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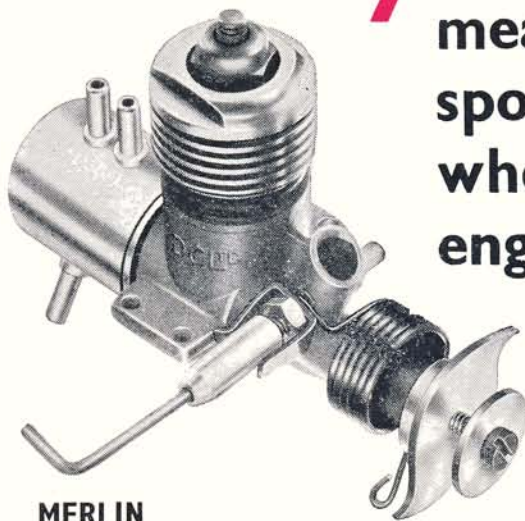
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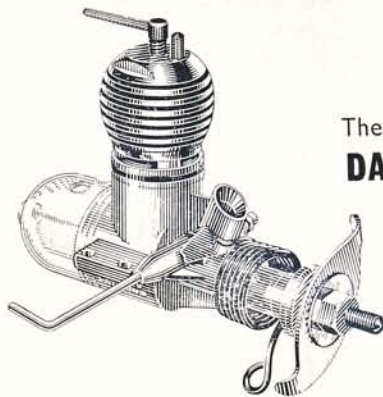
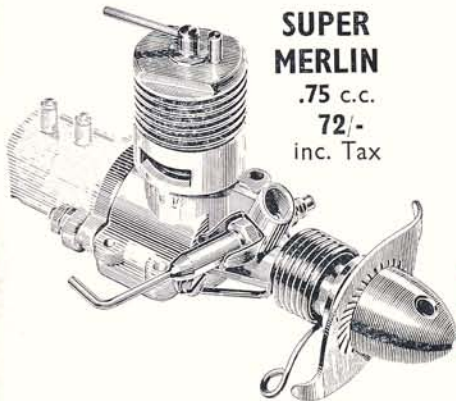
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## COMMENT

The stimulus of a National Championships is of inestimable value to our hobby and when, by every standard of attendance, performance and climatic conditions, the Nats exceed all expectation, we can say that enthusiasm for aermomodeling is in a very healthy condition. This is the only conclusion one can reach after the 1968 Nats. Our hosts, the Royal Navy at R.N.A.S. Yeovilton, found their airfield literally bursting at the seams this Whitsun. Such was the influx of spectators, campers and competitors that the sorely pressed S.M.A.E. Officers were in a state of constant 'emergency' to cope with the situation. As has been said many times before, the Nats continue to expand beyond the capacity of a sprinkling of volunteers. What appears to be fabulous to the onlooker or participant is too often at the expense of those who bear responsibility. The consolation is that those who ran the 23 contests can reflect on a job well done and one which gave enormous pleasure to thousands of fellow modellers. To these good people, and the Royal Navy at Yeovilton, we all say thanks for a **Fab-Nats!**

## on the cover

*The brilliant nose decoration of a Luftwaffe Messerschmitt Bf110 C-4 emerges from the smoke of war in Laurie Bagley's fine painting. See pages 364 onwards for a description of this twin engined fighter and accurate, measured from life drawings.*

## next month

At last, full details of the **variable pitch propeller** for Wakefield class models revealed by the leading expert Reiner Hofsass. Full size plans for David Boddington's **Apprentice** - a delightful small-field Radio Sportster. **Jigs** how to make and use them, **Control-Line News**, plus of course, our full report on the **Nationals** with photos of the winners and results. On Sale July 19th.



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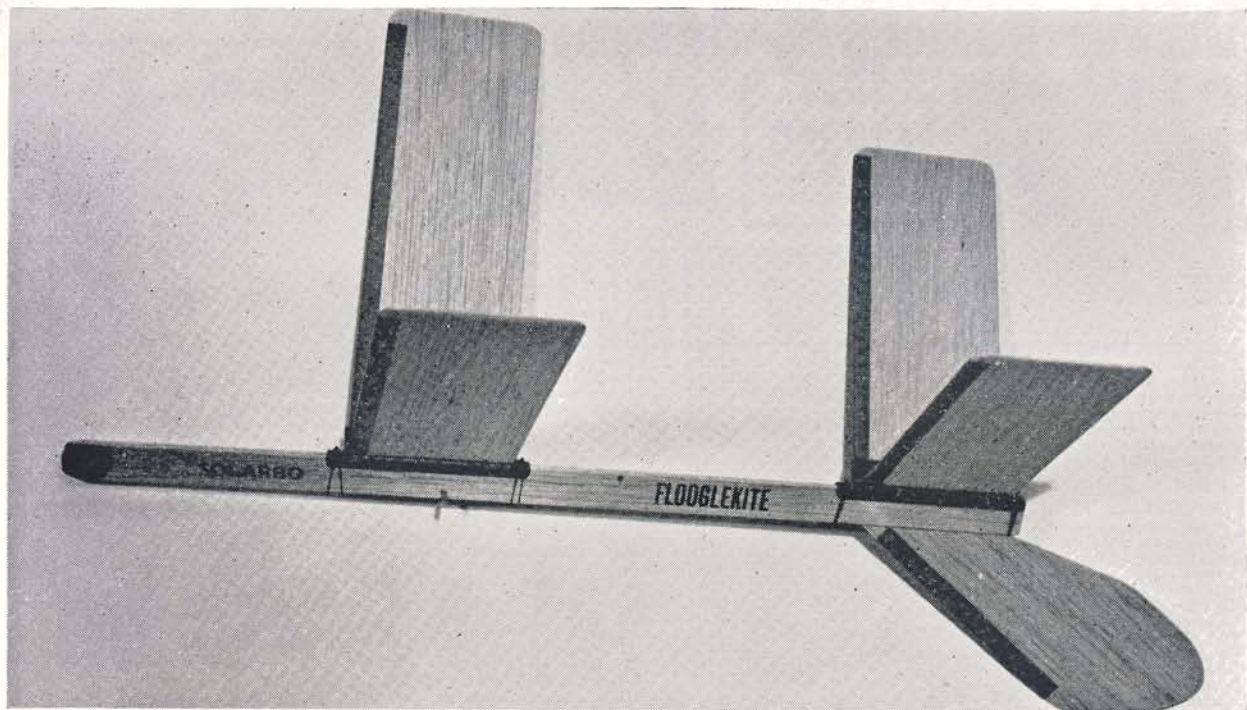
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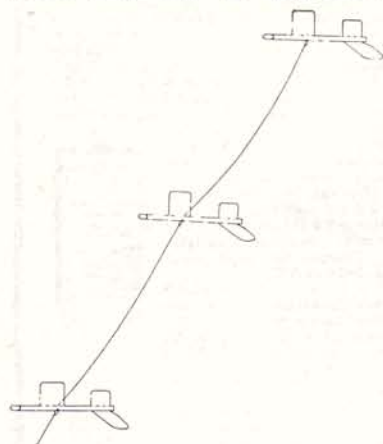
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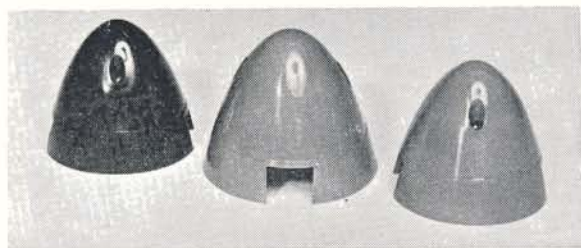
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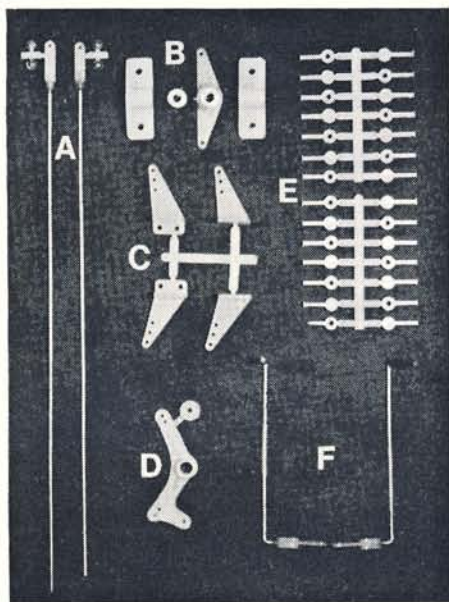
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- D** 120° Nylon Bellcrank for aileron linkage to strip ailerons giving differential movement from wing mounted servo. Price 3/7.
- E** Nylon control surface hinges. Set of 14-pins-and-socket type hinges for all control surfaces in tough grade nylon for free surface working combined with strength and reliability. One set is enough for one complete installation. Price 6/6.
- F** Aileron cranks for strip ailerons. With adjustable nylon horns, 4" arms and no-noise nylon hinge type already fitted. Per pair 5/9.



## SPORTS PILOT

A smart 2" scale nylon pilot in civilian sports flying garb. Complete with pair of goggles for open cockpit models. Easily painted with plastic enamels to get a very realistic and lifelike pilot for scale and other models. Price 5/2.

## MERCURY CONTROL-LINE ITEMS

include the well-known Mercury metal control-line tanks. 1/2" A wedge stunt 4/11; 7 1/2, 10 & 15 ccs economy wedge stunt 4/11; 30 ccs economy wedge 5/3; 1 1/2" standard wedge 6/2; 2" standard wedge 6/4; 2 1/2" standard wedge 6/7; 2", 2 1/2" & 3" pressure fed stunt square 6/7; 2", 2 1/2" & 3" pressure fed wedge 6/9; 10 and 15 ccs team racing 4/11; 30 ccs team racing 5/3; 7 1/2, 10 & 15 ccs pressure fed team racing 5/3; 100 and 125 ccs baffle stunt tanks for large models 7/11. P.V.C. free flight graduated tanks for diesel or glow fuel: small 2/1, large 2/4; also Super Record Props. Rising Escapements, Mercury scale type wheels. 1/2" A and A T/R Pilots, etc., etc.

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Span 58 1/2"  
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Another superbly authentic model with faithful scale construction, aerofoil sections and detail. The same fabulous prefabricated kit contents as the D-7, including scale engine, cowl ring, etc. £24.19.6.

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AT-6 Texan 18" span ... 24/11  
Cessna 180 17" span ... 18/11  
P-51D Mustang 24" span ... 49/11  
Jap Zero 24" span ... 49/11  
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Spad 13C 24" span ... 49/11  
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A



B



C



D

**PAL JOEY (A)**  
RC/852 By W Winter  
A 42" span beginners' radio model, for Single Channel rudder only using a relayless transistorised receiver. Specifically designed for 'Aeromodeller' readers by the leading U.S. designer of rudder-only models. 5/-

**WARRIOR (B)**  
RC/948 By D Boddington  
Semi-Scale British WW1 fighter, for Single Channel R/C. 42" wingspan this model has a very stable flight pattern. 7/6

**RED KNIGHT (C)**  
RC/949 By D Boddington  
A simple to build semi-scale model of a German WW1 fighter type of 42" wingspan, a perfect dog fight partner for Warrior. For Single Channel R/C equipment another very stable model! 7/6

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RC/957 By D Boddington  
Aerobatic R/C model of 50" wingspan, which is specifically designed for Galloping Ghost control. Tricycle undercarriage and extremely simple construction. 7/6

**LUMPERS (E)**  
RC/838 By G L Harber  
The ideal introduction to R/C flying, a really tough single-channel model, prototype flight tested through hundreds of flights in rough country of East Africa. Designed for the "Lone-hand" and widely praised since publication 48" span. 7/6



E



F



G



H

**GO-JET (F)**  
RC/925 By L Rudd  
Fast rudder only R/C Sportster, very tough 29" for 5-1 c.c. 5/-

**TYRO (G)**  
RC/920 By D Boddington  
Perfect rudder-only R/C project for up to 2.5 c.c. 45" span 3/6

**SHARKFACE (H)**  
RC/887 By E Clutton  
Rudder only 22" span aerobatic model, simple construction, knock off engine mounting. Claimed to be almost indestructible. C, D, E, F 3/6

## SLOPE SOARERS

**WIZARD OF OZ (L)**  
RC/903 By J H Osborne  
A simple glider with 48" span for radio control slope soaring, tough slab sided fuselage takes single channel. Definite recommendation for starting slope soaring. 8/6

**MOONBEAM II (M)**  
RC/938 By J Kay  
A vee tailed slope soaring glider of simple design. 50" wingspan this model will take a variety of radio equipment, easy to build 8/-

**ARIES (N)**  
G/RC698 By G Upson  
Designed specifically for slope soaring with radio control, this glider has many unique and practical features to commend it as an ideal model for the purpose 72" span, takes all forms of radio gear. 6/6



L



M



N

## SPORT MULTI R/C

**TAURI (I)**  
RC/857 By Ed Kazmirski  
The perfect introduction to multi-channel radio control, by the foremost multi flyer. Simple construction, docile flying and moderate size are its best features. Ideal equipment is a 3.5 c.c. engine and six-channel radio control. Will carry either relay or relayless receivers. Span 57". 10/-

**WIFURSKIN (J)**  
RC/914 By J Bowmer  
Semi-scale interceptor for 4-6 channel R/C & 2.5 - 3.5 c.c. 55" span 10/6

**CITIZEN KROTE (K)**  
RC/929 By D Baxter  
Small multi-channel design for 2.5-5 c.c. 49" span 10/-



I



J



K



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## SCALE MULTI

**VICTA AIRTOURER 115 (O)**  
RC/922 By G Hahn  
Super scale lightplane for multi channel  
R/C 8-10 c.c. Cockpit bubble hoods  
available

12/6

**Ki 46 TONY (P)**  
RC/931 By H Bando  
Superb multi channel 68" span scale  
Jap fighter for 8-10 c.c. two sheet plan  
Most popular Scale Multi at the 1968  
Nationals Cockpit hoods available

17/6



O



P

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**BAR-FLI (Q)**  
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World Champion's full house multi of  
58" wingspan. Functional lines with  
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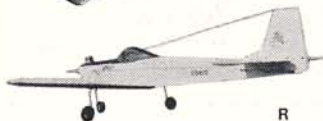
12/6

**UPSET (R)**  
RC/967 By C Olsen  
Latest of a series of full house multi  
channel designs by an expert in the  
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15/-



Q



R

## SCALE SINGLE CHANNEL

**KAWASKI TONY JR (S)**  
RC/964 By F Arigaya  
A near scale model of this sleek  
Japanese WW2 fighter for single  
channel R/C operation, using combined  
ailerons and rudder control 40" wing-  
span

10/-

**MORANE PARASOL (T)**  
FSP/924 By D Rattle  
R/C or F/F of Warneford VC's Zeppelin  
buster 34" for .8 c.c.

3/6

**FOKKER DVII (U)**  
FSP/916 By J D McHard  
29" scale model for R/C or free flight  
5-1 c.c. very popular

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**CESSNA 172E (V)**  
FSP/RC 902 By F Arigaya  
A 46 1/2" span single channel R/C flying  
scale model for 1.5 - 2.5 c.c. engines  
Rudder only or with flaps, ailerons,  
elevator, rudder, throttle and steerable  
nose wheel, can be flown free flight  
A top seller

10/6

**D.H. GIPSY MOTH (W)**  
FSP/135  
A revised plan of an old favourite, and  
a very successful rudder only radio  
model, for which details are given  
Span 60 1/2"  
H, J, K (radial)

10/-

**JUNKERS JU 87D (X)**  
RC/884 By F Arigaya  
A 41" near scale model for rudder only  
R/C and 1.5 c.c. - 2.5 c.c. engines, scale  
deviations are shown A top seller  
E, F, G

10/-



S



T



U



V



W



X

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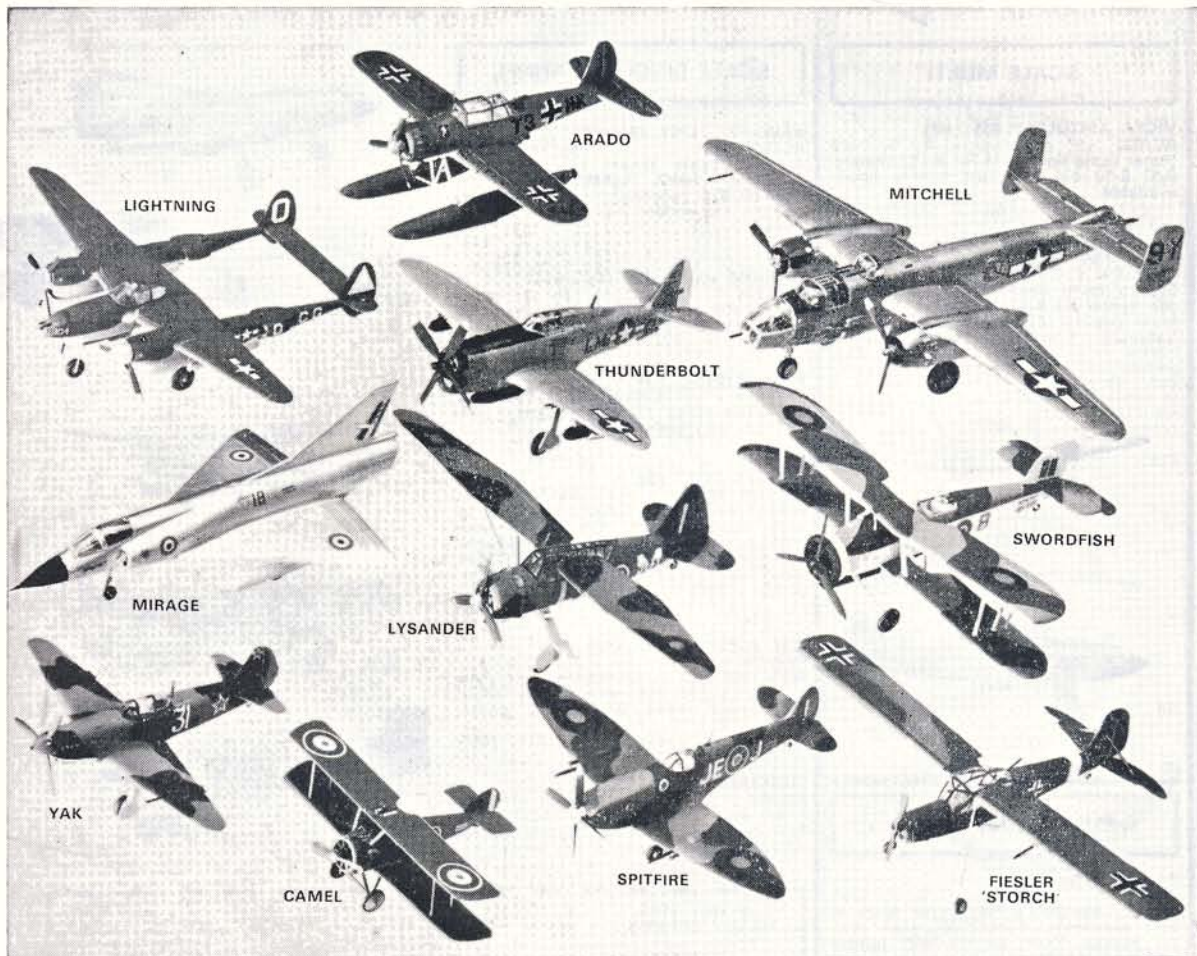
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# NOTHING BUT THE BEST AT

# 308

That's what you'll always find at '308'—the best service, and the best stocks of kits, engines, radio-control equipment, accessories and materials. This month sees the arrival of several new items including the full range of the remarkable Japanese Pilot Scale model kits, the HP 61 R/C engine, the new Merco Mk. III 61 R/C which is a completely re-designed unit, and a host of new accessories. A visit to '308' is always well worth while but if you can't manage that, our MAIL ORDER DEPARTMENT is at your service.

## PILOT SCALE MODEL KITS from Japan

The degree and accuracy of the pre-fabrication of the wooden parts in these kits is remarkable. Every part is hand cut or shaped (there is no diecutting) and the kits include such items as spun aluminium engine cowls, moulded cockpit covers, hardware, pre-formed undercarriages and so on. The kits are very complete and the parts accurately cut, but they are not recommended for beginners. These are definitely kits for the experienced builder. Please add 7/6 to all Pilot kit prices when ordering by MAIL.



Grumman F3F-2. 48" span. 620 sq. ins. wing area. For engines 40-50. £13.16.0.



Stuka 100. The famous W.W.2. dive bomber. 42 1/2" span. 290 sq. ins. wing area. For engines 09-15. £9.2.4



Curtiss Hawk FC.11C-2. 49 1/2" span. 640 sq. ins. wing area. For engines 40-50 capacity £13.16.0.



Mustang P 51. W.W.2 fighter. 44 1/4" span. Wing area 300 sq. ins. For engines 09-15. £8.5.3.



Brucker Jungmeister. Aerobatic champion aircraft. 58" span. For engines 60-61 and over. £35.6.3.



Stearman PT17 by Boeing. 42" span. For engines 30-40 capacity. £13.15.11.



Cessna 172-100. 44" span. 325 sq. ins. wing area. For engines 10-15 capacity. £8.5.3.

### PILOT KITS not illustrated

P51 Mustang. Larger version 60" span for engines 50-60. £31.11.4  
Cessna 182. Giant 72" span. Beautiful model, for engines 50-60. £31.11.4  
Cessna 182. Wing span 54" for engines 30-50. £15.9.6  
Sopwith Camel. 55" span for engines 50-60. £19.2.4  
SE5. W.W.1 biplane. 55" span for engines 50-60. £19.2.4

## TWO FINE STERLING MODELS



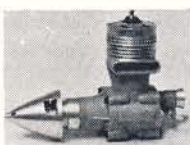
hanging up in our shop until recently and it was literally sensationally received by all those who came to visit us. In our opinion the ultimate in kit models available today. Not a beginner's kit by any means—strictly for the expert. For 61 engines and full house proportional. £24.19.6.



Sterling Fokker D.7. Another outstanding scale kit by the makers of the PT 17 which sets a new standard for pre-fabrication and completeness. Kit includes metal radiator cowl, fully detailed plan giving ultimate in scale detail, moulded engine parts, selected pre-cut balsa and hardwoods throughout. Span 58 1/2", 950 sq. ins. wing area for 49-65 engines. Scale 2" equals 1'. £24.19.6

## IN STOCK NOW!! THE FULL RANGE of K & B ENGINES

This fine range of engines is now available from stock and spares are also ready to hand. The 40 is an outstanding unit in both Rat Race and R/C forms and is highly recommended.  
K & B 15R £12.6.0  
K & B 25R £14.9.0  
K & B 35 £18.10.9  
35 Combat £9.1.6  
35 series 64 £12.6.0  
29 series 64 £12.6.0  
40 series 67 £14.9.0



K & B 19 R/C £10.14.3  
K & B 35 R/C £12.6.0  
K & B 45 R/C £14.19.0  
40 series 67 R/C £16.12.0  
Also the Veco 60 R/C £30.0.0

## TWO NEW ENGINES

HP.61 R/C complete with Silencer £29.7.6



MERCO 61 R/C Mk. III with Silencer £19.19.9



Two new R/C 61's arrive this month. The HP.61 from Austria designed by Paul Bugl is an entirely new engine developing 1.49 bhp in its R/C form. The Mk. III Merco is an entirely new engine with new cylinder with integral fins and a brand new design of carburettor. Both these power units should prove to be outstanding.

