Receiver, compact and rising clockwork escapements, silenced R/C Webra 'Sport-Glo' in Graupner 'Amateur' £20. E.D. Bee 30/-, Cox 049 22/6d. Clayton, 64 Ashbank Road, Liverpool 11. U.

BOOKS

Dieter Hoffman/Karl Ries Books at the Old Prices! Markings and camouflage (Luftwaffe), 3 volumes, each 47/-; Aora Kurfurst - Volumes 1-3 at 52/- each and volume 4 at 61/6d. NEW RIES TITLE Luftwaffe Volume 1. The Moles underground activity 1919-1935 67/-. And other titles. Order direct (post free) from Graham K. Scott, 2 The Broadway, Friern Barnet Road, London, N.11. U.

Ten Years U.S.A. Model Airplane Inventions, illustrated, comprehensive booklet, send 10/-. Stanley Garli, 825 New Hampshire Avenue, Washington, D.C. U.S.A.

Available (and Wanted). Aviation Journals 'Flight', 'Aeroplane', 'Aero' 1911-1950. Satisfaction guaranteed. Lambert, 60 Salhouse Road, Rackheath, Norwich. U.

American Magazines. Year's subscription: 'Model Airplane News' 54/-; 'American Modeller' 66/9. Full catalogue free. Willen Ltd. (Dept. 1), 61a Broadway, London, E.15. T/C.

'SAILPLANE & GLIDING' - The only British magazine devoted solely to the sport of gliding and soaring. Over 80 pages of fascinating material and pictures. Published every other month. Send 5s. for current copy or £11.0.0 or 5s. for a year's subscription to a British Gliding Association, Artillery Mansions, 75 Victoria Street, London, S.W.1. T/C.

NITRO-ENGINEERING OF BANBURY

(Engine Specialists)

Pay the highest prices in the country for good used engines of any type. Send your engines to us for a quote by return and PROVE IT!

FREE! FREE! FREE! FREE!

We give away FREE! every month a quality used engine. S.A.E. for new and used engine lists which contain full details.

Winner of April's Competition:

Mr. M. R. Downes, 26 Hollyway,
Tiptree, Essex

112 WARWICK ROAD,
BANBURY, OXFORDSHIRE

WANTED

Wanted. Aeromodeller Annual 1948 and 1955-56, good price paid. P. Martin, 28 Langley Rise, Solihull, Warwickshire. U.

Wanted 1967-1968-1969 'Aeromodellers' - will trade McCoy 35, Redhead engine used only once, for them. Charles Schafer, 441 West Lafayette, Rushville, Illinois 62681, U.S.A. U.

Diecast metal model airplanes. Dinky, Tootsie Toy, etc. Also diecast and Tinplate cast trucks and buses. Carl Natter, 1703 Termino Long Beach, California, 90804, U.S.A. U.

Spark Plugs. A.C. wanted by Franz Kavan, 85 Nurnberg, West Germany, Lindenastr. 56. T.U.

Wanted. E.D. 46, Elfin 1.8, Frog 50, 'K' Hawk, Kestrel, Tornado, Falcon, Vulture. Ross Beale, 51 Burley Wood Crescent, Leeds, LS4 2QQ. U.

A standing order exists for the following motors, preferably as new, but will consider modified units, parts or specials. Dooling/Carter Dooling 29 & 61. McCoy 29, 49 & 60. Fox 408B & 29R. HP40 & 61. Rossi 60. D.C. 5 c.c. Twin. Amro 10 c.c. MVS 5.6 c.c. Moki, Komet, Nordac, Micron, Hornet. Also Tanks, Props, Pans, etc. Higgins, 28 Glanville Road, Street, Somerset. Overseas offers accepted. U.V.

GENERAL

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

HISTOREX announce the availability of their catalogue for 2/6d. including postage. For the uninitiated Historex are producers of the finest plastic kits of Napoleonic soldiers and Historical figures. Historic Agents, 3 Castle Street, Dover, Kent. S.T.U.

Penfriends wanted urgently; all ages. S.A.E. to: Pen Society (I.77), Chorley, Lancs. U.

TRADE

Ellesmere Cameras in co-operation with Roland Scott Ltd., offer Top Part Exchange allowance on Model Engines and R/C units towards any new or secondhand Photographic Equipment (or vice versa). Send 6d. stamp for newsletter and all lists - today. Ellesmere Cameras, 15-17 Bolton Road, Walkden, Nr. Manchester. Phone 061-790 5754. U.

1 1/2 oz. nylon. Ivory shade, ideally suitable for covering frames, special offer 3/11 per yard post paid, minimum order 4 yards. Three-Suns (Tex.) Ltd., 80 George Street, M/c.1. R-W.

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

Circuit Testers. Find bad connections quickly, even in the field, with new pocket-size circuit tester, complete with instructions, lead, crocodile clips. Only 10/- including postage. Turnbills, 4 Scott Avenue, Shortstown, Bedford. U.

GIG

EIFFLAENDER
REBORING SERVICE
CHESTER ROAD,
MACCLESFIELD

REBORES: P.A.W. Diesels 25/- c.w.o. Other Diesels from 30/- c.w.o. Glowplug engines from 40/- c.w.o. C.O.D. (pay the postman, UK only) 6/- extra. All work guaranteed one month. Enquiries, etc. Stamped self-addressed envelope or reply coupon, please.

GLIDING HOLIDAYS

Why not learn to fly at our thermal and hill soaring site in the Cotswolds? Instruction given in dual-control sailplane by qualified instructor. Residential course fee £32 per week; Non-residential £23 per week. Camping facilities are available. Write for details to:

Hon. Course Secretary,
**BRISTOL AND GLOUCESTERSHIRE
GLIDING CLUB**
Nympsfield, Nr. Stroud, Glos.
Telephone Uley 342

ESSEX GLIDING CLUB

North Weald Airfield (London 18 miles)
Beginners' Courses (non-residential)
15gns. per week
Expert Tuition from BGA categorised
instructors in dual control aircraft.

For details write to:
Course Secretary, P.O. Box 5, Epping,
Essex
Tel: North Weald 2222 (weekends only)

WYCOMBE AIR PARK

GLIDING
Weekly all-inclusive Gliding Courses available throughout the summer. Accommodation, Licensed Clubhouse - Professional management and instructors, all aerotow launches. Combined fleet includes 3 K 7's (two seat gliders), 3 Skylark III's, 1 Skylark 4.
Airways Flying Club (Gliding Section)
Thames Valley Gliding Club. For details of Membership and Gliding Courses apply:
The Secretary, Wycombe Gliding School,
Wycombe Air Park, Booker Marlow, Bucks.
High Wycombe 29263

CORNISH GLIDING AND FLYING CLUB

Gliding Courses in modern fleet from May 11th - B.G.A. Categorised Instructors - fine soaring - lovely coastal airfield - ideal for a different family holiday
Aerotow Courses available.
Details with pleasure from:
The Course Secretary
The Cornish Gliding and Flying Club
Trevellas Airfield, Perranporth, Cornwall

HOLIDAY GLIDING COURSES

at the YORKSHIRE GLIDING CLUB

SUTTON BANK - THRSK - YORKS.

A hill site, situated on the famous slopes of Sutton Bank, offers soaring in the most beautiful surroundings.
Holiday courses are held from May to September.

ILLUSTRATED BROCHURE FROM:

A. L. HILL, 3 West End Lane, HORSFORTH, LEEDS

PLANS

A1, A2, open glider etc., plans send S.A.E. for illustrated list. Baguley, 37 Woodburn Manor Park, Woodburn Green, Bucks. U.

Plans Enlarged or Reduced and additional copies made. Send for details from: Causer & Co., 216 Goldhawk Road, London, W.12. SHE 2366. J-U.

FLYING DISPLAYS

Service Aviation 1910-1970 will be the theme of the Military Air Pageant to be held at the Shuttleworth Collection, Old Warden Aerodrome, Nr. Biggleswade, Beds., on Sunday, 26th July. Gates open 11 a.m. Flying starts 2 p.m. Admission: adult £1, child 3/0d. Free parking. Demonstrations by historical aeroplanes also on 30th August and 27th September. U.

GET-AWAY - GO GLIDING!

KENT GLIDING CLUB

offers Weekly Holiday Courses (April - November). Beginners welcome.
Professional instruction.
Winch and aerotow launches.
Modern clubhouse with licensed bar.

Enquiries to:
The Secretary, Kent Gliding Club,
Challock, Nr. Ashford, Kent.
Tel. Nos: Challock 307 or 274.

Cash on Delivery Service

It is known throughout the modelling world that we have the best stocks in the country but even we sometimes fail to deliver the goods for various reasons - for example: Two modellers sending for the same item at the same time and we only find one in stock. To make things easy all round why not make use of the Post Office with C.O.D. service.
1. If we have the item you require you will receive this by return.
2. If we are expecting further stocks we will inform you that your order will be delivered in approximately 7 days.
3. We will know if your requirements are not available and will inform you accordingly suggesting an alternative.

PAY THE POSTMAN C.O.D. -

IT MAKES GOOD SENSE

Newsletters and all lists sent for 6d. in stamps

ROLAND SCOTT LTD.