## ACCESSORIES

**FIREBALL GLOWPLUGS** are again available. These plugs have an established reputation for long life and outstanding performance. This is the plug you can fit with confidence. Long reach 2V. Hot Standard or Cold 5/- each. Or at the special price offer of 57/- per doz.



## DUBRO PRODUCTS

We now have the full range of these excellent accessories for the R/C flier in stock and are offering them all at PRE-BUDGET PRICES. Duracollars wheel collars, 1/16", 3/32", 1/8", 5/32", 3/16", 5/9 set of 4 with allen key. Kwik links, still the favourite coupling 4/9. Blind nuts 440 thread pkt. 4-2/-, 440 screws to match pkt. 8-1/3. Nylon hinges pkt. 6-11/-, pkt. 15-24/6. Battery boxes 2PC-6/6, 4PC-11/-, 6PC-15/-. Pneumatic wheels with plated hubs. Standard and low-bounce 2 1/4"-25/9, 2 1/2"-27/9, 2 3/4"-21/9, 3"-31/9, 3 1/4"-33/9, 3 1/2"-35/9. Low-bounce only 1 3/4"-21/9, and 2"-23/9 per pair. Slicks sq sect. tyres 2 1/4"-25/9, 2 1/2"-27/9, 2 3/4"-29/9 and 3"-31/9 per pair.

## NEW! KAVAN items

Really something—40" nylon tube aileron control with link—friction free—8/3. Kwik link blk 1/10 ditto plated 2/9. Link for Bowden cable pr 5/2. Adjustable aileron horn pr 7/11. Push-on plug connector 13/1. Kavan R/C throttles 76/11.

**NEW!** Bartel fibre-glass 11 x 7 1/2" R/C prop. 35/- Rocket City servo adhesive mounting tape 3/7.9 E.Z. Orbit servo spring frame mount 9/11.

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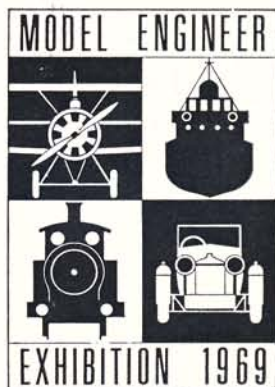
We are expecting a large consignment of American kits in August which should include the following. We regret we cannot quote firm prices until the shipment is actually here.  
**AAMCO** Aeromaster Biplane **VK** Challenger, Cherokee, Navajo and Nieuport 17 **STAFFORD** Comanche and Midget Mustang. **MIDWEST** Bebe Jodel, Lil' Tri Squire, Nieuport 17, Fokker D.7, Sky Squire, **JENSEN** Ugly Duck, **DEBOLT** Jenny and Cobra, **LANIER** READY-TO-FLY Thunderball, Pursuit, Sabre, Bronco, Comet, Midget and Mustang. As advertised in the American magazines.

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# 38th MODEL ENGINEER EXHIBITION

31st DECEMBER, 1968-  
11th JANUARY, 1969

SEYMOUR HALL · LONDON · W.1

## ● COMPETITORS

£300 in prizes; some 30 cups, trophies and other awards. Challenge cups of national status. Championship cups for permanent retention.

## ● ENTRY CLASSES

Every form of model and model engineering activity can be entered (see separate list) including locomotives, aircraft, cars, boats, yachts, radio control equipment in fact anything you can make. Write for entry forms and details.

## ● SEE & BUY

Full model trade support with well stocked stands. Nearly every exhibitor will be selling from the exhibition. Already taking stands are: Auto-Models, Hugh Evelyn, Howell Dimmock, Kennions, Myfords, Traction Engine Enterprises, etc., etc.

## ● SPECIAL ATTRACTIONS

Passenger hauling model locomotives — with rides for visitors. NEW Model Steam road vehicles will be demonstrated under power. Scenic Model Railway layouts — both commercial and private owners. Historic Model Cars never before in London. Demonstration Deck — many model activities, including model engineering and ship building will be demonstrated intimately in the gallery demo. booths, plus the country's finest models of every kind.

## ● SOUVENIR GUIDE

Another CHRISTMAS EXTRA issue of *Model Engineer* will be coming out 2nd Friday in December with entries, trade stands, articles galore to assist the visitor and solace the stay-at-home.

## ● PARTIES

Special reductions for parties, school and pre-booking. Ask for details. Save money and avoid queuing! Route maps, parking places, full particulars on request.

## ● WORKING LOCOMOTIVE CLASS

A new contest class with the LBSC Memorial Trophy and £10 award will be inaugurated. Points for performance — locomotives must have a track trial at the show to qualify — Ask for conditions of entry.

## ● DUKE OF EDINBURGH TROPHY

Open to previous winners of championship cups, silver medals, challenge cups at ANY previous M.E. Exhibition. (Note 3 year time lag has been withdrawn).

## ● NORTHERN & MIDLAND ENTRIES

A northern collection centre will be established if north of England entries justifies. A similar depot will be arranged in the midlands, again if entries justify.

## ● COMPETITION CLASSES

### ENGINEERING MODELS

#### RAILWAY SECTION

##### Class

- A Locomotives. 2½ in. gauge and over.
- A1 Locomotives — to any LBSC design 2½ in. gauge and over.
- B Locomotives. In gauge I and O.
- BA Locomotives. In gauges smaller than O.
- C Rolling Stock and Accessories. Gauge I and O.
- CA Rolling Stock and Accessories. Gauges smaller than O.

#### MARINE SECTION

- D Steam and Motor Ships of any period. (Non-working).
- E Power Driven Prototype Vessels. (Complete with power plant).
- F Sailing Ships of any period. (Non-working).
- G Working Yachts and Sailing Ships.
- H Hydroplanes and Speedboats.
- I Miniatures. Length of hull not to exceed 9 in. for ⅛ in. to 1 ft. scale or larger; 10 in. for ⅜ in. scale; 12 in. for 1/25 in. scale; 15 in. for ⅝ in. scale. No limit for smaller scales.

### GENERAL ENGINEERING SECTION

##### Class

- J General Engineering Models (including Stationary and Marine Engines)
- K Internal Combustion Engines.
- L Mechanically Propelled Road Vehicles (including tractors).
- M Racing Cars (1) Working scale; (2) Non-working; (3) Working, i.c.
- N Tools and Workshop Appliances.
- O Engineering Scale Models (Non-working).
- P Scenic and Representational Models (including Architecture).
- Q Horological, Scientific and Optical Apparatus.
- R General Craftsmanship — not otherwise classified.

#### JUNIOR SECTION

- S For any type of model or mechanical work by a junior under the age of 16 by 31st December, 1968.

### AIRCRAFT MODELS

##### Class

- AA Flying models of all types; (a) free flight, (b) control-line and (c) radio control.
- AB Scale flying models of all types, rubber, glider power, control-line or radio control.
- AC Scale non-flying models.

### MODEL CARS

- AD 1/32 scale working electric powered car.
- AE 1/24 scale working electric powered car.
- AF 1/32 or 1/24 non-working scale car.
- AG Own design freelance non-working/working car.

### PRIZE POOL ALLOCATION

Classes attracting six or more entries will enjoy prizes to value of 1st £5; 2nd £3; 3rd £1. With over 12 entries 1st £7; 2nd £4; 3rd £2; 4th £1. Classes under six will have 1st and 2nd only. Additional Medal Awards will be made at discretion of the judges. Entry fees will be added to the Prize Pool. Prizes may take the form of Vouchers, Cash, Replica Trophies (for Challenge Trophy winners) or Championship Trophies. Please express your preference on entry form.

### TRANSPORT GRANTS

Would-be entrants of interesting models that by reason of bulk, weight or distance present special problems are invited to submit details, when in suitable cases we can offer assistance.

Enquiries for Competition Entry Forms, Trade Stands, to **EXHIBITION MANAGER, M.A.P. LTD., 13-35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.**

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS





## Heard at the HANGAR DOORS

Two-wheel Version of the AerMacchi 'Santa Maria' (Lockheed 60) which Larry Peterson photographed for builders of the full size plan in April issue who might like something a little 'different'.

**HELICOPTER** competition sponsored by the German R/C manufacturer, Simprop-Electronic of 4843 Harsewinkel, Heinrich-Hertz-Str 2-8, West Germany for September 14/15th is claimed to be getting good support, but we have yet to hear of that elusive bird, the working radio-controlled Helicopter! Does anyone have one in captivity? Handout from the factory states that it is understood that entrants will know what the definition of a Helicopter is. Well - *what* is it? The Models Commission of the FAI has been striving to settle the arguments for years, and thus far there is no official definition! **INDOOR WORLD CHAMPS** are now firmly established for October 3rd-6th at Rome in Italy. The modern Sports Palace has a height of 115 ft and a diameter of 164 ft under the domed ceiling. Best time established so far in the Palace was 29:25 by Jiri Kalina of Czechoslovakia at last October's International. Only snag seems to be an absolute dearth of interest among British aeromodellers. Can it really be true that the art is lost among SMAE members?

**LOCKHEED 60** in the heading picture was sent by San Diego modeller Larry Peterson with the suggestion that it might inspire those making

the full size plans from April issue. This is one of the few conversions of the Lockheed 60 from tricycle to conventional undercarriage and is operated by Munz Northern Airlines of Nome, Alaska. Registered as N 1702L in white and bearing 'Experimental' in the rear windows and the Alaskan flag on the fin (Blue with white stars) it has a dark brown and fawn fuselage with white top surfaces and wings. Landing gear is black.

**DON'T FORGET** the scale-date, July 21st at Old Warden, near Biggleswade, Beds. This grand fly-in-for-fun of all scale models (non-flying too) will be an event not to be missed. Details from the Editorial Offices or Shuttleworth Collection, Old Warden. The famous collection of vintage aircraft will be on show. Apart from the standard charge for Museum admittance there are no entry fees for sport flying or the competitions.

**FREE FLIGHT SYMPOSIUM** has been introduced to the U.S. Nats to take place at U.S. Naval Air Station Olathe in Kansas on August 5th. Planned to encourage the exchange of technical information on low speed aerodynamics the Symposium will be recorded in a publication of the talks at \$4.50.

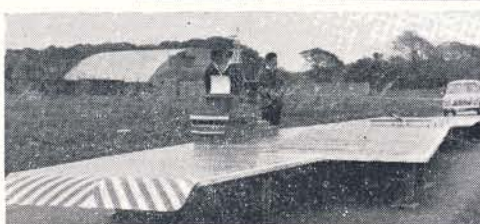
**FLYCATCHER**, the Royal Navy's carrier in miniature for the new 'Navy Carrier' event first run at the British Nationals, is scheduled to go North to Arbroath for Scottish modellers to try on 20th July when 'H.M.S. Condor' has its annual open day. Here's your chance, Scots lads to try Navy Carrier. First modellers to make deck landings on 'Flycatcher' were from Lee Bees using a

stunter with dethermaliser timer operating the arrester hook and throttle. There was ample room for take-off and landings were no bother at all (the deck is  $\frac{1}{2}$  in. Marine Ply). Chief Petty Officer Morton was in charge of construction at Lee on Solent and he and his men, Petty Officer McClacken, and Naval Airmen Taylor and Wormsley are to be congratulated on a fine job - we fancy a far bigger one than they first anticipated!

**MESSERSCHMITT Bf 110** drawings in this issue have a tale to tell in more ways than one. Our R.A.F. Tech. training would not have us accept the zero setting of the fins which are usually shown on the 110 tail assembly - for the very purpose of twin fins is to control asymmetric power conditions. So we checked with tape and plumb bob and came up with not only a decidedly asymmetric tail, but also a whole set of control surfaces which distinguish our drawing - other draughtsmen *please copy!*



Left: Top B.O.A.C. Apprentice in 1967 was Ken Wagner who also happens to be a keen aeromodeller. Seen with his true scale framework Beagle 206 S. Right: The R.N. Carrier 'Flycatcher' inaugurated at the Nationals and here, being tested by members of Lee Bees for the very first time. C.P.O. Morton (above right) was responsible for construction.







# Vedette

**CONTROL-LINE SPORTSTER  
ON COIN AIRCRAFT LINES  
TO SUIT 1.5cc ENGINES**

designed by W. I. Barrett

'VEDETTE: A mounted sentry placed in advance of an outpost; a small vessel used to watch the movements of the enemy.'

There is at present in the skies a new breed of aeroplane, the counter-insurgency machine, small, rugged and reliable. This model is based on such an idea, and is an aerobatic sports model with sleek lines for 1.5 cc. engines.

Commence construction by cutting the engine bearers to length, and drilling for the engine retaining bolts and the bellcrank bolt. Cut out the engine bulkhead former F2 from ply, and bind to it the nose undercarriage leg. Assemble together, and add the tank and former F3. Araldite should be used to support the undercarriage binding. While this is setting, build the wings which are quite straightforward. Do not add the flaps at this stage.

With the wings positioned between the bearers, cut out the fuselage sides and slide over the wings to the formers, one from each wing tip. Before cementing the sides to the formers and to the wings, ensure that the assembly is

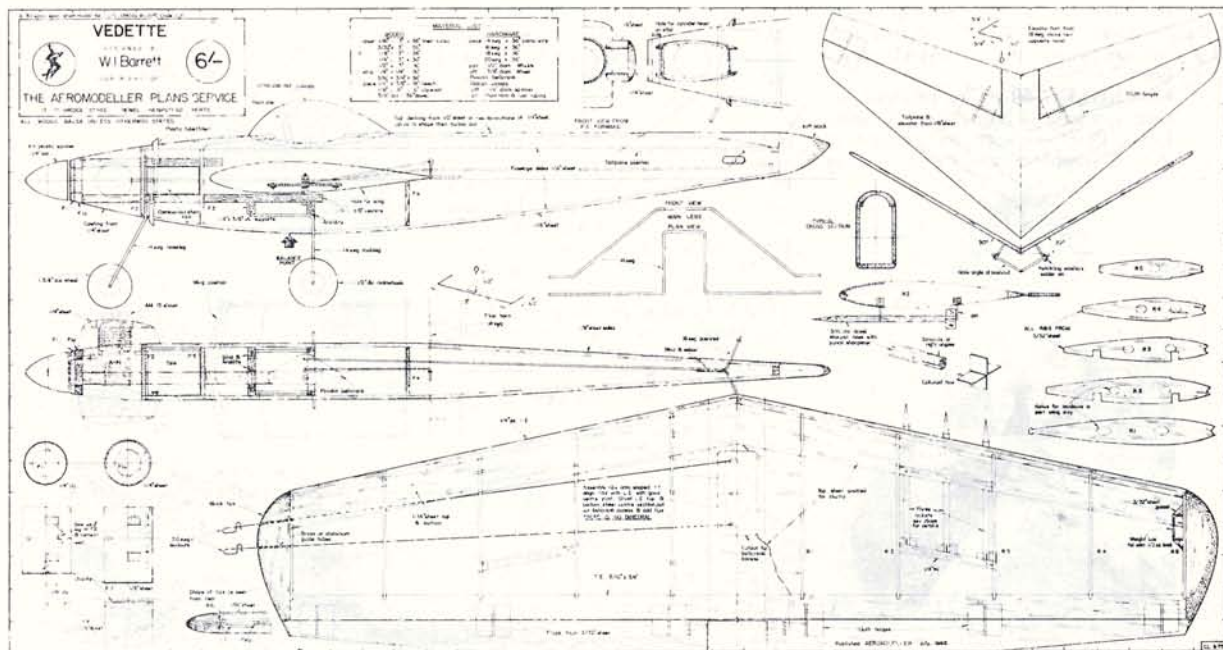
square. Cut out the wing centre section sheeting top and bottom to give access for fitting the bellcrank.

Assemble the tailplane and elevator unit, ensuring that the elevators do not foul in the 'up' position, and temporarily fit to the top of the fuselage sides. The elevator push rod can then be made to size, and soldered in position through the bellcrank at the forward end. Draw the rear fuselage sides together, feeding the push rod ends through the holes on either side. Cement the packing piece in place, and add the tailplane/elevator assembly, soldering retaining washers on the push rod ends. Check that the elevator horns do not foul.

The wing flaps can now be added, the connecting torque rod being fed through the fuselage sides. Solder in place the flap operating arm, and connect to the bellcrank.

With all work complete on the bellcrank assembly, the main undercarriage can now be fitted, again using Araldite to secure the binding.

FULL SIZE COPIES OF THIS 1/4th SCALE REPRODUCTION ARE AVAILABLE PRICE 6/- (plus 6d. postage) FROM AERO-MODELLER PLANS SERVICE. QUOTE PLAN PET 975







Mark out the top decking for the fuselage on either  $\frac{1}{4}$  in. sheet or on two laminations for  $\frac{1}{4}$  in. sheet. Roughly carve to shape, and then hollow out for lightness. Cement in position.

Build up the cowl from  $\frac{1}{4}$  in. sheet, not forgetting the holes for needle valve and fuel tubing.

Sheet the bottom of the fuselage, and add the tail fairing.

Sand the model to shape. The cowl cheeks are optional, but if required, are best built separately, being painted internally before fitting to the fuselage. Cut out holes for the tank filler and vent, and cut out the cockpit. Fit a pilot, and paint the decking that will come under the canopy. Cement in place a bubble canopy.

Cover the model with lightweight tissue on the sheeted surfaces, with heavyweight for the wings. Dope and decorate to choice. The rockets can be added for extra effect.

The balance point of the model is just forward of the main wheels, and the model should just tip back onto its nose wheel from a taildown position. Fly on 40 foot lines and have fun with the armament! Why not try some balloon bursting?



Reproduced from our German contemporary 'Mechanik' this cartoon could be captioned 'What - me dangerous? - never!' Any other suggestions?

## SMAE CONTEST CALENDAR

July 7th	*Team Glider (Model Engineer Cup)	} Area Centralised Venues
July 7th	†F.A.I. Power (Astral Trophy)	
August 11th	Coupe d'Hiver	} R.A.F. Upwood
August 11th	C/L and R/C events	
August 11th	*Team Power (Keil Trophy)	} Area Centralised Venues
August 11th	*Wakefield (Gutteridge Trophy)	
August 11th	A/I Glider	} Leigh Marsh, Southend, Essex
August 11th	R/C Multi	
August 11th	All-in Scale Meeting	} R.A.F. Upwood
August 11th		

## Contest Calendar

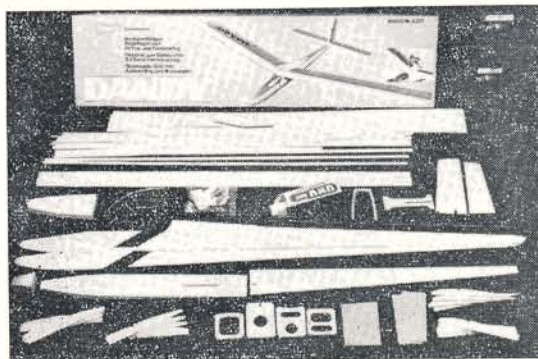
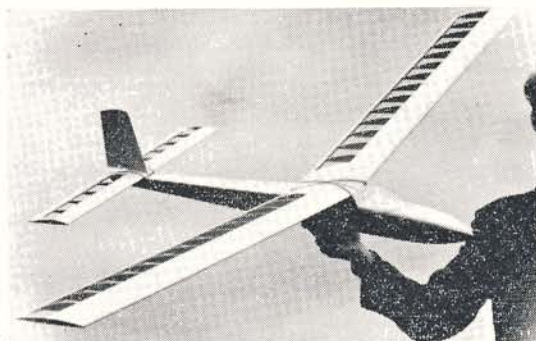
June 23rd	Potteries Slope Soaring. Hillside adjacent to Wild Boar Clough on A54 between Congleton and Buxton.
June 23rd	Croydon Open Gala. Open R/G/P, $\frac{1}{2}$ A Power, A/I and Coupe d'Hiver. 10 a.m. Chobham Common
June 23rd	Bath Festival Rally. Bristol. R/CM.A Club, R.A.F. Colerne
June 23rd	Finchley C/L Rally. 'A' Combat, 'B' Combat and R/R (SMAE rules) and Stunt. Silencers essential. Pre-entry 2/6 K. D. Lesser, 20 Squires Lane, London, N.13. Gledbels, Summer's Lane, London, N.12.
June 23rd	Esk Valley C/L Rally. $\frac{1}{2}$ A F.A.I. R/R and Combat (SAA) East Fortune
June 30th	St. Albans Summer Gala. Open R/G/P. (Simeons Trophy). Vintage, Chobham Common.
June 30th	Boscombe Down Model Rally F/F Scramble, Rat Race 15 (25) and 40 (65 cc.) R/C Spot Landing. Max spins in 3 min.
July 6th	Croydon F.A.I. (Evening). All in F.A.I. 6 p.m. Chobham Common
July 6/7th	Irish C/L Nationals—Details: M. Doyle, 14, Bloomfield Road, Belfast, BT5, 5LT.
July 7th	Scottish R/C Nats (SAA) at K.G.V. Playing Field, Leven, Fife
July 13th	Croydon Open (Evening). Open R/G/P 6 p.m. Chobham Common
July 14th	Richmond DMAC Anniversary Rally. Open R/G/P Coupe d'Hiver, A/I, $\frac{1}{2}$ A and Chuck Glider. SMAE cards essential. Entries 5/- Senior, 2/6 Junior, re-entry 2/6. Chobham Common.
July 14th	London Area Rally second round, F.A.I. T/R, $\frac{1}{2}$ A T/R and Combat. Hayes C/L circuit, Charville Lane, Hayes.
July 14th	Clwyd 1968—Open Senior and Junior R/C, Single Surface and Multi. Pre-entry for R/C by June 30th (2/6) and enquiries. Mr. C. R. Fitness, 26 Raymond Street, Chester. Start 10 a.m. at Moel Ffamau, Nr. Mold.
July 20th	Croydon F.A.I. (Evening). All in F.A.I. 6 p.m. Chobham Common
July 21st	Aeromodeller-Shuttleworth All Scale Rally, all welcome Old Warden, Nr. Biggleswade
July 21st	Feltham DMAC, C/L Rally. Class B Rat Race and A Combat. Hayes C/L circuit, Charville Lane, Hayes
July 27th	Croydon Open (Evening). Open R/G/P 6 p.m. Chobham Common
July 28th	Burtonwood Criterium. F.A.I. T/R, $\frac{1}{2}$ A T/R, A Combat, R/R and Stunt. Start 9.30. SMAE members only, admission limited entrants/assistants. Pre-entry 2/6, field entry 5/-. Details G. Stott, 4 Cecil Street, Lytham, Lancs
July 28th	L.A.R.C.A.S. Slope Soaring Fly In. Clwyd, N. Wales
July 28th	Hornets C/L Gala, $\frac{1}{2}$ A, F.A.I. and R/R (SAA) Glenburn Road, East Kilbride.
July 28th	South Coast R/C Rally—Golden Cross, Lewes, Sussex
July 28th	South Bristol MAC Summer Gala. Open R/G/P Vintage (pre 1951) R/G/P Entry 2/6. Details: J. B. Mayes, 17 Northville Road, Northville, Bristol, 7. At R.A.F. Hurlingham
August 4th	Hornets Scale Gala (SAA)—Glenburn Road, East Kilbride
August 4th	F.A.I. Gala. 7 x 1 hour rounds. Start 10 a.m. Chobham Common
August 11th	Southend Annual Competition. S.M.A.E. Multi R/C starts 10 a.m. Pylon Racing (Goodyear, Biplane, Open) afterwards Southend R/C M.F.C. Leigh Marshes Flying Field, Leigh-on-Sea.
August 18th	Southern Area Gala Open R/G/P and A/I Glider, at Beaulieu
August 18th	SEA Open Thermal Soaring Contest 300 ft line 6 minute max. Field entry Golden Cross, Nr. Lewes
August 24th/25th	R.A.F.M.A. Championships. R.A.F. Hurlingham
August 25th	Sutton Coldfield R/C MAC Annual Rally. Details: B. Marsh, 107 Station Road, Wyde Green, Sutton Coldfield. Fradley Aerodrome, Nr. Lichfield
August 25th	Bellahouston Rally. Combat and R/R, (Silencers and Insurance) Bellahouston Park.
September 1st	Woodford Rally Open R/G/P, chuck glider, F/F, C/L and R/C Scale, Multi R/C. F.A.I. T/R, R/R and Stunt 9.00-5.30. Details G. Stott, 4 Cecil Street, Lytham, Lancs
September 2nd	R/C Rally. Sywell, Northampton.
September 8th	Cotswold R/C Society Rally. Open Pylon, Goodyear and Limbo Insurance and G.P.O. Licence essential, Moreton Valence Airfield Glos
September 14th	Ulster F/F Nationals—Details: M. Doyle, 14, Bloomfield Road, Belfast, BT5, 5LT.
September 15th	South Midland Rally. All classes Cranfield
September 22nd	Sheffield S.A. Slope Soaring, Single, Multi and F/F Details (S.A.E.) P. Scaife, 44 Todwick Road, Sheffield 8
September 29th	Wanstead Scale Rally. C/L and static Pre-entry 5/- to A. Harknett, 24 Mayfield Road, Chingford, London, E4 at Charville Lane C/L circuit
September 29th	Luton Slope Soaring Rally. Ivinghoe Beacon.
October 6th	Irish F/F Nationals—Details: M. Doyle, 14, Bloomfield Road, Belfast, BT5, 5LT
October 6th	N.A. Vintage Topcliffe
October 6th	Scottish Gala $\frac{1}{2}$ A, F.A.I. R/R, Combat and R/C Spot (SAA), East Fortune
October 13th	South Coast Gala F/F R/C and C/L—R.A.F. Tangmere (Subject to confirmation)
October 20th	Torbay Rally. Open R/G/P Coupe d'Hiver, All-in F.A.I. and Chuck Glider, Woodbury Common, Nr. Exmouth
October 20th	Edinburgh Rally $\frac{1}{2}$ A, F.A.I. T/R and R/R, Glenburn Road, East Kilbride
October 27th	St. Albans Winter Gala. All in F.A.I. Coupe d'Hiver A/I Glider Chobham Common.
October 27th	London Area Rally third round, F.A.I. T/R, $\frac{1}{2}$ A T/R and Combat, Hayes C/L circuit, Charville Lane, Hayes
November 10th	Richmond DMAC Winter Gala. Chobham Common.