85 BOLTON ROAD,
WALKDEN, NEAR MANCHESTER
Phone: Walkden 6707 (061-790 6707)

ENGINES IN IRELAND

S. Tigre G.15 speed	...	...	£8.50
S. Tigre 40 RV	...	...	£10.10
P.A.W. 2.49 D only	...	...	£4.17.6
P.A.W. 19D Combat	...	...	£4.12.6
Enya 19 Glow	...	...	£5.19.0
Enya 35 Stunt	...	...	£4.10.0
O.S. 15 R/C	...	...	£6.9.6
O.S. 30 R/C	...	...	£7.10.0
O.S. 60 R/C GP Rear	...	...	£16.16.0
Enya 29 R/C Glow	...	...	£6.19.6

Latest kits, accessories including
KAVAN, Micromorph and M.F.A.
SIMPROP R/C SETS
SOLARFILM

OWENS

41 Main Street, Bray, Co. Wicklow

Do you fly model aircraft?

If so, you owe it to yourself to

JOIN THE S.M.A.E. NOW

It is run by aeromodellers, for aeromodellers. It negotiates for flying sites, organises contests, publishes a newsletter, provides £100,000 third party insurance for members. For full details and Membership Application Form send an S.A.E. to: Society of Model Aeronautical Engineers, 10a Electric Avenue, London, S.W.9.

interested in scale modelling

Why not join us

IPMS/International Plastic Modellers Society

The annual subscription is 45s. or 20s. if you are under 18. This includes our monthly magazine.

Details from
Membership Secretary, 40 Cromwell Lane,
Northfield, Birmingham, 31.

NJ M

WE STOCK -

ENGINES:

Merco, Fuji, D.C., Webra, A.M., E.D., etc.

KITS:

Keilkraft, Veron, Mercury, Contest, Etc.

NORWOOD JUNCTION MODELS

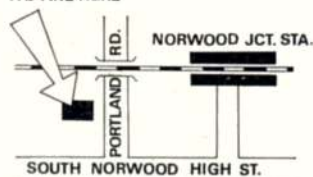
3 ORTON BUILDINGS,
PORTLAND ROAD, LONDON, S.E.25

Tel. 01-653 4943

SECONDHAND

Radio Control Equipment
and engines purchased or
part exchanged

WE ARE HERE



Hours: 9.30-6; Fri. and Sat. 9.30-7
Early closing Wednesday

Radio Control Equipment of your choice supplied, installed and serviced.
We keep extensive ranges of Accessories and Spares in Stock.
PAYBONDS ACCEPTED

If you cannot call, we will be pleased to post your requirements



MODEL SHOPS TO SERVE YOUR INTERESTS

BIRMINGHAM Tel: B'ham Highbury 3237
KINGS HEATH MODELS
 5 YORK ROAD
 KINGS HEATH, BIRMINGHAM 14
 Keil-Kraft, Veron, Airfix, Monogram, Frogflite, Cox, Aurora, Diesel and Glow engine, Accessories, etc. Also Boats, Railways, Slot Racing cars, etc.

AUSTRALIA Tel: 637424
RIVERSIDE HOBBY CENTRE
 3 PRINCE WALK, MELBOURNE 3000
 Radio Control Equipment Kits, Engines, Accessories. M.A.P. Plans, Books.
 FAST MAIL ORDER SERVICE.

BEXLEYHEATH
 Tel: Danson Park 2055
REMCON
 FOR ALL MAKES OF RADIO EQUIPMENT AND MODELLERS' SUNDRIES
 Do-it-yourself Superhet Equipment
 Advice from practical Modellers
 Write : Dept. M.S.D., 4a Broadway Bexleyheath, Kent

BIRMINGHAM Tel: 021-772 4917
BOB'S MODELS
 520-522 COVENTRY ROAD
 SMALL HEATH, BIRMINGHAM 10
 MODEL CENTRE OF THE MIDLANDS
 RADIO CONTROL SPECIALISTS
 Friendly help and Advice backed by over 20 years' experience

AUSTRALIA
SEMAPHORE HOBBY CENTRE
 12 HART STREET
 SEMAPHORE SOUTH, S.A. 5019
 M.A.P. Plans, Books, Kits, Engines, Accessories, etc
 Radio Control Equipment
 Free Price Lists



BIRMINGHAM Tel: 554 5569
THE MODEL MECCA
 204 WITTON ROAD
 BIRMINGHAM 6
 Model Aircraft, Boats, Trains, Cars and R/C outfits

AYLESBURY Tel.: 85752
TAYLOR & McKENNA
 46 FRIARS SQUARE

BIRMINGHAM Tel: EAST 0872
POWELL'S
MODEL CENTRE
 769 ALUM ROCK ROAD, WARD END
 BIRMINGHAM 8
 Personal Attention of G. & F. Powell

BARKINGSIDE Tel: 01-500 2007
PAGE'S OF BARKINGSIDE LTD
 M.E.T.A.
 19 BROADWAY MARKET, BARKINGSIDE
 ILFORD, ESSEX
 Why go to town?
 We can supply all your needs at Ilford's largest Model Shop

WORLD WIDE GUIDE TO MODELLING SUPPLY SHOPS

BRADFORD Tel: 26186
THE MODEL SHOP
 182 MANNINGHAM LANE
 BRADFORD 8
 Radio Control Equipment, Aircraft and Boat Kits and all Modelling Accessories
 Mail Order by return

BARNSELY Tel: 6222
DON VALLEY SPORTS
 28 DONCASTER ROAD, BARNSELY
 Model Aircraft, Boats, Cars, Railways
 All makes of Engines
 R/C Equipment
 Postal Service

— IS YOURS HERE?
 Missing Shops — apply for low-cost rates & data

BRIGHTON Tel: Brighton 48225
HARRY BROOKS
 15A VICTORIA ROAD
 PORTSLADE, SUSSEX
 The best stocked model shop in the South — You want it, we have it

BATH Tel: 60444
CYRIL HOWE'S
 CHEAP STREET, BATH, SOMERSET
 The Model Shop of the West for all your modelling requirements Aircraft, boats, engines, radio control. Expert advice available
 M.A.P.

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

BRISTOL Tel: 47505
MODEL HIGHWAYS
 85 GLOUCESTER ROAD, BRISTOL, 7
 Keil, Veron, Top Flight
 Fuel by the gal. Balsa, etc.
 CLOSED WEDNESDAY

CARDIFF Tel: 29065

BUD MORGAN

The Model Aircraft Specialist
For KeilKraft, Mercury, Veron, Ripmax,
Simprow R/C and Mainstream products.
PAYBONDS ACCEPTED
S.A.E. stamped please for assorted lists
22 & 22A CASTLE ARCADE, CARDIFF
CF1 2BW

CHICHESTER Tel: 83592

**PLANET MODELS AND
HANDICRAFTS**

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

CROWTHORNE Tel: 4605

MODELS & HOBBIES

196 DUKES RIDE, CROWTHORNE, BERKS
Aircraft, Boats, Engines, Radio
Control, servos and all accessories
AGENTS FOR ALL LEADING MAKES
Prompt Mail Order Service

DERBY Tel: ODE 2 62771

SUPER MODELS

3 CHAPEL SIDE, SPONDON, DERBY
(7 mins. off M1. Exit 25)
The leading shop for Ready-built Air-
frames. Quality R/C gear. Delta Sky-
leader. Main Service Agent for Sky-
leader in Midlands and North.
Fantastic selection of Solarbo Balsa
Wood 2", 3", 4" & 6" wide 4' & 3' long

DONCASTER Tel: 2524

B. CUTRISS & SONS

MODELS AND HANDICRAFTS
40 DUKE STREET

Call and see our Shop

DUDLEY Tel: 57045

ACE MODELS

20 FOUNTAIN ARCADE, DUDLEY

For Keil Kraft, Veron, Mercury,
Revell, Riko, Frog, etc.
CLOSED WEDNESDAY

FAREHAM Tel: 4136

G. M. H. BUNCE & CO. LTD.
206 WEST STREET, FAREHAM

Aircraft, boats, engines, radio control
Engineers/woodworkers
tools and machinery

FARNWORTH Tel.
Farnworth 74688

JOYCRAFT
29 HALL LANE, MOSES GATE
FARNWORTH, BOLTON

The shop for all your modelling needs.
Balsa Wood specialists, materials,
engines, aircraft and boat kits. R/C
equipment. S.A.E. for reply. Postal ser-
vice. We are here to serve 'YOU'.

GLASGOW 041-632 8326

RIDDELL BROS.

61 MOUNT ANNAN DRIVE
(Facing Mount Florida School),
GLASGOW, S.4
VERON KEIL BILLINGS AIRFIX
Accessories, Balsa, etc.

HEMEL HEMPSTEAD

Tel: 53691

TAYLOR & McKENNA

203 MARLOWES

HULL Tel: 43701

REG. BEAUMONT

150 CHANTERLANDS AVENUE,
HULL. E. YORKS.

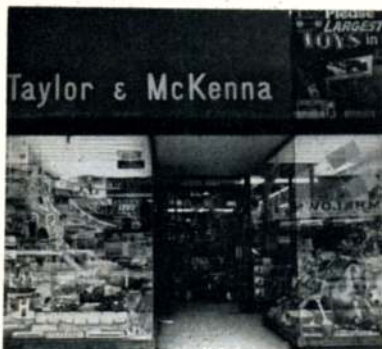
Mainstream, Veron, etc.