## Trade Notes

NEW KITS  
REVIEWED  
FROM OUR  
TEST  
BENCH

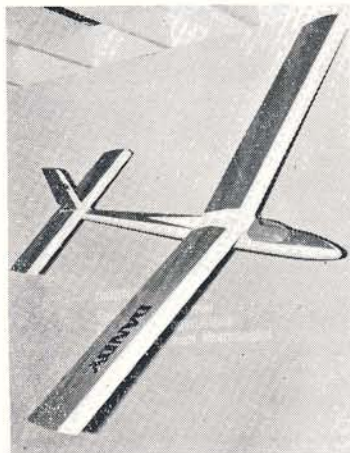


SUPPLIES of a welcome new model from **Keil-Kraft** have now arrived at the shops in the shape of 'Fleetwing' (see May edition). The kit for this attractive low wing, open cockpit, model contains a host of shaped and die cut parts to make for quick assembly. Suitable for 6 channel or 3 function proportional equipment and .19-.29 engines, this aircraft should provide a rugged easy-to-build model for those venturing in the direction of larger full multi jobs. The completeness of the kit leaves little to be desired and includes items such as fuel tank, (clunk) wheels, preformed U/C parts and spinner to name but a few of what are often called 'extras'. It represents excellent value for £7 14s. 9d. As promised in our May edition, more details now of our **Veron Big Eagle**. The wings of this model assemble really nicely (one piece spars would avoid joining but we all know the problems involved with boxing components 48 in. long). Most of the moulded fuselage pieces fit well, but we had to pare a little from the depth of the fuselage sides to give accurate assembly with the rear boom. Veron have been informed of this and have altered the boom dimensions slightly to make up the difference. Wing tongue assembly appears a little unusual but when assembled with Araldite or similar epoxy adhesives becomes a very rigid structure (proof of strength soon!). Very straightforward is the tailplane construction with leading edge sheeting on the underside (to fend off landing damage on rough slopes?) with sheet fin and rudder to complete. All being well a flying report on the eight footer will appear in the near future. One of the latest **Graupner** gliders is the 64 in. wing span **Dandy**. Available through **Ripmax** agents the die cutting and completeness of this kit are as good as could be wished. The fuselage construction and fits are such that an experienced modeller could almost build it in the dark. About the only exceptions to this are the slightly undersize nose block and the wing fittings, centre section, etc. requires care in building to avoid difference in incidence angles. Free flight, or up to four channel R/C is possible and so far ours has been fitted up with **Minimac/Conquest** single channel R/C. A few towline flights have been most successful, but the first slope soaring attempt nearly ended in loss! (Too high wind and too little experience of pilot at Ivinghoe.) However, tough construction and Nylon covering came out of the gorse with little damage. Costing £5 19s. 6d. the general quality and attractive lines make the **Dandy** well worthwhile.

In the world of plastics, the pace never seems to slacken. Three new kits appeared from **Revell** at the Brighton Fair, first to catch our eyes being the **A-7A Corsair II** at 9s. 6d. To be an attack fighter of the future with the U.S. Navy first and many Air Forces in the queue, this builds into a neat 1/72nd model complete with a host of underwing ordnance. Revell are in the 'Helicopter-race' with plastics too, their **Bell Huey-Cobra** comes at the large 1/32nd scale. Retailing for 14s. 9d., this 'chopper' model makes into a neat replica of the ground strafe used in Vietnam. Another unusual subject at yet another scale by Revell is the 1/144th (actually 1/140th) **C-130 B/Hercules** (Herky Bird) now in standard U.S.A.F. combat camouflage. The kit, retailing at 9s. 6d., can of course be converted to R.A.F. and other Air Force markings with the external variations of 'E' version.

More helicopter kits have appeared in the **Fujimi** range of 1/50th scale kits imported by **Richard Kohnstam & Co.** The **Westland AS1 Wasp** retails at 13s. 6d. and a **Bell Huey-Cobra** is a little more

Top. Layout of Keil Kraft Fleetwing kit, shows to good effect the many cut and moulded parts plus complete set of hardware. Second photo shows partly completed Veron Big Eagle (upper boom / block joint to be completed). Practical two piece wing should solve most transport problems with this eight footer. Left. Three photos of Graupner Dandy showing uncovered airframe, the simple but very complete kit and at right the manufacturer's example as seen at Nuremberg and Weybridge.





Right. Three examples of new Revell releases (each of a different scale). Upper is the neat LTV Corsair II to 1/72nd scale. Second The Bell Huey Cobra, combat helicopter model to 1/32nd scale. At 1/144th scale (1/140th actual) the Revell C130B (Herky Bird) Hercules makes a neat replica of a little modelled but attractive subject.

at 15s 6d Each has interior details inside the glass-houses and rockets are supplied with the U.S. Army Huey-Cobra. Unillustrated here, but in the same range is the *Bell Iroquois* also in U.S. Army colours. This is the most detailed of the three and is 17s 6d. Two examples of Japanese *Aosima* 1/72nd models also available through Richard Kohnstam have been made and are remarkably inexpensive at 5s. each. These kits are not up to the general Western standards, but even so, with a little TLC (Tender Loving-Care) in building one can still produce neat replicas of the Saiun (Norm) seaplane and the Saiun C6NI (Myrt) as seen in photos below.

G. R. Noceti in Italy produce a large range of well finished wooden propellers from 6 in x 3 in through to 12 in x 8 in. Known as 'Super-Record' these well designed props are available from Henry J. Nicholls in this country and include specials for team racing and speed. We shall be trying out some of them this season.

On the novelty side, and for windy seaside beaches *Printoy Ltd.* have produced two new all balsa kits issued through *Solarbo*. The *Gyrokite* which is rather like an Autogiro with stabilisers front and rear and *Flooglekite*, a tandem wing kite with 45 deg dihedral were demonstrated to us by their designer. The *Gyrokite* is now readily available for 30s 6d. and certainly fills the bill as far as that perpetual question 'What to do when it's too windy to fly models?' is concerned, more on these later.

After much flying and recovering of the wings, the *Graupner UHU* (see May issue) A/1 has now been flown radio-controlled with no mods to the wing; but a new fin and very simple box fuselage' this combination makes a good slope soarer for light winds. Best flight to date is around nine minutes, using *MacGregor* single channel R/C. More about this conversion later.

Besides the kits and accessories illustrated here, others have arrived including another 1/48th scale *Monogram* W.W.II type in the shape of the *Junkers Ju 87 G/1 Stuka*. The version the kit depicts is that of ace 'tank buster' Rudel complete with its under-carriage mounted cannon, but, of course, with skill the model could be converted to any of various marks. Whilst on the subject of W.W.II dive bombers mention must be made of the *Stuka's* contemporary the British *Fairey Battle*.

From *Airfix*, this good looking (even if vulnerable, full size) single engined monoplane bomber comes in the usual 1/72nd scale. Pictures of these models will appear as soon as our sample kits are built. Not yet available, but on its way is yet another *Monogram* model and what is probably the largest and most enterprising plastic kit yet produced. A *B52 Stratofortress* to 1/72nd scale! This brings the wingspan up to over 30 in. and length over 26 in. (all we need now is a 1/72nd B 361).

Below. Two examples of the range of *Aosima* kits. Left the Saiun (Norm) seaplane and right the Saiun (Myrt). With care, both will build up into very attractive models. Fujimi 1/50th scale helicopters are above right, the *Westland Wasp* and *Bell Huey Cobra*. Distributed by Riko of Hemel Hempstead.







## Strictly Simple

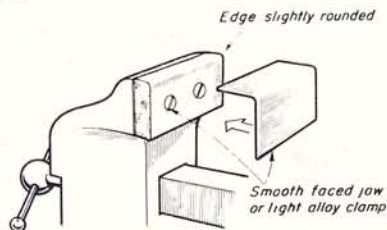
By David Boddington

Sheikh Ghaiyas Bashir of the Monarch Aero-modelling Club, Karachi made this 'Veron Skylane' for Webra Bully diesel and Metz R/C - an ideal combination for single scale radio control.

### PRACTICAL WORKSHOP HINTS

SOME TIME AGO in this column I tried to pass on a few items of practical advice that I have found useful during many happy years of aeromodelling. It was gratifying to find that not only had fellow modellers read the article; but also found some of the suggestions to be helpful to them in constructing models. The interest shown in that article has given me the confidence to pass on a few more hints and 'wrinkles' to readers in general.

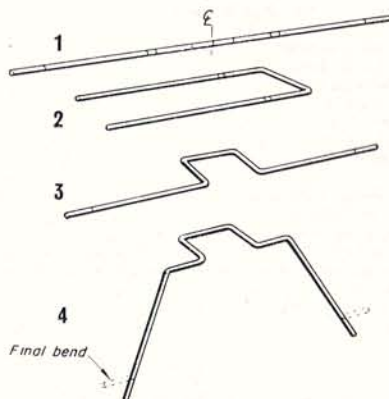
Bending piano wire, particularly the heavier gauges, can be frustrating and time consuming unless tackled in the correct sequence. One piece of equipment that is essential for accurate wire bending is a fitter's metal vice securely mounted to a bench. If possible the vice should be fitted with smooth faced jaws in place of the normal serrated jaws or light alloy clamps. These will damage the wire less than the conventional jaws and, if the top edges are slightly rounded, are less likely to fracture the wire when bent.



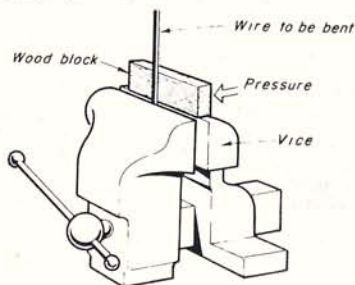
As an example of wire bending let us consider the main undercarriage of my *Ghost Rider 50* design (Plan RC/957, 7s 6d plus 6d post), this has apparently given some trouble to builders of this model. Firstly, cut the wire to the exact length and mark, with a felt pen or very soft pencil, the positions for the bends. Wrap around the marked positions with Sellotape to protect the mark and also to protect the wire if standard vice jaws are being used. The wire should never be marked by filing a small knotch at the bend position as this will increase the

tendency for the wire to fracture. Piano wire varies considerably from different suppliers, some is too 'springy' and will break easily when bent and other stocks are too soft and weak. Try to obtain a happy medium with wire that will stand up to its job, but is still possible to bend without having to resort to heat treatment and re-tempering.

With the wire marked out and protected, start bending from either side of the centre, i.e.:



In following through this sequence it is possible at all times to hold the work satisfactorily in the vice, start bending from one end and you will finish in trouble. To obtain a neat radius bend and to keep the remainder of the wire straight, never attempt to 'pull' the wire over in the vice with your hand. A block of hardwood, such as a sample wood floor block, is ideal for forcing the wire over to form the angle you require.



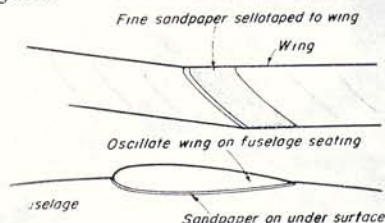
Check the angle of the wire against the pattern on the plan or by measuring the important dimensions, but you will soon find that the eye can be quite accurate for estimating and obtaining equal angles. A final word about cutting piano wire. Really good heavy quality wire cutters (not the electrical side cutter types) can cope with piano wire up to about 14g. but larger diameters than this require some other method. A sharp edged triangular file is, in my opinion, superior to a hacksaw and with the latter a high-speed blade should be used. One of the easiest ways to cut piano wire is by revolving it on the corner of a grindstone so, if you are not fortunate enough to own one at the moment, put a motorised grinder on your next Xmas list.

### Wing Seats

Many single channel models these days feature a symmetrical or semi-symmetrical wing section. It is important with this type of wing to ensure that a good consistent seating is obtained on the fuselage, otherwise the incidence may vary each time the model is assembled.



To obtain a close fit between the underside of the wing and fuselage use the wing as a sanding block to sand the sealing area.



To finish off the wing seating, epoxy glue a strip of thin foam rubber to the fuselage to make a fuel-proof seal and minimise the risk of damage to the wing.

### Plan Protection

Some years ago it was possible to obtain copies of plans from the Aeromodeller Plans Service delivered in a cardboard roll. Unfortunately, this service is no longer economical and all plans are despatched folded. The creases and folds in a plan can be a nuisance when it comes to building over the plan, so before starting construction make it as flat as possible. Smoothing the plan with a domestic iron at a low heat will often help to remove the creases. Most modellers know that you should never build a model direct on to the plan without first taking some protective measures. Soap rubbed on to the plan works quite well as does covering it with greaseproof paper. An alternative to greaseproof or waxed tracing paper as an overlay is a plastic film called Euthulon. Although this is normally fairly expensive it is obtainable from K. R. Whiston, New Mills, Stockport at a cost of 18s for a 20 yd. roller, 1s a yard to callers only. This material has a smooth, impervious surface and none of the adhesives will stick to it at all.

### Metric wheels and S.W.G.

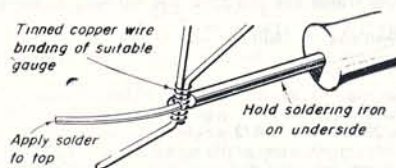
With a high proportion of modelling equipment coming from abroad difficulties are often encountered with non-standard (British) sizes of screws, holes etc. A case in point concerns Japanese balloon wheels – these have holes drilled in the hubs that do not coincide exactly with British S.W.G. diameters. Such is our own standardisation that the drill sizes (in fractions of inches) are also slightly under or oversized for piano wire diameters. The answer is to use numbered drills (Numbered 1 to 60) to obtain a good fit, a number 20 drill is correct for 8g. wire and a 29 drill for 10g. wire. If you have any difficulty in obtaining these drills, they are also obtainable from K. R. Whiston, as mentioned above, 2s 7d and 2s 3d respectively plus postage. Talking of drilling reminds me that great care should always be taken when drilling out the centres of propellers. Needless to say, if a propeller has an off centre hole it will cause excessive vibration from the engine and will be impossible to balance correctly. Nylon props should be drilled, with a hand drill, from both sides of the hub with the propeller held firmly by a helper or held by the hub in a vice. By drilling from both sides it reduces the chance of drilling off centre due to the drill not being held vertically. Do not forget to balance the prop. after enlarging the centre hole and remove the sharp edges of the blades by sanding lightly – it saves cutting your finger when starting the engine.

Holes drilled in hard materials such as Paxolin or metal require marking and centre punching before drilling. Work as accurately as possible, it will save much wasted time enlarging holes with files that, in any case, are probably completely clogged and smooth and should have

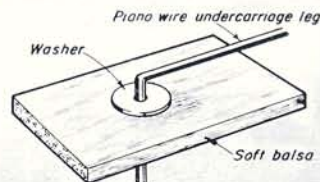
been thrown away years ago. I know I have pushed home this point about accuracy before but it is worth re-emphasising: whether you enjoy building or whether it is just a necessary evil to allow you to get on to the flying field it will make the constructional part of modelling more satisfying. This also applies to a logical preparation of parts before commencing construction, i.e. cut and sand all parts first, drill all the holes required at one time, prepare and solder all metal items ready for use, etc., etc.

### Soldering

Now there is word that strikes terror into the hearts of some modellers – soldering. I am not sure whether, in fact, I should mention this subject for, if I am honest with myself, it is only in the last few years that I have really mastered this branch of the hobby. Indeed, there is a local modeller who might say that I have yet to reach this stage – a fuel tank I made for him leaked! However, in for a penny, in for a pound, so here are some of the basics of soldering. Two of the main essentials for good soldering are to use the correct size soldering iron and the cleanliness of a surface to be joined. A 25 watt soldering iron may be fine for work on electrical circuits, when working with electronic components, but it is no good for soldering heavy gauge piano wire undercarriages. A heavier duty iron is required for this work and make sure the tip of the bit is clean and 'tinned'. Metal parts are best cleaned with emery paper or steel wool and they should then be handled as little as possible until tinned or soldered to its counterpart. Bind piano wire parts together with ready tinned copper wire to keep them in place during soldering.



To hold the internal wheel retaining washers in place, force push a piece of soft balsa on to the axle before soldering.



The outside washer can be soldered hard up to the hub, providing it is metal, as the wheel will revolve freely after a little oil has been applied. For wheel hubs of nylon or other plastics, place a piece of silvered paper between the washer and the hub and do not hold the iron on the undercarriage leg too long. Again, a heavy duty iron will heat up the area to be soldered in a minimum of time with less likelihood of heat being transferred to the wheel hub. Finish the job properly by cleaning off the surplus solder and flux and if any joint has not taken completely then 'desolder' it, clean and make the joint again. Remember, solder is to join parts together not to fill gaps, so make sure the parts fit well before even contemplating soldering – the rest is a matter of practice.

That concludes the month's helping of constructional tit-bits, next month Strictly Simple will be devoted to a new single channel design for .049 cu. in. (.8cc.) engines.



# SOUTH AFRICAN NATIONALS

reported by Basil Moore

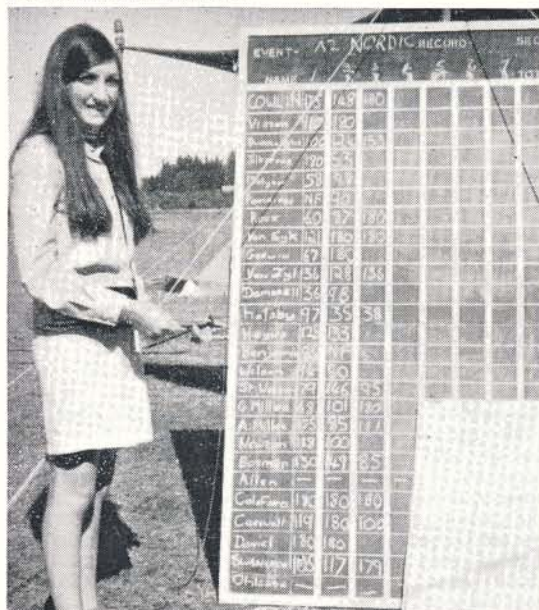
THE 1968 South African National Model Airplane Championships held in the Cape at Murray Louw's farm will be remembered best for the fact that only on one day did the weatherman do his worst with a blustering South Easter and also for the fact that those who had represented South Africa in World Championships proved that their selection was in the main no haphazard one.

Member's wives worked magnificently in supplying the needs of the inner man with Hamburgers, Hot Dogs, Teas, Coffee, Cold Drinks, Sandwiches and such like over the few days. At the end, that not one crumb nor one Cola was left was a tribute to their efforts.

The Organisers, Western Province Model Aircraft Club, set aside the first day, April 12th for A/2 glider, Open Power and Open Rubber.

This was the first time in South Africa that the new FAI ruling of 7 flights was used and there was much speculation as to whether any of the 29 entrants in A/2 would reach that 'puffing' 1260 secs. (This is undoubtedly a test of the modellers' stamina).

Five entrants maxed out in near perfect conditions for round 1; Silkstone, Calefatto, Daniel and Rowe of Western Province and J. Nevins down from the Rand.



Round 2 saw six maxs. in a freshening breeze, Rowe, Daniel and Calefatto now had two each and visiting modellers from East London and Johannesburg were getting the 'know how' on field conditions and proved that they too were learning to fly tactically.

Round 3, with a steady breeze brought 15 maxs; among them Daniel, Calefatto and Rowe. A little bit of 'piggy-back' flying was in evidence as absolute novices at A/2 were maxing in this round whereas in subsequent rounds they reverted to normal standards.

Twelve more maxes were flown in Round 4. Daniel slipping with a bad 38 secs., but Rowe and Calefatto continued on their glory path. Cowlin (seen in action in Prague, had now registered his second max). In the interim - Pete, (the old man) Visser had recorded 110, 180, 180 and then pulled a muscle in his leg. Arthur Bonamour, President of the S.A.M.A.A. flew proxy for him and notched up 2 maxs., 128 and 60 for a total of 1018.

Round 5 found Rowe and Calefatto still up front with full scores. 15 maxs were recorded and competitors were now gauging the weather and feeling for the thermals. There was no doubt now that the outcome would be between R. Rowe and J. Calefatto and the penultimate round was eagerly awaited.

Eleven more maxs were recorded, the still fresh breeze had remained constant until now and a lull brought the inevitable down-draught, the majority of the contestants recording between 43 and 91 secs. in round 6, Calefatto and Rowe still with 'full houses'.

Round 7 again produced 11 maxs, Rowe and Calefatto among them.

Great expectations for Round 8 (fly off) did not materialise as Calefatto was down at 63 while Rowe was only 3 secs better at 66. A feature of the fly-off was the magnificent recovery of Rowe on tow where it was obvious to the large crowd present that only a miracle could bring his 'Thermal Nose' to a decent launch. It was here that Robby proved that he was still in World Class. Johnny Calefatto's modified 'Talon' for some unaccountable reason stalled around after launch and undoubtedly this cost him the championships as he had launched into lift.