MAIL ORDER SERVICE

ILFORD Tel: 01-554 9142

AVIACOLOUR

MODEL SUPPLY SPECIALISTS
Specialists in Radio Control
466 EASTERN AVENUE, ILFORD, ESSEX
(1 min. from Gants Hill Central Line
tube station)



KENT Tel: RAV 0818

AVICRAFT LTD.

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

KENT

MODERN MODELS LTD.

49/51 LOWFIELD STREET
DARTFORD, KENT

For all that's best in Model Aircraft and
Boats, including Radio Control
American Kits and Accessories a
speciality

LEEDS Tel: 27891

THE MODEL SHOP

38 MERRION STREET
(Nr. Tower Cinema)

Model aircraft—boats—cars—railways,
all makes engines. Every accessory,
R/C equipment. Same day postal service

LEICESTER Tel: Leicester 21935

**RADIO CONTROL
SUPPLIES**

52 LONDON ROAD
Mail Order Specialists
Closed Monday
Open until 8.30 p.m. Friday
The Showroom of the Midlands with full
R/C service facilities

LEYLAND Think of MODELS

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

LINCOLN Tel.: 25907

MODEL CENTRE

24 NEWLAND
THE ENTHUSIAST'S SHOP
Big Stocks of Kits, Engines, Balsa,
Accessories, R/C Gear, etc.
MAIL ORDER

LONDON Tel: 01-529 1250

'LEISURE TIME'

4 STATION ROAD,
CHINGFORD, LONDON, E.4
Aircraft, Electric Cars, Boats, Railways
and Accessories, Plastic Kits, Modelling
Activities, Secondhand models section.
All models bought, sold & exchanged.

LONDON Tel.: 01-560 0473

**RADIO CONTROL
SUPPLIES**

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

LONDON Tel.: MIL 2877

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

MILL HILL CIRCUS, LONDON, N.W.7
Complete range of model aircraft,
engines and accessories, boats,
cars and railways

LONDON Tel.: TID 6292

D. BRYANT

MODEL SUPPLIES
328 BROCKLEY ROAD, S.E.4
For Futaba R/C equipment and all
other leading makes, Keil, Veron,
Frog, Airfix, etc. Expert advice on
scale problems, easy parking.

MODEL SHOP DIRECTORY



LONDON GRA 2471
A. G. HERMITE
 (MODEL SUPPLIES)
 633 BARKING ROAD, WEST HAM, E.13
 Aircraft—Boat—Car—Plastic Kits & R/C
 Saturdays 9 a.m. to 6 p.m.
 Postal Service

LONDON Tel.: 01-485 1818
AERO NAUTICAL MODELS
 39 PARKWAY, CAMDEN TOWN, N.W.1
 Main Agents for R/P MAX - GRAUPNER
 Full range of Timbers stocked and cut
 ALL KITS AND ACCESSORIES FOR
 AIRCRAFT AND BOATS
 MAIL ORDER SERVICE
 1 min. from Camden Town Tube Station,
 Northern Line.
LONDON'S LEADING MODEL SHOP

LONDON Tel.: WELbeck 8835
W. & H. (MODELS) LTD.
 14 NEW CAVENDISH STREET, W.1
 (Five minutes from Oxford Circus)
 LEADING WEST-END STOCKISTS OF
 ALL QUALITY MODEL AIRCRAFT KITS
 BOATS, RAILWAYS, MAIL ORDER

LONDON Tel.: North 4272
**HENRY J. NICHOLLS
 & SON LTD.**
 308 HOLLOWAY ROAD, N.7
 We stock only the best for
AEROMODELLERS
 Specialists in Radio Control

LONDON Tel.: 01-703 4562
**MODEL AIRCRAFT
 SUPPLIES LTD.**
 207 CAMBERWELL ROAD, S.E.5
 Business Hours:
 Monday to Wednesday, 10 am. to 6 pm.
 Saturday, 9 am. to 6 pm.
 Late night Fri. 7.30 pm. Closed all day Thur.
 Postal Service. Parking Facilities.

LONDON Tel.: 01-445 6531
MICHAEL'S MODELS
 546-8 HIGH RD., N. FINCHLEY, N.12
 Comprehensive stock of KeilKraft, Mercury & Veron kits. Good selection of Engines and a full range of accessories and woods.
MAIL ORDER A PLEASURE
 Closed all day Monday Easy parking

LONDON Tel.: 01-902 4823
WALLY KILMISTER LTD.
 6/7 NEED PARADE
 WEMBLEY TRIANGLE, MIDDX.
 Radio Control Boat Specialists, Aircraft, Engines, Servos, etc., Ripmax, KeilKraft, Veron, Hales Rovex, Scalextric stockists
WEMBLEY BOAT CENTRE

LUTON Tel.: 23182
AEROMODELS (LUTON)
 20 GORDON STREET
 LUTON, BEDS.
 Model Aircraft, Cars, Railways and Boats for the beginner and expert.



MAIDENHEAD Tel.: 21769
E. WALTON
 61 KING STREET
 Wide range of Modelling Kits and Accessories
 Engines and R/C Equipment
 Railways, etc.
 Established 1932

MAIDSTONE Tel.: 51719
J. F. CARTER & SONS LTD.
 (THE MODEL SHOP)
 19-23 UPPER STONE STREET
 MAIDSTONE, KENT
 Complete range of modelling equipment and accessories, including R/C.
MAIL ORDER

MANCHESTER Tel: BLA 3972
THE MODEL SHOP
 13 BOOTLE STREET
 MANCHESTER 2
 THE UP-TO-DATE SHOP WITH THE COMPREHENSIVE STOCK
 Mail Orders by return

NEWCASTLE Established 1924
THE MODEL SHOP
 (NEWCASTLE UPON TYNE) LTD.
 18 BLENHEIM STREET Tel.: 22016
 NEWCASTLE UPON TYNE, ENGLAND
 Pioneers of modelling
 Our Expert Staff are at your Service
MAIL ORDER

NOTTINGHAM Tel.: 50273
GEE DEE LIMITED
 40 GOOSE GATE
 NOTTINGHAM
 Everything for the aeromodeller at Nottingham's leading shop.

OLDHAM Telephone: MAIn (Oldham) 8812
**A.B.C. ELECTRONICS
 (OLDHAM) LIMITED**
 83 LEES ROAD, OLDHAM, LANCs.
 * Radio Control Manufacturer *
 All leading makes of R/C, engines, kits and accessories in stock.

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

PAISLEY Tel.: 8244
THE HOBBY SHOP
 43 BROOMLANDS STREET, PAISLEY
 Books, Aircraft, Boats, Railways, Cars, Engines galore. R/C equipment.
 All accessories. Trade-ins accepted.
 Engines, etc. repaired.
 Paybonds accepted.

READING Reading 51558
**READING
 MODEL SUPPLIES**
 5 CHATHAM STREET, CAR PARK
 OXFORD ROAD, READING, BERKS.
 BERKSHIRE'S SPECIALIST MODEL SHOP FOR KITS, ACCESSORIES, ENGINES, RADIO EQUIPMENT.
 H.P. Terms available.
 You can drive right to us.

READING

Tel.: 50074

G. SLEEP, LTD.

22/24 KINGS ROAD, READING

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

ROMFORD

Tel.: ROM 44508

HOME & HOBBY STORES

144 NORTH ST., ROMFORD, ESSEX
Goldberg - Graupner - Mail Order - Keil - Veron - Frog - Top Flite - MacGregor - A.P.S.
Late closing Fridays 7 p.m.

SHEFFIELD

Tel.: 581197

MODELS & HOBBIES

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

SOLIHULL

Tel.: SHI 3374

SHIRLEY MODEL SUPPLIES62 STRATFORD ROAD
SHIRLEY

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

SOUTHAMPTON

Tel.: 25565

THE MODEL SHOPR. G. LEWIS (SOTON) LTD.,
17 HANOVER BUILDINGS,
SOUTHAMPTON

For all your Aircraft and Marine Kits. Engines and accessories, Radio Control equipment by Sprengbrock, Skyleader, Simprop, Staveley, MacGregor, Futaba.
EASY TERMS MAIL ORDER
OPEN SIX DAYS A WEEK 9 a.m.-6 p.m.

ST. ALBANS

Tel.: 59234

BOLD & BURROWS LTD.19-23 CHEQUERS STREET,
ST. ALBANS, HERTS.
THE MODELLERS' DEN**STOCKPORT**

Tel.: STO 5478

THE MODEL SHOP280 WELLINGTON ROAD SOUTH
(BRAMHALL LANE CORNER)

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

SUTTON

Tel.: Vigilant 8292

E. L. S. MODEL SUPPLIES9 EAGLE STAR HOUSE,
HIGH STREET, SUTTON, SURREY
SURREY'S HOBBY CENTRE
BY RETURN POSTAL SERVICE

Complete stock of all Aeromodelling requirements.