Models most in evidence were *Inchworms* - *Empresses* - *Talons* - *Aquillas* - *Thermal Noses* - *Wishbones* - *Baguley*. John Carswell in 3rd place, dropped only in the 1st, 2nd and 3rd rounds with a total of 1119, just ahead of Cowlin's 1105.

Flown concurrently from 10.00 hours onwards was **Open Power** which attracted 12 entries including one junior, Keith Moore. Six of the entrants were also flying in A/2 (are these boys fit!). 'Ramrods' a 'Eureka' and a 'Kiwi' were conspicuous and the contest developed into a struggle between J. Carswell of W.P. flying a 'Creep' with an OS Max 15 up front and Murray Silkstone of W.P. flying a similar combo. Young Keith Moore, after battling manfully with his Cox TD.69 all morning had one of the only three maxs. in Round 1. A Tatone D/T timer did not live up to its name and when last seen this 'Kiwi' was heading for outer space. No outstanding flying was in evidence and the final placings were:

1. J. Carswell - (W.P. MAC) 752; 2. M. Silkstone (W.P. MAC) 713; 3. M. V. Eyk (E. London) 649

Rosita Calefatto, scoreboard Queen at the South African Nationals looks after the A/2 glider scores as they proceed over the seven rounds.



Left: John Calefatto bides his time before launching in A/2 as his brother waits with 'Talon'. Main opposition from start to finish came from Robbie Rowe (at right) who eventually won by a slim three seconds margin in the eighth round. Note that wonderful wide open background!

**Open Rubber** was also being flown concurrently with A/2 and Open Power and of the eight entrants no less than four had entered both the other events as well! With the breeze taking the models some distance away and retrieving being much of a self-service, one can gauge the degree of fitness needed.

Own designs dominated the event which was won by S. McCullagh (W.P.) with 848 sec. - 4 maxs. and 128. Second place went to Digby Woods, a recent immigrant from the 'old country' and St Albans, flying an O/D very much English type design with 832 sec. - (4 maxs. + 122). Rob Rowe was 3rd with 756 including only one max.

The next day, Saturday, 13th April, dawned clear but with a South East wind which gave every promise that it would be a real 'meany' and **FAI Power** got going at 08.00 hours to a thunderous flapping of tent flaps. As was to be expected, times were poor and competitors were exhausted after their cross country runs of two miles and more per flight. *Faitals*, *John West*, *Hi-FAI* and *Vikings* were in evidence. Maxs. were few and far between, though John Carswell of Western Province managed 4 in his 994 total with a 'Faital' (G 20). Sean McCullagh was only 2 secs. behind at 992 using an O/D with Miebach G 15. M. v. Eyk of East London lost his last round flight and was 3rd at 783 secs. with 'Hi-FAI'. In fourth place was that regular Natsman, Brian Partridge of Rand M.A.C. who dropped with only 41 secs. on his last flight. Flown concurrently was **A** and **Open Glider**.

In the **A**, *Ramrods* and *Mini Weavers* predominated as did the Cox .049. It was a case of those that survived the wind being the best. Winner was Rowe (W.P.) with 3 maxs. and 60, not taking his last round flight; 2nd v. Zyl and 3rd J. Roux, both from E. London.

**Chuck Glider** was flown in the same gale as F.A.I. Power but Robbie Rowe launched into lift on each of his first two flights to record a couple of 2 minute maxs. Everyone tried to emulate him but succeeded merely in getting 'glass arms'. 1, R. Rowe (Western Province) 333 sec.; 2, M. v. Eyk (East London) 138 sec.; 3, C. Watson (Western Province) 118 sec.

**Open Glider** with *Top Scores*, *Baguleys*, *Inchworms*, *Caprices* and *Roplanas* was very much a wait-and-see effort. C. St. Watson of W.P. was early up with 176 and 180 and then spent the rest of the day watching the other competitors trying to catch him. At midday it was still Watson's event and later in the afternoon a challenge came from v. Eyk and Burroughs. Although their models were all but write-offs, they persisted and by assistance from their team members they forced Watson to fly a third round of only 15 secs. Burroughs of Rand made his last flight within 1 sec. of closing time and thus ended a most exciting event.

1, C. St. Watson (W.P. M.A.C.) 371; 2, M. v. Eyk (E.L.M.A.C.) 330; 3, E. Burroughs (R.M.A.C.) 314.

Sunday, 14th April dawned clear with just a gentle breeze to help the 13 **Wakefield** flyers. Despite near perfect conditions, no full-houses were recorded. Models were mainly O/D with strong overseas influence. Flying was very much copybook and it was encouraging to see John Forbes of R.M.A.C. take 2nd Place (he was 5th in F.A.I. Power) to Robbie Rowe of Western Province with young Heyns of Western Province 3rd. J. Cowlin of East London got his second 'fourth' having gained the same place previously in A/2.

J. Rowe (W.P.) 180. 150 170. 180 180. 160. 111-1131  
J. Forbes (R.M.A.C.) 141. 180 180 141. 180. 124. 180-1126  
F. Heyns (j) (W.P. M.A.C.) 180. 136 180. 180 180. 86-1122

**A/1 Glider** with 18 entries, was flown concurrently with Wakefield and produced no fireworks. Most common design was 'Top Kick' with a sprinkling of own concoctions, pirated parts and the like. Top Kicks were just not getting to the top of the tow and all persisted in weaving after reaching approx. 1/3rd tow height. Top three flew own designs:

1, E. Burroughs (R.M.A.C.) 536; 2, C. St. Watson (W.P.M.A.C.) 509; 3, J. Carswell (W.P.M.A.C.) 447

At Gunners Circle, the **control-line** events opened with **F.A.I. Combat**. It was a crowd pleaser, with no less than 90 cars parked on the perimeter of the flying field and hundreds of spectators sitting on the grass. Contestants gave it a 'real bash'. Much was the

Hugh Daniel leans back for a big 'chuck' in hand launch glider, flown with 2-minute max's. Event is a popular feature of most National Championships, except, strangely enough, in Great Britain.



prangery, the slaughter and the noises out of which B. Menges (R.M.A.C.) was first and A. Duncan (R.M.A.C.) second.

**Open Combat** was won by R. Nevin (R.M.A.C.) and H. Newton (W.P.M.A.C.) came second.

**Stunt** standard was not as high as previously but more interest is in evidence. Building standards have gone up and the Rhodesian contingent under Roger Stern brought some really beautiful models. R. Nevin of R.M.A.C. took first place with a smooth, well executed pattern. Neil Allen of Pietermaritzburg flew his O/D excellently to gain 2nd place and Roger Stern of Mashonaland took third place.

**Control-Line Scale** was won by R. Stern with a truly magnificent 'Grumman Widgeon' with motor control. It is a long time since such a model has been on display at a S.A. Nats. S. Helsly of W.P. was 2nd with a 'Mosquito' and E. Ziller of W.P. third with a 'Waco Biplane'.

**A/T Race** had one entry! A. v. Breda was awarded the certificate and insisted on doing a 100 lap heat plus 200 lap final! He used an Oliver Tiger Cub and his time was 10 m. 3.1 secs.

More exciting - **B. T/R** went to E. Ziller (W.P.M.A.C.) in 9 m. .03 secs.

**Class 'B' Rat Race** was a real crowd pleaser, speeds of 109/125 m.p.h. were typical, and the results:

1, A. Duncan (R.M.A.C.) 6 m. 47.4 secs; 2, R. Stern (Mashonaland) 11 m. 20.1 secs.; 3, A. v. d. Westhuizen (R.A.M.C.) 12 m. .09 secs.

Best supported event was **F.A.I. T/R** which went to B. Menges of R.M.A.C. with a final time of 10 m. 55.5 (5:13 heat), while A. v. Breda of Mashonaland took 2nd place with 13 m. 56.3 (6:16 heat).

**Open speed** was also won by B. Menges of R.M.A.C. with 93 m.p.h.

At the curry and rice supper/dance, trophies and certificates were handed out by Mrs. Murray-Louw and a donation of R100 (Approx. £50) was made towards the expenses of a Control Line team to the 1968 World Championships. Who knows; but that we might see S.A. represented at Helsinki?







## ENGINE TEST

BY PETER CHINN

# Eta Elite Mk. II

NOTES ON Eta history and on the development of the new 1968 model Eta 15, the Elite Mk. II, were contained in the April, May and June 'Latest Engine News' columns. We shall not, therefore, waste time by going over these facts again in detail but, to briefly recapitulate the main points of the engine's design, it may be stated that this is a disc-valve, twin ball-bearing, contest diesel embodying a number of interesting refinements.

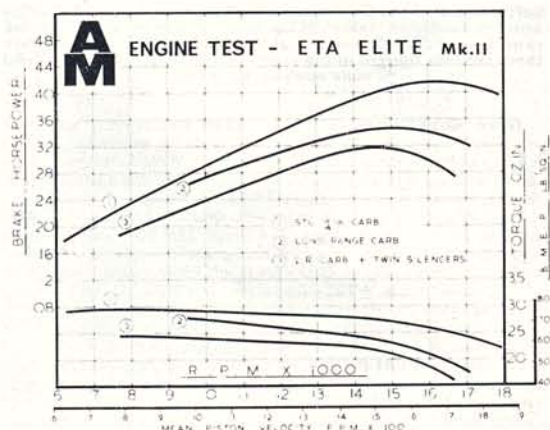
The rotary-valve, for example, features a rotor of hard wearing non-metallic material (Tufnol) rotating against a ground steel plate, .035 in. thick, instead of bearing directly on the alloy backplate. The cylinder is hard-chromed and has a shrunk-on cooling jacket of extra large fin area for maximum heat transference and dissipation. The cylinder head is vented, by means of a series of holes, also to promote better cooling. In addition to the rear rotary-valve, a crankshaft valve, to open the crankcase to atmospheric pressure for about 45 degrees each side of TDC, is incorporated and a more robust front bearing housing than that used on the Mk. I Elite is now employed.

The Elite Mk. II retains the mounting lugs, fore and aft, for the optional Eta silencer system, which consists of a collector chamber to which venturi extractor type silencers can be fitted on either or both sides. Other optional extras are the 'Rangebar' spraybar type, multi-jet, needle-valve assembly that can be fitted in place of the standard open jet to reduce fuel consumption and, as an alternative to this, a new backplate unit with small bore plastic venturi.

The engine is of quality construction throughout.

### Performance

As delivered, our test motor had had about two hours running-in at the factory. A further hour of running time was given before torque tests were undertaken. The manufacturer states, in fact, that the performance of these engines may continue to improve until four to six hours of running time have been accumulated.



Our last full test of an Eta 15 was on the 15 Mk. II four years ago, shortly after it has been introduced. This model showed a marked increase in performance over the original Eta 15 Mk. I introduced in 1960 and quickly became almost universally accepted as the No. 1 F.A.I. team-racing engine. Its success culminated, of course, in the World T/R Championship win for Britain by Dick Place and Don Haworth towards the end of the 1964 season.

Compared with the maximum output we recorded for this model - just on 0.40 b.h.p. at about 16,700 r.p.m., the figures shown in our graph, for the present version, of not quite 0.42 b.h.p. at slightly lower r.p.m., may not seem to be a particularly dramatic improvement. This is acknowledged by Eta designer Ken Bedford and confirms his own findings on static prop/r.p.m. checks. He emphatically states, however, that a very much greater increase in performance is evident under actual flying conditions - at least so far as team-racers are concerned.

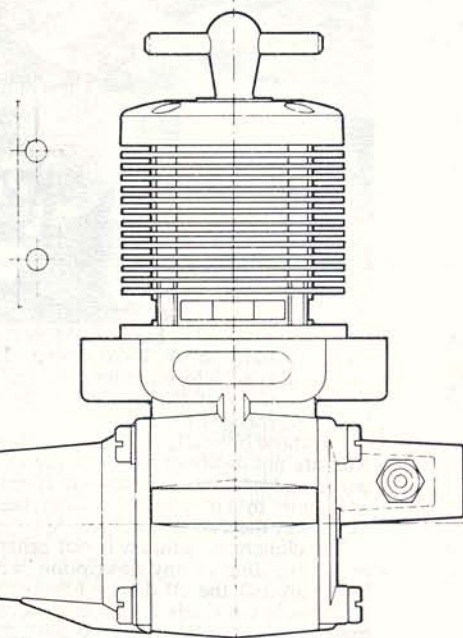
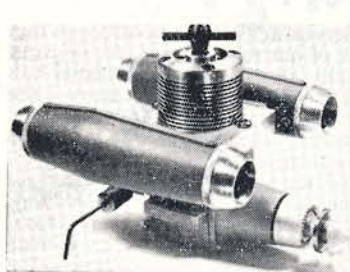
Be that as it may, it needs to be said that the output obtained for the Elite is the highest achieved to date in this series by a 2.5 cc. diesel and that its specific output of 168 b.h.p./litre is the highest we have ever recorded for any model diesel.

These figures are for the Elite in stock trim, using the standard large bore ( $\frac{1}{4}$  in.) carburettor intake and without silencer. We also ran a second series of tests on the engine with the optional long-range induction unit. This reduced output to just under 0.35 b.h.p. at 15,000 r.p.m. In terms of a given prop load, this is a drop of around 900 revs at the peak and can be expected to reduce the speed of a typical teamracer by 5 to 6 m.p.h. This may not be too much to pay for the substantial improvement in fuel consumption gained which according to the manufacturer's

Display of Elite Mk 2 parts reveals refined design features.







P - G - F C H I N N

claim, may result in up to 90 per cent more lapage.

A third set of torque and r.p.m. figures were then taken for the Elite fitted with the Eta twin silencer system in addition to the long-range backplate as above. From these a peak output of nearly 0.32 b.h.p. at 14,600 r.p.m. was found.

The interesting point about the various sets of performance curves obtained for this engine was that, whereas the long-range backplate did not very greatly reduce maximum torque compared with the standard unit, and only made a substantial difference under light loads and high revolutions, the opposite was the case when the twin extractor silencers were fitted, i.e. low speed torque was quite considerably reduced but torque at high speeds was somewhat maintained. In terms of prop r.p.m., this meant a drop of 450 r.p.m. at the peak, equivalent to a reduction in power of just over 9 per cent and a 500 r.p.m. drop at 9,000 r.p.m. which is equivalent to the much greater power loss of approximately 17 per cent. From this, one might reasonably deduce that the special Eta extractor type silencers become more and more effective as airflow through them is increased. In other words, they are most efficient when the engine is turning a small diameter prop at high speeds.

As regards handling characteristics, the Eta was virtually above reproach. Starting qualities were really excellent. Even on a light 7x4 prop which allowed r.p.m. to rise above 18,000, the Elite (practically alone among 2.5 cc. diesels, some of which began to bite even on an 8x4) remained quite docile.

These qualities were maintained irrespective of the type of intake fitted. We did however detect slight differences in running qualities. In our first test the usual diesel high-speed 'spit' occurred in the region of 14,000-15,000 r.p.m. as the engine warmed up and needed fairly precise compression adjustment to eliminate it although, above 16,000 r.p.m., the engine ran quite steadily and the exhaust note was absolutely 'clean' at 17-18,000. In the second test with the long range backplate fitted, the spit was present at 13,000-14,000 but was easier to control: compression was noticeably less critical and the compression lever could be turned through about 40 degrees at high speeds without serious effect on running qualities.

Handling qualities remained equally good with the silencers fitted. At no time, with or without the silencers, did we have to resort to priming the engine through the exhaust ports to obtain a start. Merely choking the intake to draw a rich mixture into the crankcase was sufficient to start the engine within two or three flicks of the prop, if the compression setting was approximately right. Restarts with the engine warm were virtually first flick.

During the past two or three years the Eta has had to fight hard against some strong Continental opposition in the team racing world and the new Elite model has been introduced in the expectation that its improved perform-

ance will make this task easier. For free-flight contest work, the Elite Mk. II is obviously one of the very few diesels that are capable of challenging the 2.5 cc. racing glowplug engines when the latter are running on straight fuel.

Unquestionably the Elite Mk. II is a fine motor. In our view it is one of the three top British engines irrespective of size and type.

**Power/Weight Ratio** (with standard intake less silencer): 1.03 b.h.p./lb.

**Specific Output** (with standard intake less silencer): 168 b.h.p./litre.

#### SPECIFICATION

**Type:** Single-cylinder, air-cooled, compression-ignition two-stroke with disc rotary-valve induction and twin ball-bearings

**Bore:** 0.558 in. **Stroke:** 0.620 in.

**Swept Volume:** 0.1516 cu. in. = 2.484 cc

**Stroke/Bore Ratio:** 1.11:1

**Weight:** 6.5 oz. (8.8 oz. with twin silencer assembly)

#### General Structural Data

Pressure diecast aluminium alloy *crankcase* with detachable front and rear components. Hardened, counterbalanced *crankshaft* having 8 mm dia. main journal, 0.187 in. dia solid crankpin and running in one 8 mm i.d. x 22 mm. o.d. Hoffmann ball journal bearing (rear) and one 1/4 in. i.d. x 3/8 in. o.d. Hoffmann ball journal bearing (front) mounted in pressure diecast aluminium alloy *front housing*. Hard-chromed cast-steel *cylinder* with shrunk-on finned machined aluminium alloy *cooling jacket* and detachable machined aluminium alloy *cylinder head*. Cast-iron lapped *piston* with pressed-in 3/16 in. dia tubular *gudgeon-pin*. Machined alloy, bronze bushed *connecting-rod*. Valve rotor of Tufnol, mounted on one-piece *backplate/carburettor unit* having ground steel valve face. Plated brass needle-valve assembly. Beam mounting lugs.

#### OPTIONAL EXTRAS

Long range induction assembly with plastic venturi (for reduced fuel consumption)

Rangebar multi-jet spraybar type needle-valve assembly (for reduced fuel consumption).

Exhaust collector and single or twin extractor type silencers.

#### TEST CONDITIONS

**Running time prior to test:** Approx. 3 hours.

**Fuel used:** 47 per cent Kerosene, 30 per cent ICI Technical Ether, 20 per cent Duckhams Racing Castor-oil, 3 per cent amyl-nitrate.

**Air Temperature:** 60 deg F

**Barometer:** 29.70 in. Hg.

**Silencer:** Maker's twin extractor type as noted in text.





THE ROYAL AIR FORCE Muharraq Model aircraft club is usually about 15-20 strong (depending on who can be conned into building a model!) and devotees of most branches of the hobby can be found lurking in hidden corners of the island.

For those blissfully ignorant members of the fraternity who are not aware of the existence of our sun-drenched paradise, Muharraq is a tiny island linked to the mainland of Bahrain by a mile long causeway, the whole mess being located in the Persian Gulf.

The climate of Bahrain is not generally conducive to model building of any description, winter temperatures hover around the 60 degree F mark whilst in summer 110 plus in the shade is not uncommon. Humidity is the main problem with between 60-100 per cent saturation as the accepted figure all the year round. Calm days are rare. In these conditions, dopes and cements 'blush' at the slightest provocation, and storage properties of modelling goodies, i.e. all adhesives, paints, rubber etc. are drastically reduced.

Modelling goods in general are difficult to obtain, and dearer than in UK. A very limited range of kits and accessories are sold by the local sports equipment store, but no balsa, tissues, or other basic requirements. Typical of the services provided by the proprietor are as follows:

C/L kits; but *no* lines or handles! Engines, *without* elementary spares, such as needle/spraybar assemblies (one instance is even recorded of an engine being sold with no needle, and, on returning said useless piece of ironmongery, the irate modeller was told 'You don't need that bit anyway'), tanks, or even fuel tubing.

Free-flight kits are also available in small numbers, generally .5 cc power, and small gliders. Fuels are obtainable, but in somewhat spasmodic batches. At time of writing, no glow fuel has been on sale for some two months, with no immediate prospect of a shipment. Hence, a supply system has been established with UK. It has been found that the larger mail order houses tend

## MODELLING in MUHARRAQ

Persian Gulf  
adventures  
described by  
P. Redhead

to give inconsistent service in as much as, although they invariably hold stock of our requirements, the despatch side of the house usually lets them down. No matter how much postage is enclosed the items always seem to come by sea mail rather than air. Consequently the club members usually accumulate a list of their requirements which is posted to a relative, who then visits the local model shop, purchases the goods, has them packed for transit and post them out for distribution. In this way, at least they know who to blame if the stuff doesn't arrive!

As far as the flying side is concerned, once the difficulties of getting models have been overcome, stage two has to be contended with. Although not blessed with UK weather, or trees, they have their own minor problems. Sand may be delightful at Blackpool or Clacton, but it's an awfully hard testing ground, both in the way of model contact and in grinding away whatever it happens to find its way inside, C/L suffers particularly in this respect. The few radio addicts have great difficulty with interference, probably due to the large number of military organisations, British and otherwise, jamming the ether, and also with grit in escapements, etc. A prang involving any mechanical or electrical equipment requires a complete strip down and clean up of all relevant bits, with loss of flying time. As if sand weren't enough the desert is covered with small, spiky shrubs around 6 in high, which are a living hell to anything tissue-covered: if you manage to miss those, you hit a rock or an Arab graveyard or worst of all suffer the mental anguish of watching the model being pounced upon by Arab children, who having the advantages of not speaking English take no notice whatsoever of foul cursings and muttered threats, and must surely rival piranha for time taken to reduce a structure to bare bones.

Flying sessions between April-September are restricted to mornings pre 11 am and afternoon post 5 pm, due to the midday sun (mad dogs and Englishmen variety), one can certainly go out in it, but to retrieve errant F/F models or fly combat under it, requires an, as yet, undiscovered brand of fireproof Englishman. However, the difficulties are more than offset by the entertainment and relief from boredom. Highlights have been the removal of a non-belligerent Arab from his bike, by John March's K.K. *Spectre*, as he rode through a C/L circle, the dive bombing of a minibus by the writer's Dart powered sport model, and the fly-away of John Blount's PeeWee powered *Schoolboy* (recovered after intensive search by foot and Volkswagen).

Top: John Marsh's 42 in. Seaboot with Merco 49 for sea-plane C/L. Left: Bob Deathridge and his 'Spectre' and below, John Blount's 'Schoolboy' gets away.





# TOPICAL TWISTS

by 'Pylonius':  
illustrated by 'Sherry'

## The Years Between

Someone has remarked that the club scene has now radically changed. Gone is the old miscellaneous wrangle of old, young and middling, going gaga with excitement over the prospect of a coach outing to the Cranfield Rally, or rebelliously suffering a series of lectures on 'The Evolution of Tissue Paste'. Gone, too, are those good old battle royals between the 'do-gooders' who want to bring the gospel of aeromodelling to the heathen juniors and the hard-headed types who just want to kick the noisy blighters out. The scene is now decidedly cool with almost complete segregation between Seniors and Juniors. And the distance apart is not only from the Combat arena to the private R/C field; but also in the age gap. Whilst the juniors are getting younger than ever – twelve being a ripe age before downing the model gear to take off after the birds – the seniors are well beyond that age when life is reputed to begin, and the second childhood, (or is it the first?) is celebrated with the purchasing of the most expensive toys available.

Indeed, it is this very affluence on the part of the daddy-o's which is rapidly changing the shape of things. Modellers, for instance are generally much plumper than they used to be, having acquired that supermarket superfluity which, at one time, was only to be seen in pictures of the American Nationals. Then, too, they are so ostentatiously equipped. You no longer get the greasy, motor bike type with his equally greasy model box strung on his billowing back. Model man of the sixties glides on to the private club airfield in his sumptuous limousine, trots out his highly commercialised multi job, puts it through its push button routine and retires to a celebratory snifter in the clubhouse.

The junior, too, has changed out of all recognition. In many cases he has grown up to be a plump multi flyer, but what I mean is you no longer get the cap-in-hand junior coming in for a few pointers on building a rubber

powered beginner's model; by some new genetic process he has an inbuilt ability to build and fly the fastest in Combat models right from the word go. Later on, if the birds don't get him, he undergoes a sudden metamorphosis, and we see him next as an aging multi flyer.

You can't help sighing for the good old club days.

## Field Research

We hear a lot of talk about flying fields and their vanishing tricks, but very little about the psychological approach to same. I don't mean that anyone flying toy aeroplanes is in need of a session on the psychiatric couch, nor do I refer to the stratagems involved in getting the wifely assent to an afternoon's flying, but to the mental effect the particular type of flying field has on the particular model flyer.

But, surely, you might say, in these overbuilt, over-enclosed, keep out times, any piece of available territory should be eagerly seized and cherished; even the pocket sized airfield is not to be sneezed at. Yet it is surprising how some model types will shy away from what might be considered an ideal flying field through some obscure agrophobic fixation or unresolved inner conflict.

Now, you or I may have no qualms about going through the normal routine of obtaining access to the more official type of flying field, and will accept the following experience as a matter of course:

'Did you know you should have reported to the Guard Room?'

'I – I was just looking for it.'

'It's plain enough to see – that building over there.'

'Well, I looked in there, but I didn't want to wake anybody up.'

'Hmm. Can you show me your Green Permit Card, Code No. X7?'

'It's in my other pocket. If you call that dog off and let me get up, I'll show it to you.'

Others may be put off by this sort of thing. Allergic to dogs, perhaps, or averse to discipline as the result of an over strict upbringing.

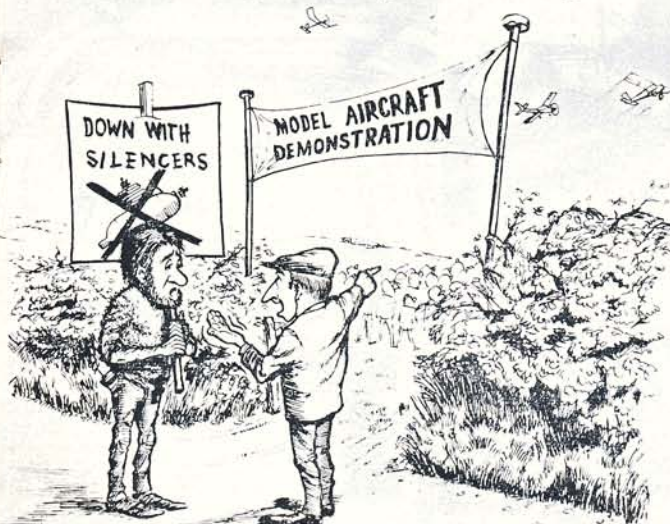
A less official type of flying field which is now enjoying a popular vogue; but is not to everyone's liking is the agrarian patch. Again a latent fear of animals may be at the root of an aversion to the friendly farmyard scene. You may not have sufficient faith in your Bull identification capacities to get on terms with the lowing herd, although younger club members will have the advantage of getting lessons about this sort of thing at school.

Then again, there are many model flyers, particularly radio types, who would be appalled at the prospect of flying too far from the madding, but applauding crowd; with only the odd goose or cow ('tell it's a cow by the ring through its nose') as audience. They cannot fly happily without having around them the security (not always of the insurance companies) of a happy, appreciative throng of spectators. The thought of putting the precious model through all those heart-in-mouth procedures for no other reward than the squawk of a startled bird, is enough to give them nightmares.

There is also the vociferous clubroom type who breaks out in a lather of indignation whenever the word 'airfield' is mentioned, which, as he is always using the word, is very often. The rottenness of the club field is a good excuse for him not to have to put in a flying appearance, and this says much for his insight, as he has never set foot on it.

Contest flyers have the oddest psychological approach of all; they don't worry about the flying field itself, but the skyline beyond.

'It's not that kind of demonstration'.





# AIRCRAFT DESCRIBED NUMBER 175

## Messerschmitt Bf 110

Described by J. Richard Smith

Drawn by Ian R. Stair

ALTHOUGH proving a humiliating failure during the Battle of Britain, the Messerschmitt Bf 110 was to provide the backbone of the *Luftwaffe's* night fighter force until late in 1944. The aircraft was conceived in 1934 as a long-range bomber destroyer with the ability to meet single-engined fighters on equal terms.

The first prototype, the Bf 110 V1, flew on 12 May 1936 piloted by Rudolf Opitz. It, like the second two prototypes, was powered by two 960 h.p. Daimler Benz DB 600A engines and was almost as fast as the contemporary Hawker Hurricane fighter. The first production model, the Bf 110A-O, was powered by two 610 h.p. Junkers Jumo 210 engines and was followed by the generally similar B-O. Two B-Os were later re-engined with the DB 600A as forerunners of the B-1 fighter & B-3 trainer.

The first major production model was the Bf 110C which featured 1,100 h.p. DB 601A engines with direct fuel injection. Several variations on the basic design were produced including the C-4B and C-7 fighter-bomber and the C-5 reconnaissance fighter. The Bf 110D series were fitted with a variety of long-range fuel tanks and the Bf 110E was a specialised fighter-bomber. Of these perhaps the most potent was the Bf 110E-1/R2 which could carry two 2,200 lb. bombs beneath the fuselage. The Bf 110F series were similar to the E model, but were fitted with 1,300 h.p. DB 601F engines. The F-2 was equipped with two 210 mm. WGr 21 rocket tubes.

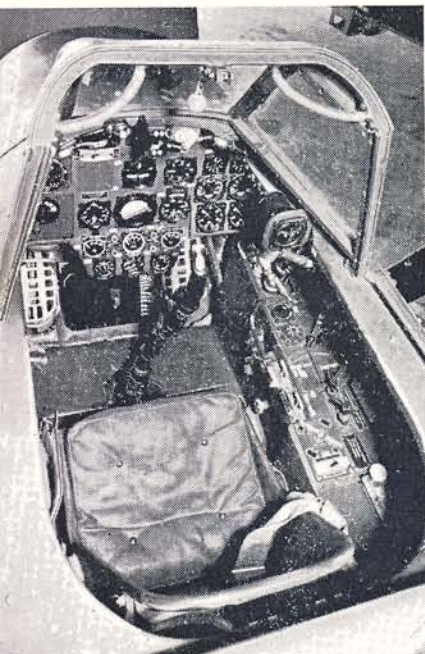
By far the most important production variant of the Bf 110 was the G series which appeared late in 1942. The aircraft differed in being powered by two 1,475 h.p. DB 605B engines and could carry an armament of four 7.9 mm. machine guns and four 20 mm. cannon. The Bf 110G-2 was a fighter-bomber, the G-3 was a high-speed reconnaissance aircraft and the G-4, which was produced in parallel with the F-4, was a night fighter. A multitude of sub-variants were produced from the basic G-4 design featuring such refinements as different radar equipment, GM-1 power boosting equipment, additional armament etc.

Late in 1938, Goring established the first of the *Zerstörergruppen*; elite fighter units to be equipped with the Bf 110. The aircraft first entered service with I.(Z)/LG 1 and when war was declared in September 1939, the *Luftwaffe* possessed nine *Zerstörergruppen*, although only three of these, I.(Z)/LG 1, I./ZG 1 and I./ZG 76 were equipped with the Bf 110C-1. All three units took part in the Polish campaign, the Bf 110 proving more than a match for the ancient fighters of the opposing air force.

In December 1939, Bf 110s from I./ZG 76 in company with Bf 109s intercepted 22 R.A.F. Wellingtons over the Heligoland Bight with the result that only eight bombers returned intact. Not for another three years did a large Allied bomber formation violate German airspace in daylight. I./ZG 1 and I./ZG 76 took part in the invasion

Below left, the photos and instruments of a Bf 110 C-4 showing the right fuselage side console and a direct reading compass mounted separately at sill level. Note fretted rudder pedals which have stirrups and twin handgrips for access. At right, a view aft shows the observer's seat. In later aircraft, this and another for a gunner were of wicker basket type. These photographs by

'Aeroplane'. Centre top is the same C-4 on test at Farnborough with the canopy opening and nacelle fairing detail evident. Small vertical rod is red, indicates U/C position (I.W.M. photo E. MoS 131). Centre below, is the Bf 110 G now at Biggin Hill, with radar antennae, exhaust mufflers, underwing tanks and different nacelle shape to the earlier types.





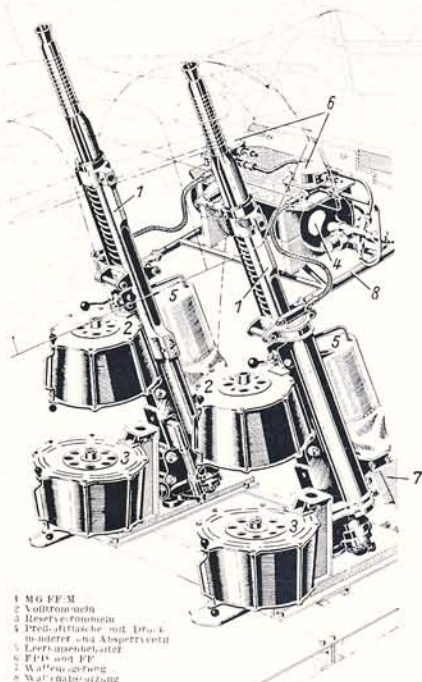
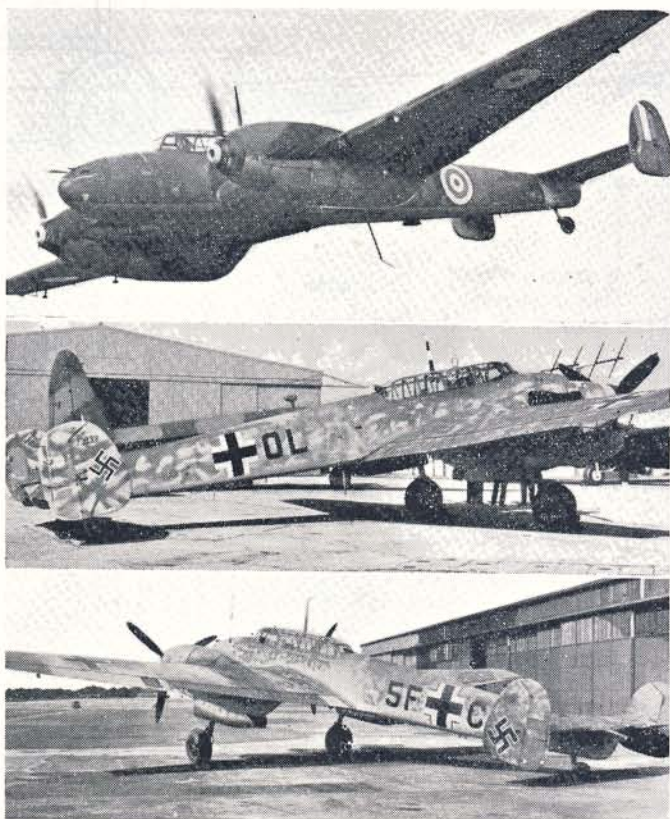


Abb. 6. Bf 110 G-4/R 8 Übersicht MG-FF/M Schrägeinbau

Detail from Official handbook shows Messerschmitt Bf 110 G-4/R fitted with two 20 mm MG FF/M cannon in the co-called Schräge Musik (Jazz Music) installation. Mounting is in the rear cockpit, facing forward.



Top: Bf 110 C-4 on test in R.A.F. insignia (I.W.M. photo E MoS 122). Centre: Bf 110 G at Biggin Hill, 730301 on fins, repainted colours. Underneath peeling is off-white. Bottom: Bf 110 C-5 of 4th Staffel, Gruppe 14 (I.W.M. photo MH 4196).

of Norway and Denmark in April 1940 and nine Bf 110C and D equipped *Zerstörergruppen* were operational for the campaign against France and the Low Countries in May.

The first real test for the Bf 110 came during the summer of 1940 when the aircraft was used as an escort fighter for *Luftwaffe* bombing attacks on the British Isles. Nine *Zerstörergruppen* (drawn from ZG 2, ZG 26, ZG 76 and V.(Z)/LG 1) were operational for the Battle of Britain, plus the experimental fighter-bomber unit, *Erprobungsgruppe* 210. Although very fast, the Bf 110 suffered severely from the attentions of the highly-maneuvrable Spitfires and Hurricanes of the R.A.F. and the ludicrous situation developed whereby the Bf 109E had to protect the Bf 110.

Meanwhile three night fighter *Gruppen* had been established within the *Luftwaffe*, two of them equipped with the Bf 110. By June 1941, when German forces invaded Russia, four night fighter units (I, II and III./NJG 1 and I./NJG 3) two fighter-bomber units (I and II./SKG 210) and three destroyer units (I, II and III./ZG 26) were operational.

Initially the Bf 110 night fighters attacked visually, but this was soon abandoned in favour of the *Himmelbett* system of ground-controlled interception. In February 1942 the *Lichtenstein* BC radar set was introduced into service. This set was carried by the aircraft itself with a complex radar array distributed around the nose. By February 1943, five night fighter *Geschwader*, NJG 1, 2, 3, 4 and 5 had been established, but in July the R.A.F.'s first use of the 'Window' jamming device rendered all German radar sets virtually useless.

By the autumn of 1943 no less than seven *Zerstörergruppen* were established in Germany as defence against the ever-increasing daylight attacks by U.S.A.A.F. bombers. At first the American bombers suffered heavily, especially from the rocket-firing Bf 110s, but the introduction of long-range escort fighters drastically changed the situation. By July 1944 the remaining *Zerstörergruppen* had been disbanded.

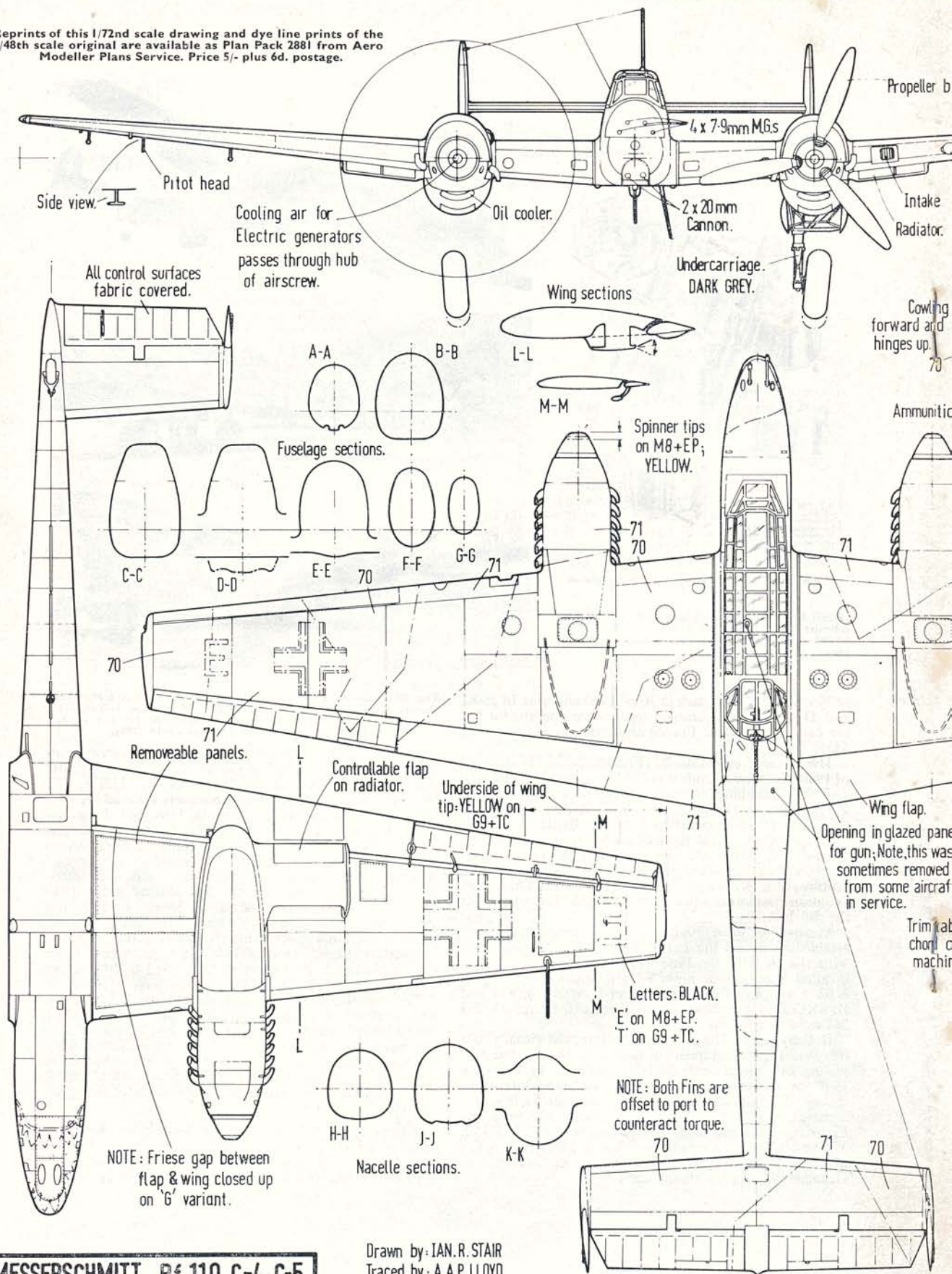
At the end of 1943 several new radar sets were introduced into *Luftwaffe* service, and during early 1944 Bomber Command suffered severe losses. Perhaps the worst was on 30 March when 94 bombers were shot down out of a force of 795 attacking Nuremberg. But, after the invasion of France in June 1944 the night fighter force rapidly declined. By December 1944, 913 night fighters were on strength, but only 150 of these were Bf 110s.

Towards the end of the war, many night fighter units were reduced to nocturnal ground-attack sorties against Allied troops, and many aircraft were lost in this hazardous business. When the war in Europe ended on 8 May 1945, only NJG 1 retained the Bf 110 in any numbers, although the *Luftwaffe*'s highest-scoring night fighter pilot, Maj. Heinz Schnauffer of NJG 4, was still flying his Bf 110.

Thanks are due to Members of 'Gruppe 66' the International Society of German Aviation Historians, especially members J. R. Smith and K. S. West, the Royal Air Force Biggin Hill, Imperial War Museum and Temple Press Ltd.



Reprints of this 1/72nd scale drawing and dye line prints of the 1/48th scale original are available as Plan Pack 2881 from Aero Modeller Plans Service. Price 5/- plus 6d. postage.



MESSerschmitt Bf.110 C-4,C-5.

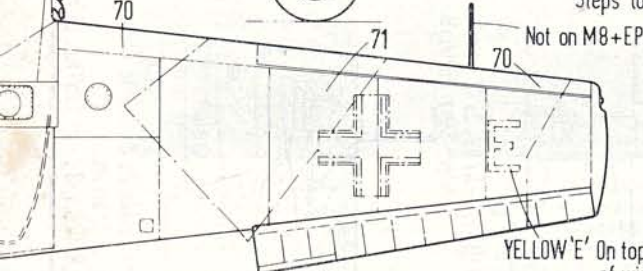
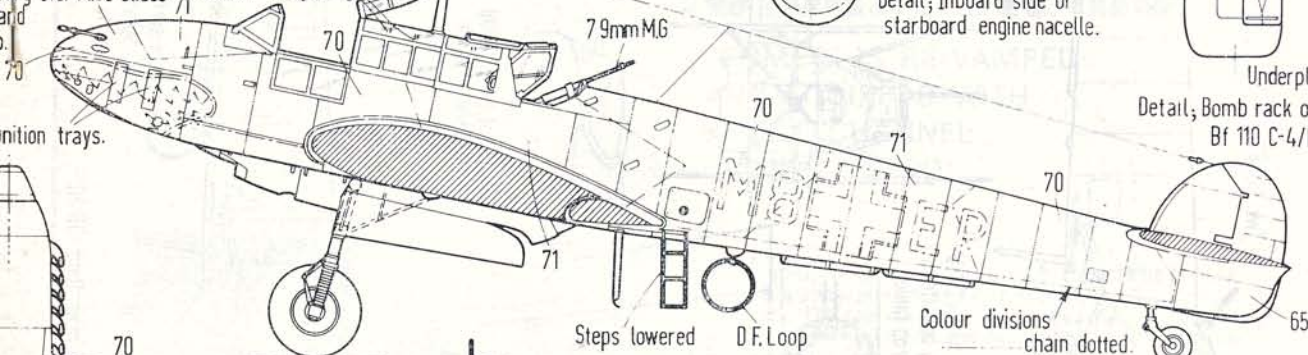
Drawn by: IAN.R. STAIR  
Traced by: A.A.P LLOYD



er blades BLACK.



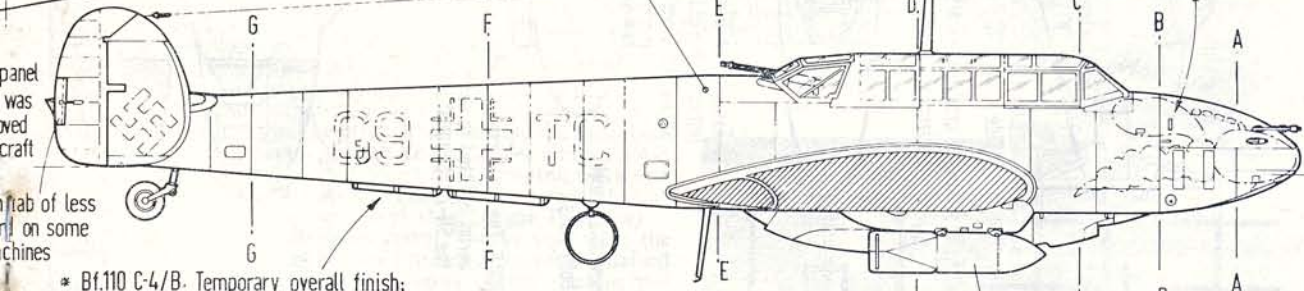
Cockpit framing shown thus is under the glazing.



COLOURS: M8+EP  
Top surfaces: SCHWARZGRÜN - 70.  
: DUNKELGRÜN - 71.  
Undersurfaces: HELLBLAU - 65.

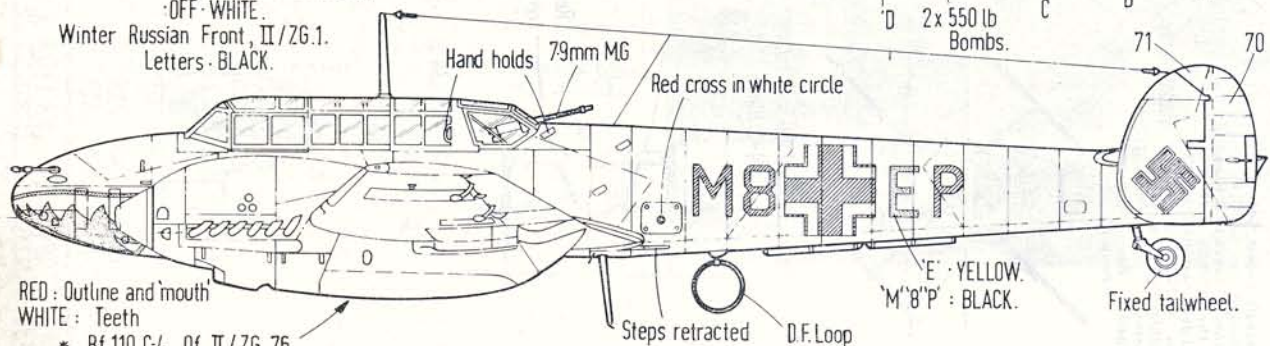
NOTE: Identification letter discontinued in 1941.