**TUNBRIDGE WELLS**

Tel.: 22078

MAYKIT LTD.56 GROSVENOR ROAD
AIRCRAFT—BOAT—CAR—R/C KITS
Radio Control and Actuators—Engines
CALL, PHONE OR MAIL ORDER**WAKEFIELD**

Tel.: 77363

**RADIO CONTROL
SUPPLIES**53 BRADFORD ROAD,
WAKEFIELD, YORKS.
Closed all day Monday
Open until 8.30 p.m. Friday
Largest R/C stockists in the country**WALKDEN**

Tel.: 061-790 6707

ROLAND SCOTT LTD.85 BOLTON ROAD, WALKDEN
MOST ITEMS IN THIS MAGAZINE
IN STOCK NOW.
SEND FOR SECONDHAND LISTS**WALSALL**

Tel.: 23382

S. H. GRAINGER & CO.CALDMORE MODELS
108 CALDMORE ROAD
Everything for the Modeller
Aircraft - Railways - Boats - Electric Cars
Repairs - Rebores - Overhauls - Spares -
Radio Control - Part Exchanges**WATFORD**

Tel.: Watford 43026

MODEL EXCHANGE71 ST. ALBANS ROAD
WATFORD, HERTFORDSHIRE
The shop with stock and expert advice.
Free radio and engine testing service.
S/H engines and radio bought and sold
any time. Models built to customers'
specification, speedy service, reasonable
prices.**WELWYN****H. A. BLUNT
& SONS LTD.**38 FRETHERNE ROAD
WELWYN GARDEN CITY, HERTS.
Complete range of model aircraft,
engines and accessories, boats, cars
and railways.**WESTON-SUPER-MARE**

Tel.: Weston 6600

**RADIO CONTROL
SUPPLIES**1 THE CENTRE, WESTON-SUPER-MARE,
SOMERSET
Open until 8.30 p.m. Friday
Largest R/C stockists in the country
Own R/C service centre**WIGAN**

Tel.: 83208

TONY'S MODEL CENTRE10 CHAPEL STREET,
PEMBERTON, WIGAN
Radio Control equipment, Aircraft, Rail and
Boat Kits and all your modelling require-
ments. Personal attention assured.
IT WILL PAY YOU TO VISIT US
Easy parking — 24 hr. ans. service
MAIL ORDER SPECIALISTS**WOLVERHAMPTON**

Tel.: 26709

MODELS & HOBBIESBELL STREET, MANDERS CENTRE
WOLVERHAMPTON
EXPERTS COME TO US
VISIT US AS WELL
WE HAVE ALL THE BEST IN MODELLING**WOLVERHAMPTON**

Tel.: 27150

**THE HANDICRAFT
CENTRE**491 DUDLEY ROAD, WOLVERHAMPTON
Everything for the Modeller
Kits, Engines, Radio Control Equipment,
etc.
Mail Order Service**WORCESTER PARK**

Tel.: 01-337 0983

**THE TOY HAVEN & WORCESTER
PARK MODEL CENTRE**16/18 CENTRAL ROAD,
WORCESTER PARK, SURREY
Mon. to Sat. 9 a.m. to 6 p.m. For the
enthusiastic Modeller, Plastic Kits.
The best toys. Nearby Parking**WORKSOP**

Tel.: 2855

MODEL CENTRE

RYTON STREET

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

MODEL SHOPS EVERYWHERE

This is the cheapest form of advertising in the entire field of modelling publications. Become known to Aeromodellers everywhere with your name and address in this directory.

enquiries to:

**MODEL & ALLIED
PUBLICATIONS, LTD.**

13/35 Bridge Street

Hemel Hempstead
Herts, England

FIGHTER AIRCRAFT OF THE 1914-1918 WAR

BRITISH, FRENCH, GERMAN, AMERICAN,
AUSTRIAN AND ITALIAN AIRCRAFT

223 pages, including 84 of 1/72nd scale 3-view line drawings and 702 photographs. The book also describes 84 operational and experimental aircraft, including tables of dimensions/performance and list of unit equipment. Nearly 150 of the photographs feature close-ups of engines, guns, cockpits and undercarriages. This magnificent book, size 11¼" x 8½", weight 2½ lbs., is a must for modellers and historians.

20,000 COPIES SOLD!

ORDER NOW FROM: **HARLEYFORD PUBLICATIONS LTD.** (Dept SM),
LETCWORTH HERTFORDSHIRE ENGLAND

'Joy-Plane'

BALSA CEMENT

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

10d.; 1/6d.; 2/3d.

(Recommended retail selling prices)

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**



Now £100,000 INSURANCE

Model & Allied Publications Limited

13-35 Bridge Street,
Hemel Hempstead,
Herts.

We are happy to announce that our already well-known third party insurance for readers has now been increased to offer indemnity of £100,000! This magnificent insurance scheme which covers modelling activities within Great Britain, Northern Ireland, Channel Islands and the Isle of Man, has been negotiated with a leading insurance company. It is sufficiently embracing to cover all forms of model activity. It is equally applicable to free flight models, control line models, radio control models, aircraft, boats and locomotives.

All that is necessary for you to do to obtain the benefits of this magnificent cover is to complete the forms at the right of this announcement, sending the first part to us together with your remittance of 5/-, which covers you for one year, and handing the second part to your usual magazine supplier. Whether or not you already have an order in hand for the regular supply of your magazine, this form should still be handed in and your dealer will adjust his requirements according to whether you are a new customer or merely continuing your old arrangement.