RED: 'Mouth'  
BLACK: Outline and 'face'.  
ORANGE: Body and head  
WHITE: Wings and eye



\* Bf.110 C-4/B. Temporary overall finish;  
OFF-WHITE.

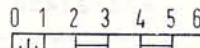
Winter Russian Front, II/ZG.1.  
Letters: BLACK.



RED: Outline and 'mouth'  
WHITE: Teeth

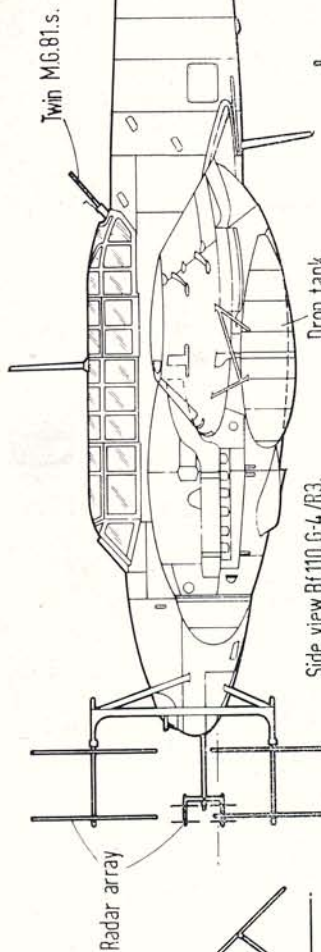
\* Bf 110 C-4, of II/ZG 76.

SCALE, FEET:





Aircraft coded 'H1 + GM' belonged to 4.(H)/12, a reconnaissance unit based in the Middle East. The full designation of the unit was 4.(Heeres) Staffel/ Aufklärungstaffel 12 or 4. (Army co-operation) Squadron/ Reconnaissance Group 12.

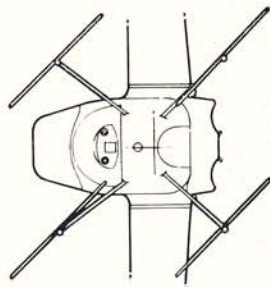


Side view, Bf 110 G-4/R-3.

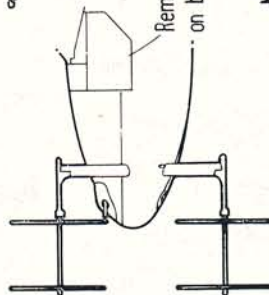
NOTE: Radar aerial cross-pieces attached to sides of horizontal bars.

NOTE: Racks for 2 x 110 lb bombs may be fitted in place of drop tanks.

Overall finish: LIGHT GREY-HELLGRAU. 76. With the upper surfaces and sides mottled with: DARKER GREY-DUNKELGRAU. 74. National markings were carried in the same manner as on the Bf.110-C series.



Front view, Bf.110 G-4/R-3.  
SN-2 Radar.



Side view, Bf.110 G-4/R-3.  
SN-2 Radar.

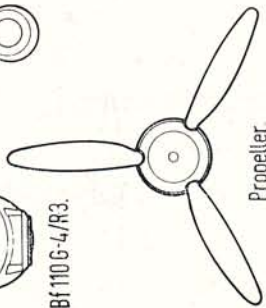
Exhausts on 'G' series, (other than night fighter) similar to 'C' series.



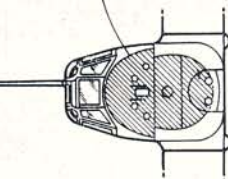
Sketch of twin Mk.108 installation in nose.

NOTE: The small central radar aerial is fitted to some of the SN-2 type radar array.

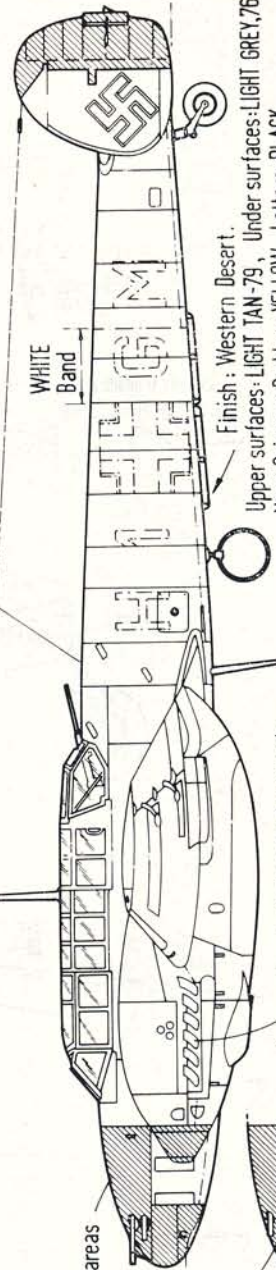
\* Bf.110 G-4/R-3; 2 x 1475 hp. Daimler-Benz DB-605B.



Front view, Bf 110 G-4/R-3.



Cross-hatched areas YELLOW. 04.



Finish: Western Desert.

Upper surfaces: LIGHT TAN-79. Under surfaces: LIGHT GREY. 76. Nose, Spinner, Rudders: YELLOW. Letters: BLACK. Underside of wing tips: WHITE, with a black 'G' (both sides)

Drawn by: IAN R-STAIR.  
Traced by: A.A.P. LLOYD.

MESSerschmitt Bf.110F & G.

\* Bf.110 F-3; 2 x 1350 hp. Daimler-Benz DB-601F.

SCALE: FEET.





READERS will recall the feature in October '67 describing D. E. Parker's 'Comet' and his impressive achievement with steam power. Now the 'Comet' is radio controlled!

Having been able to obtain some light gauge stainless steel sheet and tube and thus able to make a better boiler to basically the same design, plus a burner with larger wicks, Mr. Parker was able to double the thrust. The new plant ran at 60 lbs./sq. in. turning a 12 in. dia. plastic propeller with the pitch reduced to 6 in., and produced a static thrust of one pound.

This additional power enabled an increase of wing loading, and so made 'Comet' less of a calm-air-only flier. Wingspan was reduced from 8 to 7 feet and the wing roots were strengthened. A stronger and longer undercarriage was fitted. The most important mod., however, was a new rear fuselage of 1/32 in. sheet balsa housing single channel radio control—rudder only. (MacGregor Relayless).

In the air, the rudder control works very well; the limited rudder area enables it to be held on for a sustained turn. The low forward speed makes 'Comet' ideal for spot landings, but not in winds above about 6 m.p.h.

A number of modifications were made to the engine to improve it mechanically. These included a heavier and better balanced crankshaft, longer piston and valve rods sliding in guides on top of the engine, a larger displacement lubricator, and a throttle valve to speed the build up of steam pressure; this is opened fully as soon as the safety valve blows with the engine running.

The boiler casing is now lined inside with .008 in. light alloy sheet, and a sliding stainless steel door replaces the original pivoted fire-door. The boiler is equipped with a specially made (not by Mr. Parker) lightweight 3/4 in. dia. pressure gauge reading to 100 lbs./sq. in.

ONE STAGE FURTHER  
IN THE SAGA OF  
D. E. PARKER'S ACHIEVEMENT

## Steam Radio

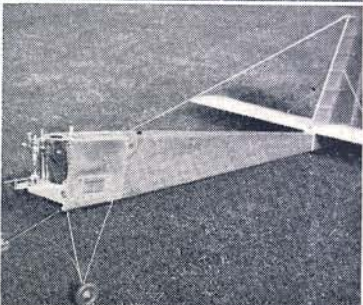
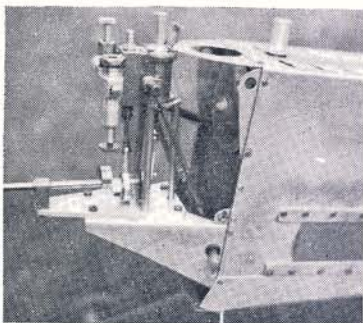
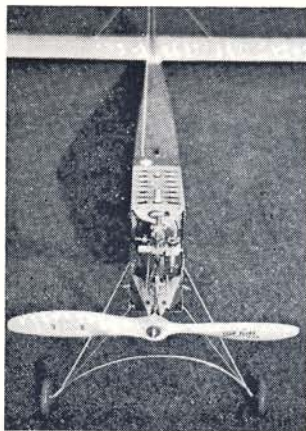
"COMET" IS RE-VAMPED  
AND EQUIPPED WITH  
SINGLE CHANNEL  
RADIO CONTROL

The all-up weight has increased by 8 oz. Flight duration, on a consumption of 1 1/2 oz. meths. and 2 oz. water, is 3 mins. The fuel capacity could be easily increased by an additional tank, and the boiler could take another 3 oz. of water.

The largest airscrew used to date is a 13 in. dia. x 5 1/2 in. pitch wood 'TopFlite' and further improvement is anticipated when a larger prop is tried.

Mr. Parker has just completed a new stainless boiler of improved design which has been tested to 100 lbs. pressure. This has not yet flown, but is being held more or less in reserve, for the future, running at a higher pressure and earlier cut-off. We look forward to hearing of the next stage in this saga of Steam Power.

Heading shows the new 'Comet' in full steam and under radio control. Details of the rear fuselage enclosing the Radio equipment (was previously an open boom framework) and the more powerful steam unit at right. That prop is a Top Flite 13 x 5 1/2 in. Total weight now 38 ozs.







## JUNIOR MODELLERS' PAGE WITH YOUR QUERIES, PHOTOS AND HANDY HINTS—John Bridge

Dear John,

I started modelling about three years ago and I joined the Golden Wings Club a year ago. I enclose a picture of myself and my K.K. Bandit which I lost at Ashdown Forest; I also have five other models which are, K.K. Phantom and Phantom Mite, A.P.S. Popsie, Frog Nimrod and a combat plane of my own design. I have four engines which are D.C. Sabre 1-5, E.D. Hornet 1-5, Mills .75 and a D.C. Merlin. I always read *Aeromodeller* every month and I always read the Golden Wings Club page.  
London S.E.9.

Stuart Adams.



Stuart Adams with the KeilKraft Bandit which he lost - we hope he gets it back.

Dear John,

I have just finished building a K.K. 'Firebird' in which I have installed my new A.M. 25.

After covering my model with the tissue supplied and applying one coat of clear dope, I noticed that the outer wing had a large warp giving the whole wing appearance of being buckled.

This is a great disappointment to me and I would be grateful if you could tell me how this happened and of a remedy you may know to overcome this warp.

I would like to point out that the covering and doping of this model took place in a dry atmosphere.

Sidcup, Kent.

G. S. Crimp

*I am sorry to hear of your misfortune with Firebird. To remove the warps I suggest that you brush dope thinners on the warped wing and twist in the opposite direction until dry. Before flying the model you should give at least three coats of clear dope overall and preferably a coat of fuel proofer.*

Dear John,

I am writing to tell you about my control-line experiences. I first started with a Hush Buggy powered by a Frog .80. When I got used to that my Dad and I built the Flying Tiger powered by the P.A.W. 2-49. The first flight it crashed. The second flight the engine fell out of the plane. Third flight was perfect; I did loops with it then I tried inverted flights and I lost control of it and crashed. Last night we stuck the wing and fuselage together and it only needs a bit of tissue on it now. Please would you send me two new Golden Wing transfers and I enclose 6d. to cover cost.  
Halifax, Yorks.

David Child.

Dear John,

Every month I have the *Aeromodeller* magazine, and every month I see that there are adverts for plans for aeroplanes; but I wondered if you had any for helicopters

and also the price. If so could you please send me a reply. My club number is 10400. Llanrumney, Cardiff.

David Gough.

*The Aeromodeller Plans Service Handbook No. 1 is available, price 2/- from the Editorial Office and contains a number of illustrated descriptions of Helicopter designs ranging from those for Jetex 50 units to one for .5cc., another for .75 cc. engines. Admittedly there are not many, and the Helicopters are out-numbered by the Autogyros; but you must remember that even though the Helicopter is much refined in the full size world, it still has to become a practical proposition for the aeromodeller.*

### TIPS OF THE MONTH

Is there any way of filling small gaps or cracks in balsa other than using plastic wood? If I do not make a perfect join when planking or doing similar jobs I find these joins show up even when tissue covered.

*A good way to overcome this is to squeeze some cement into the crack, then sandpaper over it while the cement is still wet, and you will find that the sanding dust combines with the cement and makes a good filling.*

I find it difficult to cement windscreens or canopies in place without sometimes getting a cement finger mark on the windscreen. How can I remove this?

*You can remove these marks cleanly by rubbing over with a clean cloth moistened with dope thinners.*

A quick tip: When you finish off a solid balsa wing such as that for a chuck glider, rub in a good coat of cement around the end grain at the tips and you will have a much harder finish to resist the usual knocks on the ground.

### WHO WANTS A PEN PAL?

A keen Golden Winger in East Africa Rashid Kassam of P.O. Box 1021 Mombasa would like to get in touch with fellow members in his part of the world in order to exchange ideas and to improve his aeromodelling through mutual exchange of letters. Can anyone help him in that part of the world?

Pascal Meritte is only 7, and so has 3 years to go before he can join our club but already, thanks to his expert father, he is flying 'Coupe d'Hiver' models in France.



## Join Now!

### Reduced cost plans for all Golden Wings Members

Dear John Bridge,

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

NAME IN FULL

ADDRESS

YEAR OF BIRTH . . . . . SCHOOL

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

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



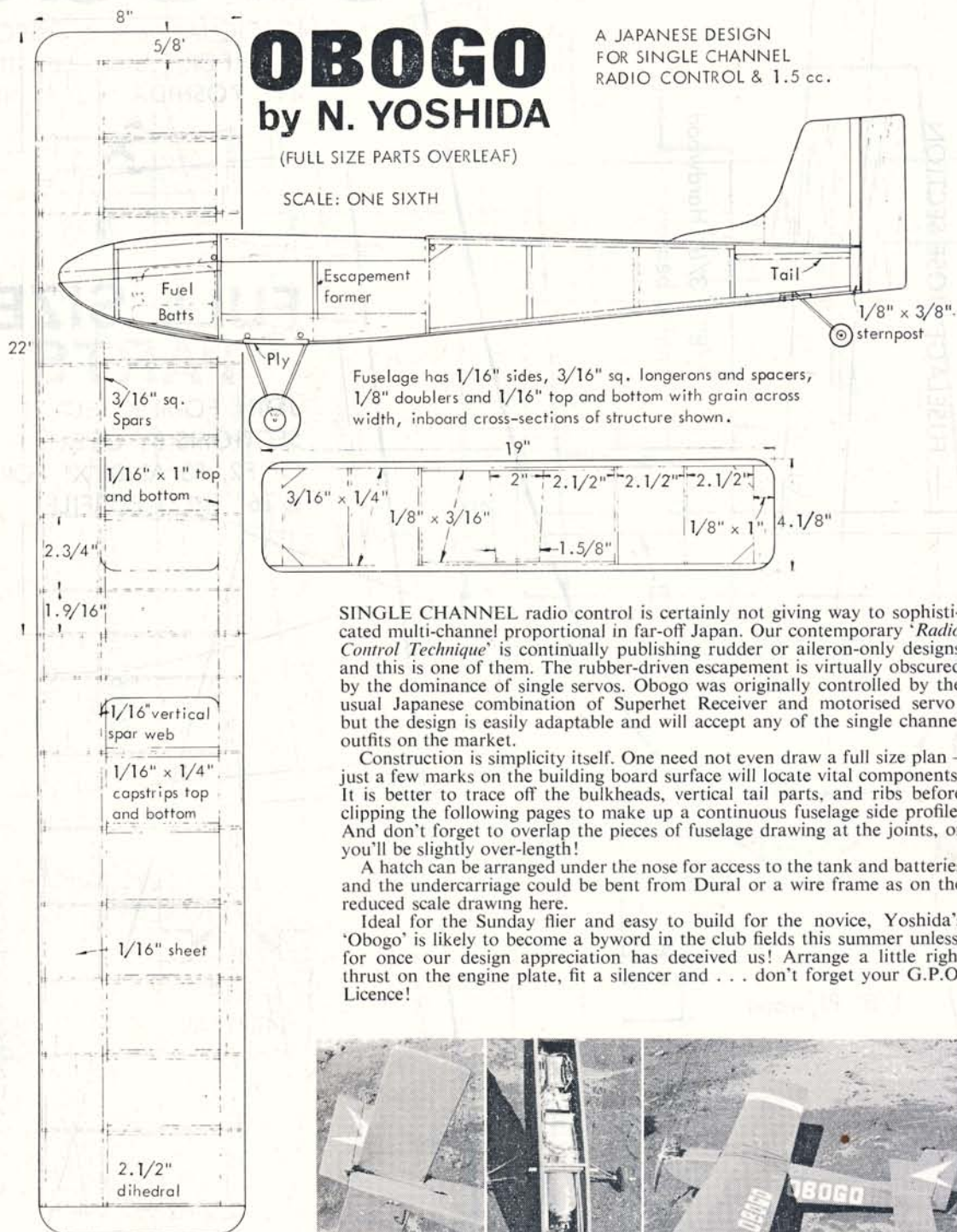
# OBOGO

## by N. YOSHIDA

(FULL SIZE PARTS OVERLEAF)

SCALE: ONE SIXTH

A JAPANESE DESIGN  
FOR SINGLE CHANNEL  
RADIO CONTROL & 1.5 cc.

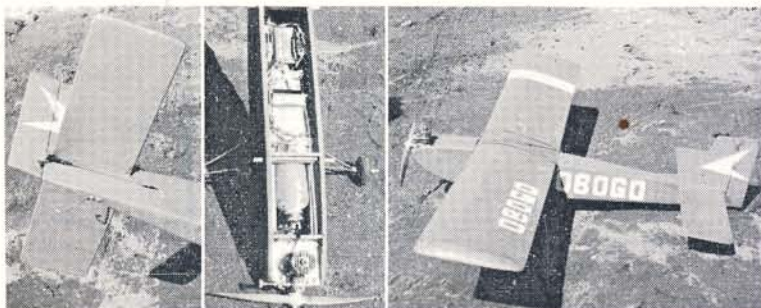


SINGLE CHANNEL radio control is certainly not giving way to sophisticated multi-channel proportional in far-off Japan. Our contemporary 'Radio Control Technique' is continually publishing rudder or aileron-only designs and this is one of them. The rubber-driven escapement is virtually obscured by the dominance of single servos. Obogo was originally controlled by the usual Japanese combination of Superhet Receiver and motorised servo: but the design is easily adaptable and will accept any of the single channel outfits on the market.

Construction is simplicity itself. One need not even draw a full size plan — just a few marks on the building board surface will locate vital components. It is better to trace off the bulkheads, vertical tail parts, and ribs before clipping the following pages to make up a continuous fuselage side profile. And don't forget to overlap the pieces of fuselage drawing at the joints, or you'll be slightly over-length!

A hatch can be arranged under the nose for access to the tank and batteries and the undercarriage could be bent from Dural or a wire frame as on the reduced scale drawing here.

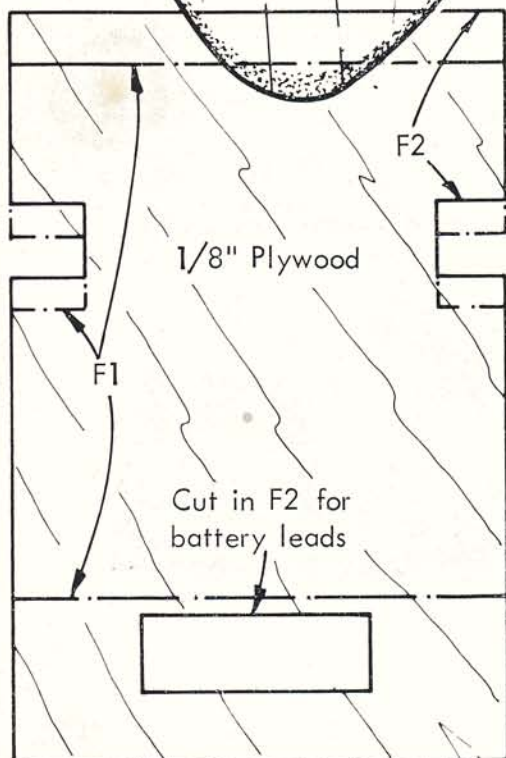
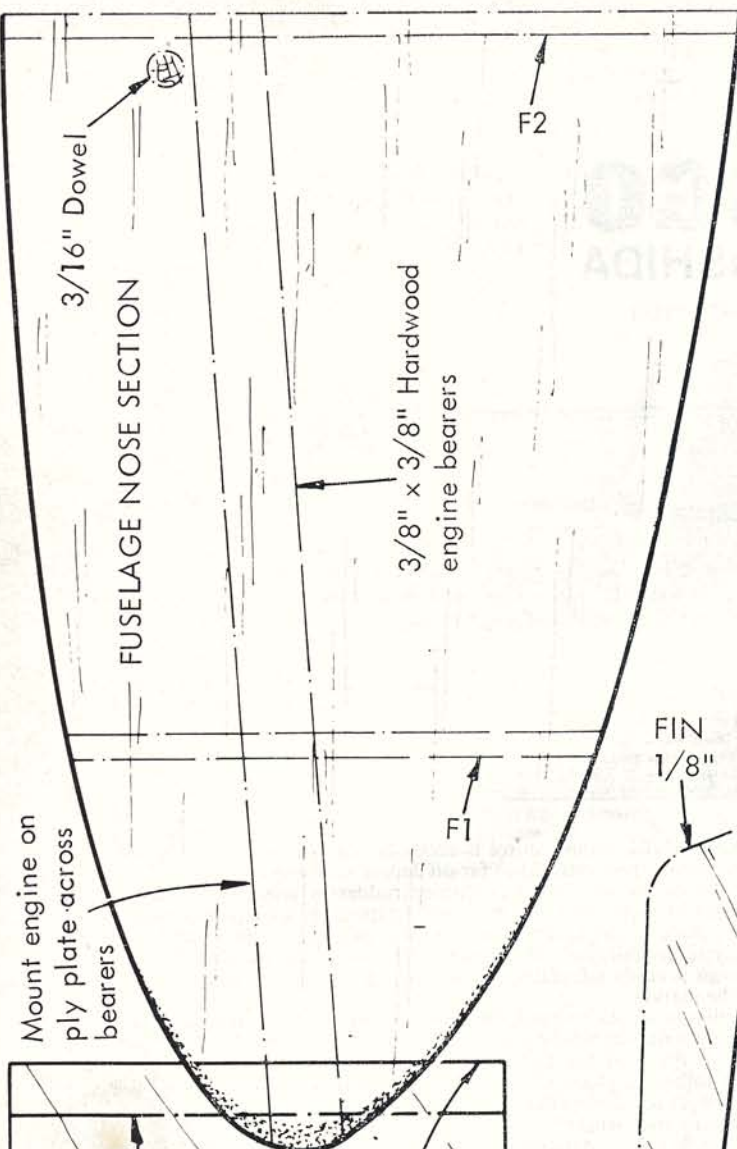
Ideal for the Sunday flier and easy to build for the novice, Yoshida's 'Obogo' is likely to become a byword in the club fields this summer unless, for once our design appreciation has deceived us! Arrange a little right thrust on the engine plate, fit a silencer and . . . don't forget your G.P.O. Licence!





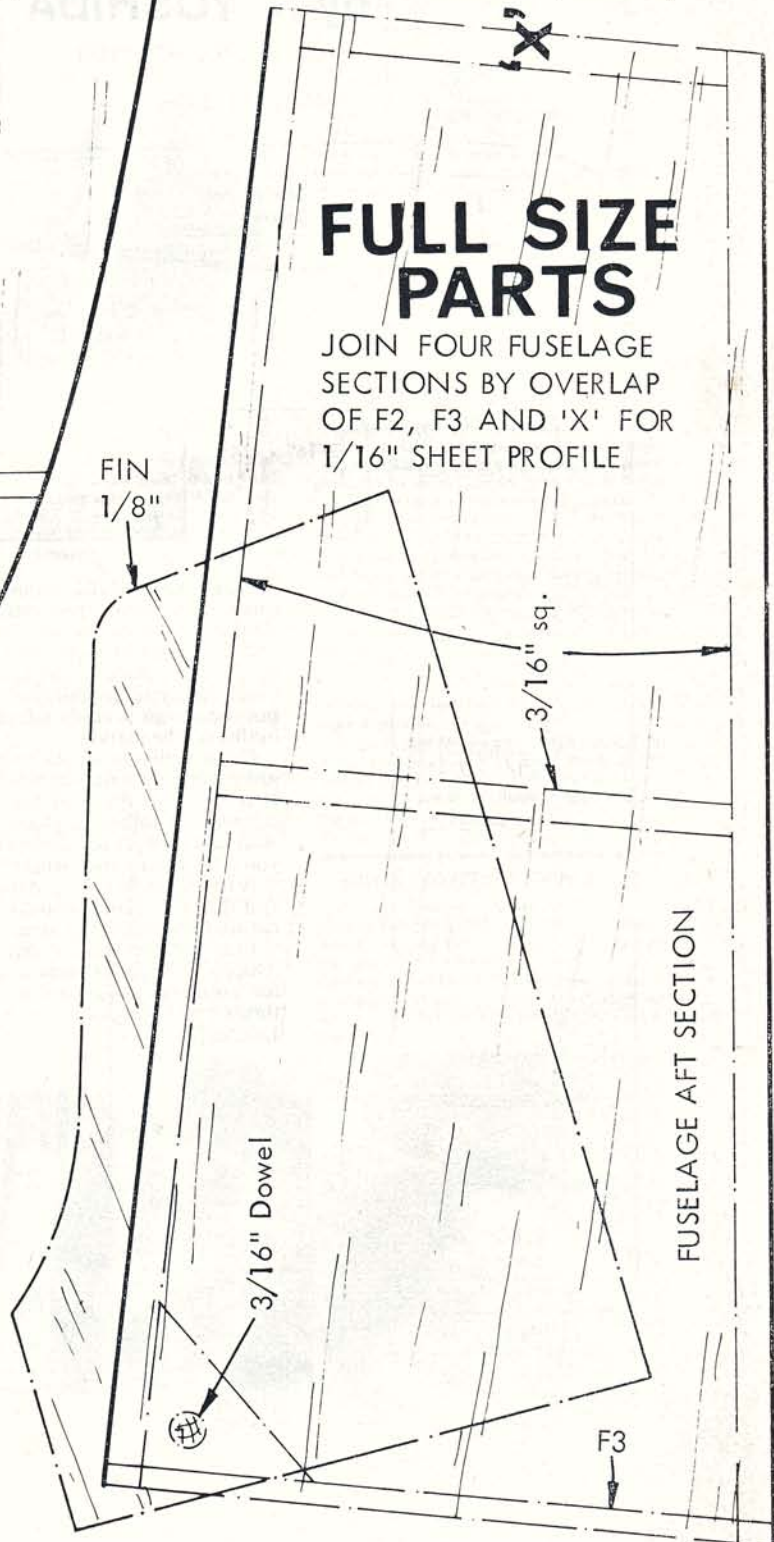
# OBOGO

SINGLE CHANNEL R/C SPORTS  
DESIGN FOR 1.5 cc. ENGINES  
BY N. YOSHIDA (JAPAN)

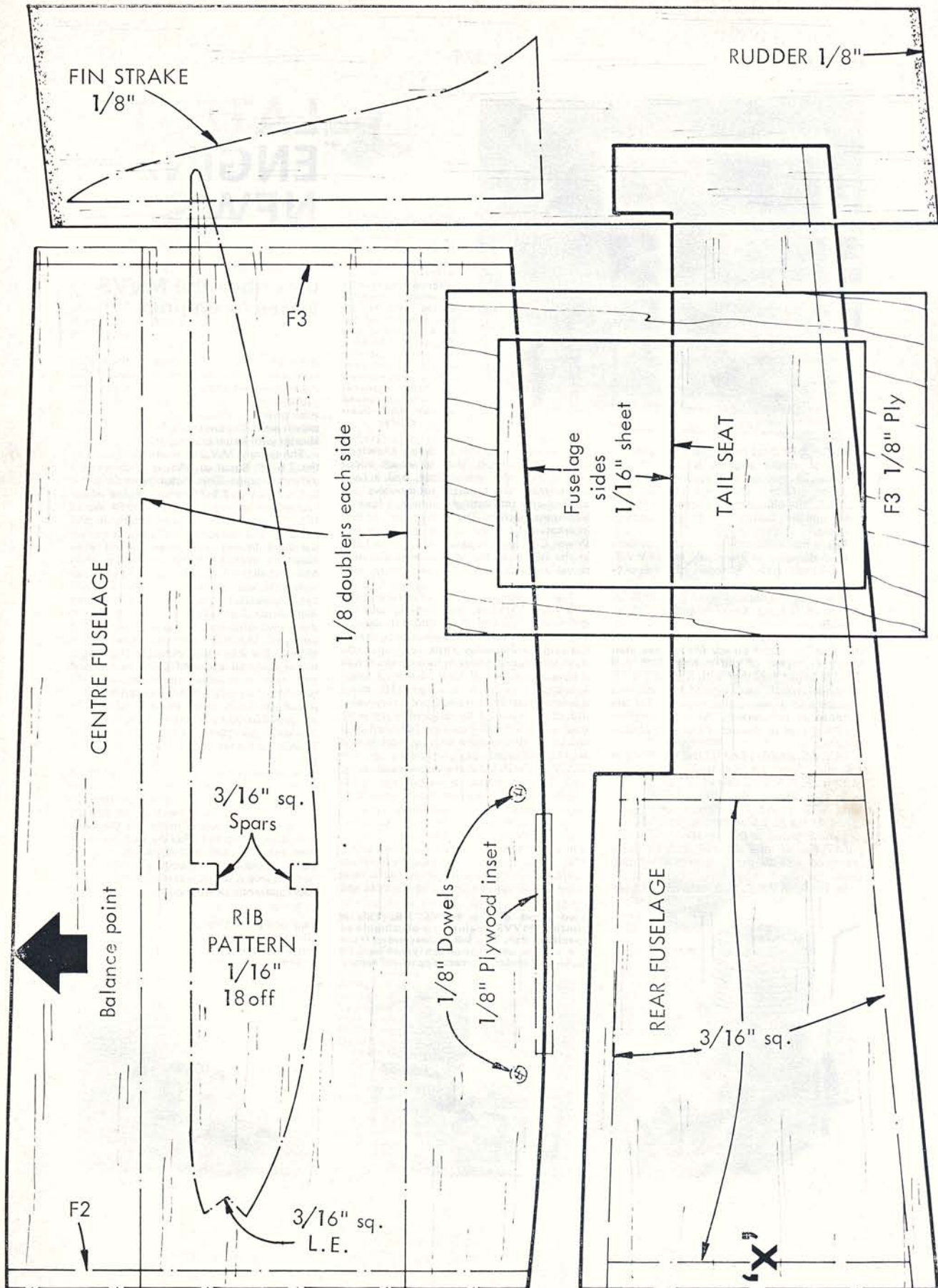


## FULL SIZE PARTS

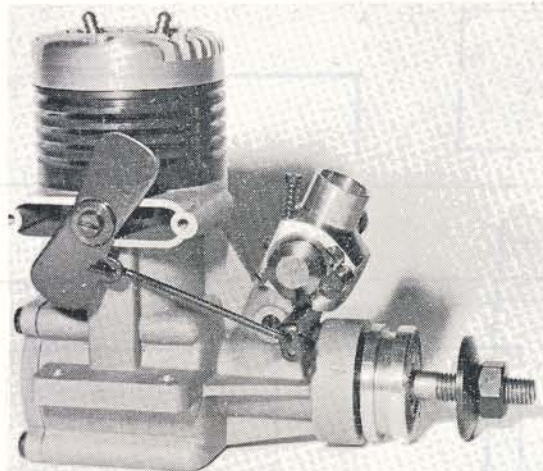
JOIN FOUR FUSELAGE  
SECTIONS BY OVERLAP  
OF F2, F3 AND 'X' FOR  
1/16" SHEET PROFILE











Merco 61 series III recently introduced and to be the subject of future comment (see August R.C.M.&E.) Features entirely new crank-case and redesigned throttle, integral fins, with increased power and flexibility.

ONE OF THE most respected names in the world of model engines is that of the *Modelarske výroby a vyvojeve stredisko, Svazarm, Brno*, otherwise known as M.V.V.S., the official state-sponsored Model Development Centre at Brno, Czechoslovakia.

There has always been a small but persistent demand in the U.K. for M.V.V.S. engines and interested modellers will doubtless be glad to know that it is now possible to obtain these motors through Mr. R. J. James of Sidcup, Kent. At present, three models are available, namely the 2.5-RL glowplug engine, the 5-R glow motor and the 2.5-TR Super diesel. Mr. James sent along examples of the current 5-R and 2.5-TR Super, together with a used 2.5 TR (a model which has enjoyed considerable international team racing success) for the purpose of comparison. All three engines are illustrated in the accompanying photographs.

M.V.V.S. engines first hit the headlines in the mid-fifties and their really big success was the 1, 2, 3, 5 placing of the Czech team of Sladky, Zatocil, Pastyrík and Smejkal in the 1957 World C/L Speed Championships. M.V.V.S. 2.5 cc. racing glow engines of various types, both disc-valve and shaft-valve, ringed and lapped piston, have remained well to the fore ever since that time.

In 1956, M.V.V.S. also entered the free-

flight arena with a 2.5 cc. diesel known as the Type 2.5/1956. This, of which about twenty examples were made, had a twin ball-bearing shaft, shaft rotary-valve induction and, interestingly enough, a form of Schnuerle porting. The engine had its first international try out at the European F/F Power Championships in Moscow in 1957 in the hands of the well-known Czechoslovakian modellers Rudolf Cerny and Vladimir Hajek.

The following year saw the advent of the M.V.V.S. 2.5/1958 diesel of somewhat different design and construction. Its design, in fact, bore a certain resemblance to that of the original Japanese Enya 15-D that has been introduced a year or two earlier. It had a bore and stroke of 15 x 14 mm., a loop-scavenged cylinder, a large (10 mm.) diameter shaft journal and front rotary-valve induction. About a hundred of these were built with twin ball-bearings, followed by a similar number of plain bearing models of a slightly different design known as the M.V.V.S. 2.5-D. Later, the widespread swing from 1960 onwards to racing type glow engines for FAI class free-flight, resulted in M.V.V.S. diesel development being switched to team racing engines. In due course, the basic 2.5/1958 design was revised for this purpose and became known as the 2.5-TR. The most important changes consisted, firstly, of increasing the stroke/bore ratio some 23 per cent by changing the bore and

## LATEST ENGINE NEWS

Peter Chinn describes the MVVS series of engines

stroke to 14 x 16 mm. Outwardly, the crankcase was slightly modified, the front housing lengthened and a new, longer, separate carburettor intake was fitted. The piston was given a conical, instead of domed, crown and the connecting-rod was slightly shorter with larger bearing areas.

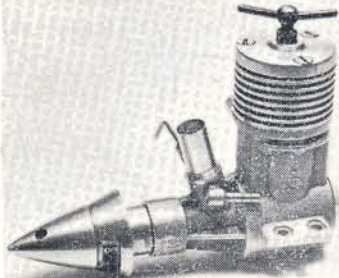
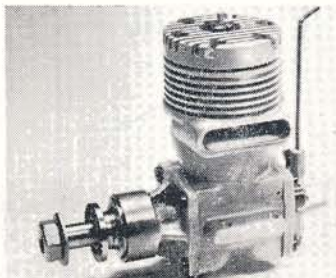
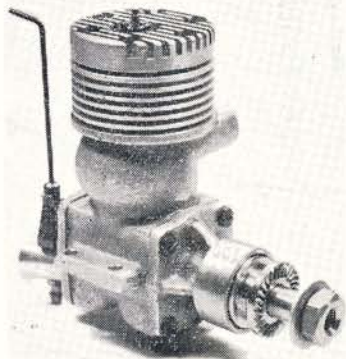
The current M.V.V.S. team-racing diesel, the 2.5-TR Super or TRS, is a completely different engine. This motor owes its origin to the M.V.V.S. 2.5-TR racing engine which first appeared in action in the 1964 World C/L Speed Championships where, in the hands of the redoubtable Sladky, it put up the third fastest time close behind Wisniewski's Wart-K&B and Krizma's Moki and beat all the Super-Tigres in the process.

The RL was the first racing 2.5 to adopt a rear exhaust. This was used in conjunction with Super-Tigre style racing porting. The design was totally removed from that of the previous M.V.V.S. 2.5 cc. racing glow engine, the 2.5/1959. Whereas the earlier motor featured a ringed aluminium piston and rear disc-valve induction, the RL reverted to a shaft rotary-valve and a lapped piston. M.V.V.S. rated the engine at 0.58 b.h.p. at 20,000 r.p.m. on 45 per cent nitromethane, compared with 0.38 b.h.p. at 18,500 r.p.m. for the 2.5/1959 on similar fuel.

A diesel version of this unit appeared shortly afterwards and we were fortunate enough to be able to obtain one of these on loan to compare with our RL. The engine, not a regular production item at the time, was designated the 'RL-D', but we were then asked to say nothing more about it publicly, mainly because the person who had allowed it to get out of Czechoslovakia had apparently been unauthorised to do so.

Two views of the MVVS 5-R. This is another MVVS engine now obtainable to special order. The 5-R is descended from the engine used some ten years ago by Bohumil Studeny to set a 5cc world record

The MVVS 2.5-TR diesel which has been widely used by Czech team-racing experts but which has now been superseded by the entirely different 2.5-TR Super.



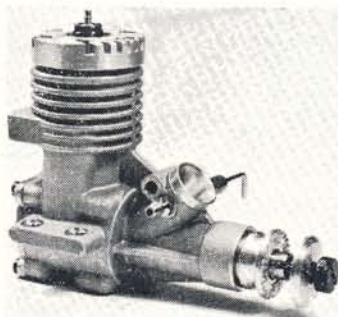




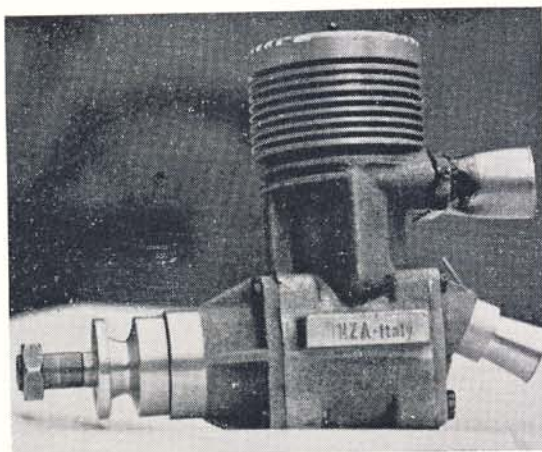
In due course, the RL-D appeared as a production engine under a new title, the 2.5-TR Super, succeeding the old 1958 based engine, the 2.5 TR.

There was a close similarity between the original RL and RL-D and not much appears to have been changed in the current TR-Super. Externally, the glow and diesel are almost identical except for the latter's compression screw and slightly different intake arrangements. The TR-Super has a 6.6 mm. bore venturi with 3.5 mm spraybar through the centre for reasonable fuel suction, whereas the racing glow version is normally set up for pressure feed, using a full 9 mm choke and surface jet. The gas passage through the shaft is smaller on the diesel (7 mm. bore instead of 7.5 mm.) and the connecting-rod is heavier. The piston has a conical crown instead of a flat crown but the same type of cylinder porting is used. Actually, port area is slightly increased in the latest models and, unlike the original RL, in which a measurable degree of exhaust lead was maintained, the transfer ports open almost simultaneously with the exhaust ports, as on the original Super-Tigre system. A feature of recent production engines, both diesel and glow, is the partially finned cylinder-head. Cooling fins are machined into the rear portion of the head only - i.e. the part which normally remains hottest. The integral machined spinner/drive-hub assembly seen on the engines in our photographs is not a standard M.V.V.S. fitting. Ron James is making these up as optional extras and very neat they are too.

The third M.V.V.S. engine shown in the photographs, the 5R, is basically a fairly old M.V.V.S. design, dating back in origin to 1957. In that year, M.V.V.S. made a small number of .35 size engines for use by leading Czech stunt flyers. The design was the M.V.V.S. 5.6, a twin ball-bearing, ringed piston, disc-valve unit that was still good enough nine years later to power Josef Gabris's World Stunt Championship winning model in 1966 and of which we gave a report in the April 1967 *Latest Engine News*. At the time when these engines were first built, M.V.V.S. also made a special de-stroked 5 cc. racing version and, with this, Bohumil Studeny, one of the M.V.V.S. employees, broke the world's 5 cc. class FAI C/L speed record at, if memory serves us correctly, something over 150 m.p.h.



**OPS 60 from Italy, specially designed for racing has claimed 2.4 bhp at 22,000 rpm, features ballrace supported rear valve and exhaust system as seen in second photo at left.**



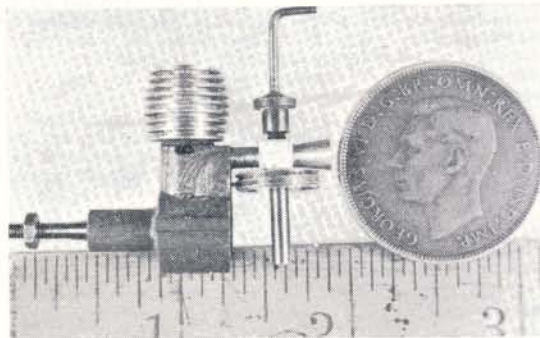
Some time later - about 1962 - M.V.V.S. began the manufacture of a small series of a similar engine and this subsequently became known as the 5R. The resemblance between this and the 5.6 can easily be seen by a comparison of the photographs printed here and in the April 1967 *Aeromodeller*. The engine's main castings are sand castings and, although precisely the same patterns have evidently not been used for the moulds for the later model, the connection is obvious enough.

The 5R has the same bore (20 mm) as the 5.6, also a similar piston and, like the 5.6, features a hemispherical transfer chamber with the entire transfer taking place via skirt ports in the piston and liner. The cylinder ports and combustion chamber shape are practically the same and, apart from the reduced stroke, the only marked difference is in the backplate assembly. This, like the 2.5/1959 or 2.5-R engine, has the carburettor intake positioned at the bottom and inclined sideways. The valve rotor, as on the 5.6, is of a Tufnol type material, mounted on a pin which rotates in a suitable bearing in the backplate but, to suit the higher peak r.p.m. of an engine built for speed work, the rotor is timed to remain open for a longer period and to close later than on the stunt engine.

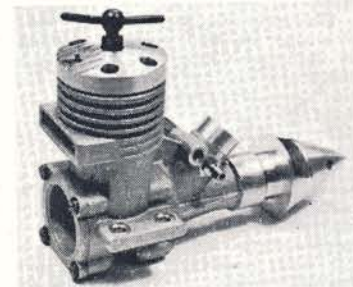
We are informed that delivery on the M.V.V.S. engines in the U.K. at the present time is about 15 weeks. The 2.5-RL and 2.5-TR Super are priced at £9 0s. 0d. each and the 5R is £9 12s. 6d. Spinner units for the RL and TR-Super are 17s. 6d. each.

**Right: One of two miniature engines now owned by Alan J. England of Surrey and which by appearance look very much like Mills prototypes. Does anyone know their history?**

**Left: The author's M.V.V.S. 2.5-RL racing glow engine. This, made in 1964, was one of the first production batch. Current production models have a different cylinder head and modified cylinder ports.**



**Now obtainable to special order in the U.K. is the MVVS 2.5-TR Super diesel. It is shown here with the special British-made spinner prop-drive assembly, that is available from the importer. The 2.5-RL glowplug model, from which the 2.5-TR Super was developed, is also being imported.**







# Free Flight Comment

BY JOHN O'DONNELL

Far left: Jim McCann ready to release his VHTL design at York meeting, May 12th. Immediate left is a familiar shape to old timers, a KeilKraft 'Slicker' just before flying into the local tree-trap.

CONTESTS have certainly been plentiful in recent weeks, and there are times when I wonder if my hobby has become long-distance driving!

The S.M.A.E. area-centralised meeting of 21st April was the beginning of the National programme (due to the postponement of the March meeting) and hence the first S.M.A.E. event to be flown with the new 5s. entry fee. Obviously it is far too early to evaluate the effects of the increase but the initial signs are rather disturbing. Both the Northern and N.W. Areas stage domestic events, in addition to the National ones. With such a choice, entrants are becoming prone to ignore the S.M.A.E. event. At Topcliffe there was twice the entry in the area glider as in the S.M.A.E. event, with Andrew Brewster recording the only treble – in the N.A. event alone.

In common with the other known contenders for the S.M.A.E. Individual F/F championship I went to Topcliffe, in preference to the N.W.'s 'unknown' and more distant venue at Cark on the fringes of the Lake District. As success in Area events is so dependent on the local weather conditions this may well have been a mistake. Weather at Topcliffe was pleasant all day and ideal for model flying. However it was overcast and misty with indifferent visibility all day and at least three entrants, including myself, 'dropped' a flight in open rubber for this reason. Perhaps it didn't matter too much as visibility at flyoff time was too bad to make winning scores possible.

Most other areas seemed to have had a calm morning followed by a windy afternoon. The **Damage Cup** (open rubber) was won by Derl Morley, flying with East Midland at Barkston, with an appreciable lead over Bruce Edwards, Gerry Tidswell and several others with very close flyoff scores. Elton Drew won the **open glider** event with a 5 minute flyoff D.T. in front of the Hullavington Woods. Runners-up were the only others to flyoff, G. Ferrer and Mike Woodhouse.

F.A.I. Power for the **Halfax Trophy** had seven flights and didn't need a flyoff, although winner Ray Monks only missed by 15 seconds. His fifth max D.T. a few feet up over the runway and the resultant impact snapped the  $\frac{1}{2}$  in. sheet box fuselage! His reserve model was his last year's World Champ. model now fitted with an E.D. 'pipe'. Second and third scores were also made at Topcliffe. Jim McCann flew his usual high thrust line and all-sheeted design, whilst Dave Wiseman (now residing in Birmingham) had a new model displaying obvious Monks' influence. This event counted for the **Plugge Cup** (National Club Championship) and it would seem that this is of little interest nowadays. Even Brighton did not make their usual effort; their only entry being John West who didn't complete his flights.