This insurance is the prudent thing for every modeller to take out, but it is a sad fact until now, although the governing bodies of the hobby have offered this cover to their members, something like 90 per cent of the modellers in the U.K. have never taken up this opportunity and are operating 'without insurance protection'. By joining M.A.P. 'Modellers' Accident Protection' you come into the world's BIGGEST MODEL CLUB. For your initial subscription you obtain a lapel badge for identification and transfers to put on your model.

Complete the form and send off at once. We will send you back your membership card, lapel badge and waterslide transfers immediately.

M.A.P. INSURANCE MEMBERSHIP FORM

PART I to be handed to Newsagent

To _____

Please *reserve/deliver one copy of *AEROMODELLER/MODEL BOATS/MODEL CARS/RADIO CONTROL MODELS & ELECTRONICS/SCALE MODELS/MODEL ENGINEER/MODEL RAILWAY NEWS/MECCANO MAGAZINE, commencing

with the _____ issue. (*Delete as applicable)

Name _____

Address _____

PART II of the Form should be completed and sent to us at the address above left, together with your remittance of 5/-. PART I should be handed to your usual supplier, either newsagent, model shop, bookseller or wherever you normally expect to get your magazine.

PART III to be sent to M.A.P. Ltd.

Name (in full) _____

Address _____

Date _____

I enclose herewith postal order value 5/- for membership of M.A.P. £100,000 insurance scheme. This sum, I understand, includes two transfers and a lapel badge, and is conditional upon my ordering. * AEROMODELLER/MODEL BOATS/MODEL CARS/RADIO CONTROL MODELS & ELECTRONICS/SCALE MODELS/MODEL ENGINEER/MODEL RAILWAY NEWS/MECCANO MAGAZINE: (*Delete those not applicable).

I have today instructed my newsagent—

Address _____

to deliver me the magazine _____ until further notice.

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS



Flying Saucers... ...part of the Humbrol invasion!

For years now Humbrol products have been landed all over the world! In the forefront of their invading forces was the famous tinlet of enamel which quickly established itself as the leader, followed by an army of adhesives, brushes, dopes, fillers, craft knives, fuel proofers, thinners, tinlet palettes, self powered spray guns... and aerosol enamels (you see the top of one just coming in to land in the picture).

Use Humbrol's out of this world products - available at model shops all over the planet.



All Humbrol enamels are non-toxic; have great covering power and dry rapidly to a professional finish.



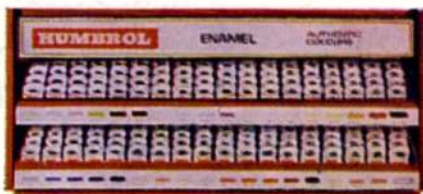
Spare palettes now available with or without lids.



HUMBROL

HUMBROL · HULL · YORKSHIRE

LOOK FOR THE LOCKER!



The perfect combination!
KEILKRAFT kits **JETEX** POWER

NOW! TWO MOTORS TO CHOOSE FROM

**JETEX
50 OUTFIT**

**JETEX
PAA LOADER OUTFIT**



Suitable for model Aircraft of 12" to 20" span weighing up to 2 oz. See the famous Flying Scale Series below. Duration 14 secs. approx. Motor and clip only available sep.



Suitable for model Aircraft of 20" to 30" span weighing up to 4½ oz. including motor. Duration 18 - 20 secs. Motor and clip only available separately

THE FAMOUS FLYING SCALE SERIES →

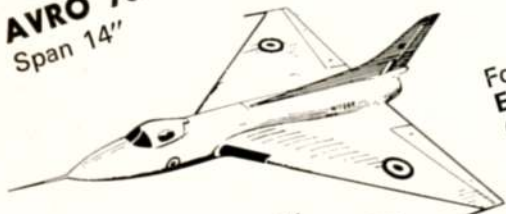
HAWKER HUNTER
Span 13½"



SUPERMARINE SWIFT
Span 14"



AVRO 707A
Span 14"



- For JETEX 50 unit only
EACH KIT CONTAINS
- Plastic Cockpit cover
 - All wing ribs, formers etc. clearly printed on high grade strip balsa.
 - Ample strip balsa etc.
 - Full size plan.
 - Building and Flying instructions.

ATTACKER Span 16"



ALL 6/4 each except D.H. 110 6/11
OTHER MODELS—
 Skyray . . . 13½" span.
 Grumman Panther
 D.H. 110 . . . 18½" span.
 Sabre . . . 15" span
 Mig 15 . . . 15" span.
 Venom . . . 16" span.
 Gloster Javelin

Obtainable at any
KEILKRAFT
 Agent