Winners in these Area events will still have to wait to the year's end, at least, before receiving their 'personalised plaques'. The S.M.A.E. proposal from the London Area that the plaques be engraved in advance and distributed immediately after the contest, was defeated by 6 votes to 5 (with one abstention!).

*(Closeness of the vote indicates even opinion on whether or not the award should be identified with winner's name. Can it be true that 50 per cent of the winners don't really care to see their name engraved? – Ed.)*

Woodbury Common near Exmouth was the venue for the **Devon Rally** on 28th April. This is rather off my usual programme, and the only previous visit I have made was 4 years ago when I worked a

bit nearer. However, memories (especially of the prickly gorse!) soon came back.

The meeting was certainly unlucky with the weather. It was very windy, and extremely turbulent, all day. There were rumours that cancellation had been suggested by early arrivals. Bright conditions around midday encouraged some entrants to commence and some even to trim. From the gyrations performed by my Coupe d'Hiver model I cannot see how any manoeuvre could be ascribed to the model as distinct from the weather.

The car park was adjacent to a group of trees and the modern tendency to operate from one's car brought several people to grief. No less than *three* models hit the *same* tree on their first circle downwind. One of the fliers had just finished describing the previous incident to me!

**Open rubber** was won by my co-driver Russel Peers with a two flight total of 5.23. His first model landed in a downwind wood, but he retrieved his reserve safely. Les Long made three short flights for second place. Both third in rubber and first in **All-in F.A.I.** were taken by Dave Hipperson through doubling-up two Wakefield flights. Al Wisher won **glider** mainly by virtue of a near max achieved by flying his 'Pelican' in the relatively less windy lull immediately after rain. Second place was taken by Dave Glue, whilst third was R. Cummins who broke a wing on tow following a very good first flight.

Only one entrant recorded scores in **open power** and **chuck glider**. They were Pete Jellis with a 'nominal' flight and S. C. Spencer. The remaining event was **Coupe d'Hiver** in which I made a respectable third flight, and so saved 'Butch' (or should I say Sgt?) Hadland from further effort. The organisers restricted the prizes (cash with plaques to follow) to first places only – quite a practical and satisfactory method in the circumstances.

The **Southern Gala**, at R.A.F. Odiham on 5th May was the first of the 1968 'major' meetings. The attendance and participation were hardly inspiring however, and certainly nothing like earlier meetings. The 'reasons why' might well include the windy weather experienced and apprehension about having to enter at double rate (i.e. twice 5s.) 'on the day'.

The latter certainly caused discussion. The meeting requires three weeks pre-entry according to the S.M.A.E.'s own Rulebook. However, entries were taken on the field at normal rates as officers of the S.M.A.E. considered that as only a few persons had pre-entered, they could be obliged to relax the rule in deference to the obvious ignorance of the rule. As it is obviously easier to 'select' events at the actual contest (when availability/trim/weather etc. are known) than a month in advance, this ruling penalised those who had taken the trouble to pre-enter. At least one who pre-entered more classes than he flew is claiming a refund. The next logical step is for the S.M.A.E. to consider the value (in other terms than increased revenue) of pre-entry in the present climate of small numbers of entrants.

Both participation and scores were affected by the weather. It was windy and, apart from one early shower, bright and sunny all day. This produced plenty of lift and retrieving troubles. One of the first casualties was Al Wisher who lost his glider due to D.T. timer failure. He phoned his home mid-afternoon to see if the model had been found. It had – at Royston, near Cambridge – just 67 miles and 3 hours as the 'Pelican' flies. (Photo page 384)



**The long, long Open Rubber design with large prop emphasised by Dave Hipperson at York Rally.**

The **Pilcher Cup** for Open Glider event saw many thermal flights – but only two trebles. Elton Drew won his second S.M.A.E. contest this season, using an older model than for the Area event. Runner-up was Ken Smith flying an A/1. **Power** also had two trebles – Ray Monks and clubmate Roger Baggott. Ray spent most of the day searching for his Cox 15 model before meeting the finder going out to post a letter of notification – and made a third flight right on closing time. This left Roger in the position of merely needing a nominal flight to claim the 'Short' trophy, a quite acceptable result as it is his first National win and some recompense for losing his Cox 15 'elliptical Dixielander'.

One interesting trend was the use of large engines by several competitors. Trevor Payne had a S.T.40 in a very small model and still had a safe looking climb. George Fuller used a Fox 59, got two maxs and then shed a wing attempting a third. His reserve put him well up.

Dave Hipperson managed a much less troublesome treble in **A** power to take an easy first place. Bob Bailey also neglected rubber and won **chuck glider** by a one-second margin. Only a handful of **rubber** fliers participated and several retired after a non-max flight. Jack Allen managed a treble with his only open model, whilst I lost my 'Maxine' in strong lift despite a working, if ineffective, D.T. and had to resort to a Wakefield (with extra rubber) for the third flight. I was hardly confident about flying-off with this model but managed to launch it into lift. Meanwhile, Jack had damaged his model carrying it out to fly, and subsequently crashed it after hasty repairs. I knew nothing of this until my eventual return *much* later after retrieving the model from the far side of Odiham village! Once again I was last off the airfield.

One encouraging development of late has been the efforts of some Clubs to try to improve their galas, and get away from the 'Do-it-yourself' and 'prizes from entry fees' attitudes. The **York Club** had obviously applied some thought to their Rally held at Elvington on 12th May.

There were only three events, and there were guaranteed first prizes – in the case of A/2 a very substantial £10. The meeting was strictly 'S.M.A.E. only' and participants were charged a combined admission and entry fee of 5s. This covered flying in any or all events. The host club did not fly and hence were able to organise and time.

Flying started at 9 o'clock and early arrival Ken Smith demonstrated the way to high scores was to get one's flights in quickly. Despite breezy conditions he had recorded 5 maxs by about 11.30, flying the straight dihedral, fishing rod, model that he used at the '67 Nationals. I made a single rubber flight before deciding the weather was right for glider and tactical flying. Even so I had finished A/2 (dropping the last flight due to an apparently faulty auto-rudder) by the time most entrants had done only 2 or 3 flights.

Quite a few models were lost – worst afflicted being Mike Woodhouse who lost two A/2s. The first was a D.T. failure, whilst the second D.T. 'd' but carried on upwards into a raincloud.

As the wind freshened appreciably early in the afternoon, flying slackened off considerably, and most who flew at this time regretted it. The wind abated somewhat for the final hour and there was some frantic activity, especially from open rubber entrants. Surprisingly only Dave Hipperson (who flew early) and Ron Pollard maxed out, although Russel Peers, Derl Morley and Henry Tubbs all recorded 8:50 or over.

Meanwhile Jim McCann managed his second and third maxs by dint of flying both his F.A.I. power models – one being previously untried since fitting both a turbulator and a pipe! A/2 fliers Barry Halford and Mike Reeves also completed their flights at this time to finish third and fourth, just 2 seconds apart. Mike had tree'd his first model on its fourth max and was reduced to an inferior reserve. A clubmate flew 'pilot' but Mike failed to launch quickly enough to catch the marked thermal, and had to tow for his own. The air at the time of his final release looked good but it didn't remain so.

On the flyoff timekeepers were positioned several yards from their partners and no remarks or advice from onlookers were allowed. With the small numbers involved this was practical and certainly a praiseworthy attempt to achieve independent timekeeping. The power fly off was held first and was quite clear cut with Ray Monks having a 2 mins odd lead over Jim McCann who had a rather flat climb and indifferent air (following starting difficulties with a burnt out plug and a flat acc. He still used F.A.I. fuel incidentally).

**Ron Pollard, off to another Max at York, was eventual winner of Open Rubber class.**



The rubber flyoff was a different story. Both contestants produced their large 'fly-off models' and were part way through winding when the wind suddenly freshened. Both held on after winding for what felt like several minutes waiting for a lull sufficient to launch. Ron Pollard launched first and Dave Hipperson followed. Both models drifted rapidly and eventually disappeared still well up. Scores were a few seconds apart with Ron Pollard emerging as victor. Neither model was found!

Prizes were awarded as advertised plus adequate follow-ups for second and third positions. With 81 entries the host club only 'lost' a few pounds and considered the venture a success. I'm sure most competitors will agree unreservedly.

#### DEVON RALLY 28th April '68

##### WOODBURY COMMON, Near EXMOUTH

**Rubber** 1. R. Peers (Congleton) 5:23 2. L. F. Long (Torbay) 4:01. 3. D. Hipperson (Croydon) 2:29. **Power** 1. P. Jellis (Croydon) 0:38. **Glider** 1. A. Wisher (Croydon) 3:55. 2. D. Glue (Brighton) 3:13. 3. R. Cummins (Bristol & West) 2:04. **Coupe d'Hiver** 1. J. O'Donnell (Whitefield) 4:18. 2. C. Hadland (RAFMAA) 1:48. 3. B. Bow (Bristol & West) 0:40. **F.A.I.** 1. D. Hipperson (Croydon) 2:29. 2. R. Cummins (Bristol & West) 2:04. 3. Chapman 1:17. **Chuck Glider** 1. S. Spencer (S. Bristol) 1:53 (5 fts.).

#### YORK RALLY 12th May '68

##### ELVINGTON, YORK

**A/2** (5 flights) 1. K. Smith (Croydon) 15:00. 2. J. O'Donnell (Whitefield) 14:20. 3. B. Halford (Norwich) 13:36. 4. M. Reeves (Whitefield) 13:34. 5. A. Brewster (Baldon) 12:37. 6. P. Oliver (Whitefield) 11:28. **Power** 1. R. Monks (Birmingham) 9:00+4:48. 2. J. McCann (Tynemouth) 9:00+2:35. 3. M. Dilly (Croydon) 7:55. 4. P. Southam (C.M.) 7:02. 5. B. Hooley (Whitefield) 6:59. 6. R. Baggott (Birmingham) 6:20. **Rubber** 1. R. Pollard (Tynemouth) 9:00+3:37. 2. D. Hipperson (Croydon) 9:00+3:31. 3. R. Peers (Congleton) 8:57. 4. D. Morley (Birmingham) 8:53. 5. H. Tubbs (Baldon) 8:50.

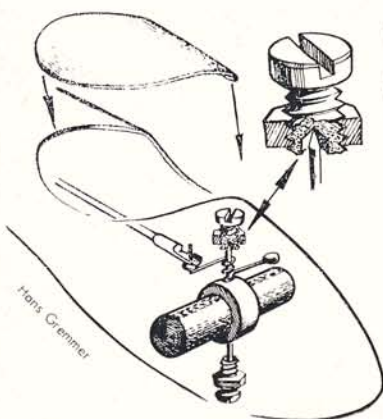




# MAGNET STEERED SLOPE SOARING

Final assessment by  
the maestro . . . .

**Hans Gremmer**



Installation in very light  
(10 oz., 6'-0" span) model.

Enlarged detail of upper  
bearing.

Unscrew to lift magnet  
clear of lower bearing  
recess.

Nut is 'captive' i.e. secure  
to upper fuselage

Magnet access. Removal and  
installation via hatch.

Distance of C/L top bearing  
to hatch L.E. = 1/2" approx.

Note: No alloy damper -  
slight friction in transmission  
bar is sufficient.

## Typical Magnet Mounts for Rear-Fin Models

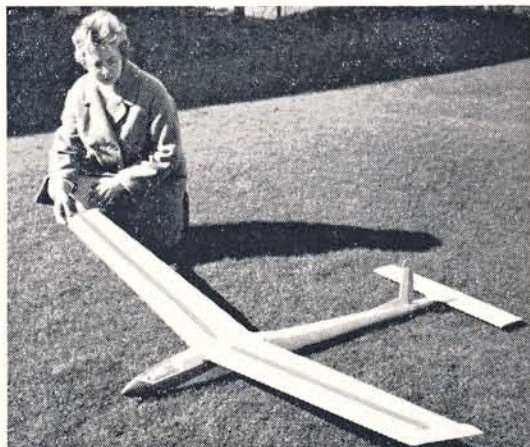
Installation in semi-scale 'Foka'.

Magnet mount is aluminium.

Top bearing double countersunk to provide  
small rubbing surface and to allow magnet-  
post to be tilted and raised for magnet  
removal etc.

2 parts of mount riveted together and screwed  
with brass screws to ply cockpit floor.

Acetate canopy allows observation of magnet  
functioning.



Brenda Faulkner with husband Trevor's latest Magnet design, a semi-scale 'Foka' of 75 ins. span weighing 24 oz., and which flies as handsomely as it looks.

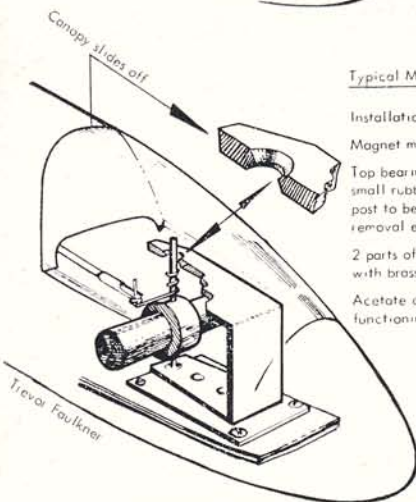
DURING A THREE WEEK stay in England it became apparent to me that the paramount problem for any Magnet design would be to overcome the fresh to strong winds (which, on the other hand, would suggest magnet flying as a means of overcoming the difficulty). The implication is to focus attention first on models for high winds.

One must bear in mind that a model of the A/2 type with an average flying speed of about 11 mph will fly faster (14 mph) if under-elevated. An additional increase of the model speed can only be achieved by loading it with ballast. Strangely enough, a load equal to the model's weight (14½ oz) is needed to alter the flying speed from 14 mph to 20 mph. The compass direction force must be four times greater for a wind speed of 20 mph than for a wind speed of 10 mph, since drag increases with the square of the flying speed concerned.

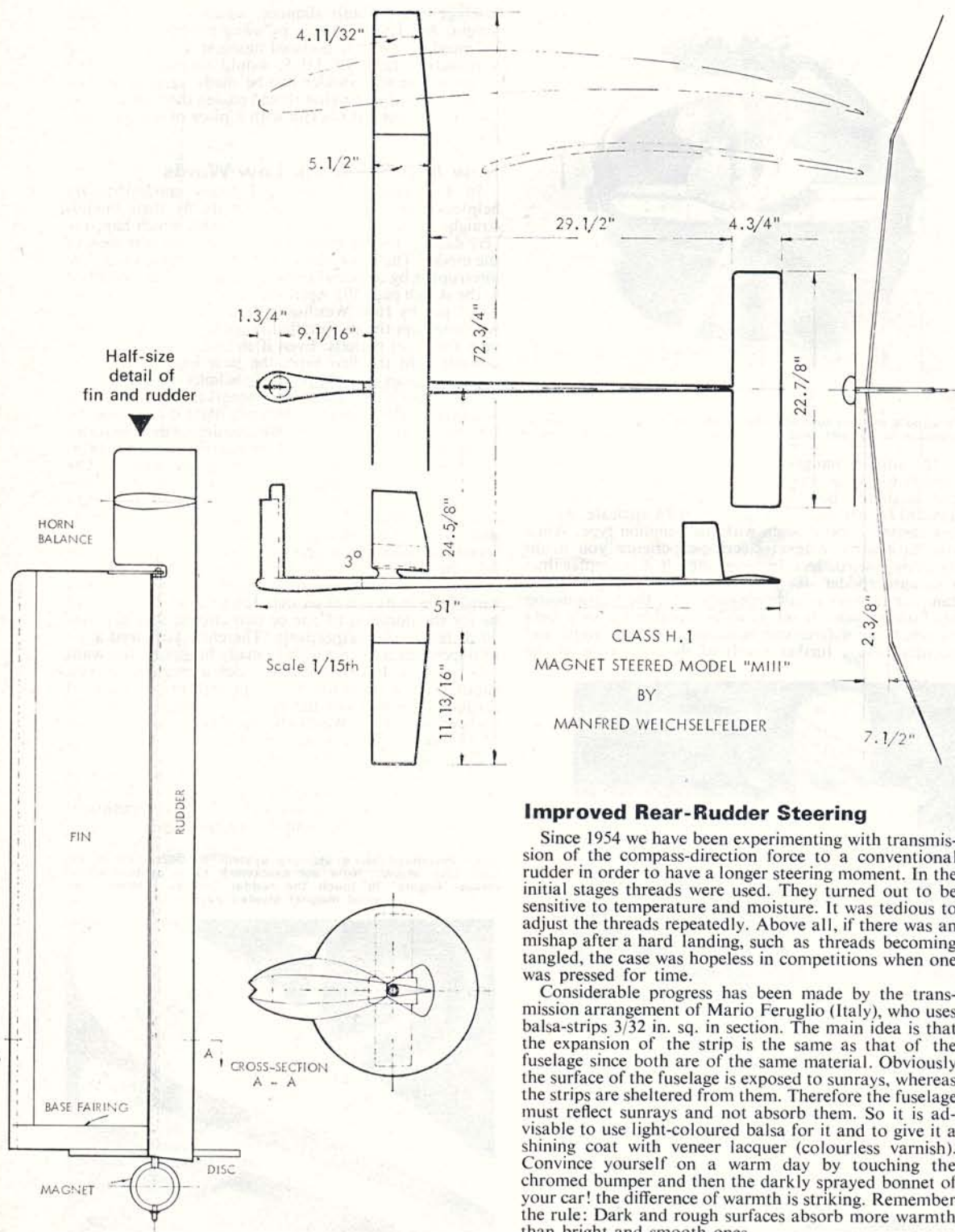
Most modellers don't like the idea of heavily loaded models being damaged by gusty winds. Apart from this, they dislike the cumbersome steering systems. Therefore we have been developing gliders which are adjustable in terms of their flying speed without being ballasted too heavily and with efficient steering units which will function in rough wind conditions. This implies a special airfoil section which, above all, has good penetration. The E387 section, designed by Dr. Eppler and published in *Aeromodeller* November 1965 turned out to be a very suitable profile for slope soarers. It generates considerable lift at relatively low speeds. With lower incidence it flies decidedly faster without the gliding angle deteriorating. Loaded with ballast, the model can also overcome fierce winds. To provide sufficient steering power it is advisable to shorten the wingspan. One of the author's models has a relatively short span of 66 ins with a long fuselage. Needless to say, such a wing with a short span and a large chord can be built very rigid and warp-free.

The most successful magnet flying group in Germany, Hof/Bavaria, has always used models with short wingspans and long fuselages. With modern airfoils they would fly even better. Obviously such a model is a bad performer in calm air if compared with an A/2 thermal model; but a light and slow slope soarer is no performer at all in strong wind conditions!

Tailless magnet steered models are still a relative novelty but show no advantages over conventional designs as in this example in West Germany.





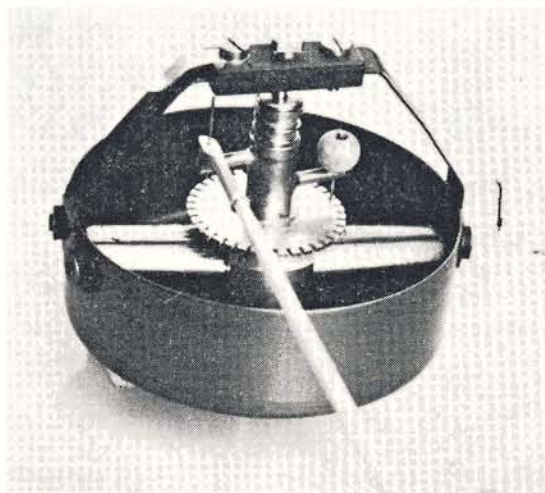


### Improved Rear-Rudder Steering

Since 1954 we have been experimenting with transmission of the compass-direction force to a conventional rudder in order to have a longer steering moment. In the initial stages threads were used. They turned out to be sensitive to temperature and moisture. It was tedious to adjust the threads repeatedly. Above all, if there was an mishap after a hard landing, such as threads becoming tangled, the case was hopeless in competitions when one was pressed for time.

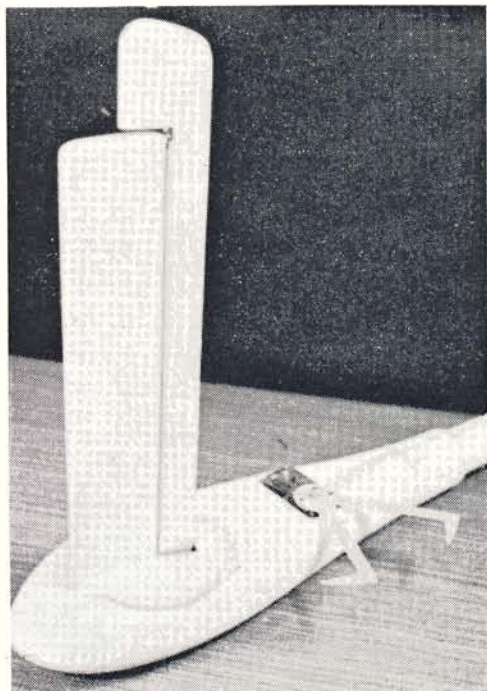
Considerable progress has been made by the transmission arrangement of Mario Feruglio (Italy), who uses balsa-strips  $3/32$  in. sq. in section. The main idea is that the expansion of the strip is the same as that of the fuselage since both are of the same material. Obviously the surface of the fuselage is exposed to sunrays, whereas the strips are sheltered from them. Therefore the fuselage must reflect sunrays and not absorb them. So it is advisable to use light-coloured balsa for it and to give it a shining coat with veneer lacquer (colourless varnish). Convince yourself on a warm day by touching the chromed bumper and then the darkly sprayed bonnet of your car! the difference of warmth is striking. Remember the rule: Dark and rough surfaces absorb more warmth than bright and smooth ones.





Feruglio's magnet unit for rear rudder models shows balance, adjustment system and light push rod to the rear rudder.

The author changed the thread transmission of three models to balsa strip transmission. It works reliably and is simply handled. Compared with the standard forward fin steering it seems to be more intricate. At any rate novices should begin with the common type. When you have some magnet steering-experience you might try using rear-rudders. In some respects it is simpler than a forward rudder steering. In the authors experience a damping canister is not necessary since the transmission has little friction. It seems to be suitable for very light models as the magnet can be made smaller in length and diameter. As a further result of this, the nose of the



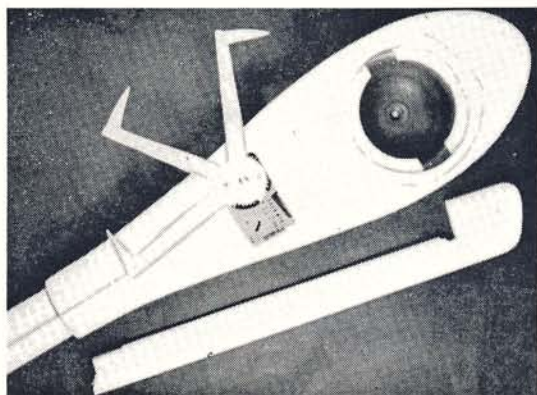
fuselage can be built slimmer, which saves additional weight. Any loss of energy by using a smaller magnet is balanced by a nearly doubled moment arm. In addition a reduction ratio of 1:1.5, would do the rest. The hinges of the rear rudder can be made very simply by using pieces of thin nylon thread passed through an alloy tube and wedged at the end with a piece of wood (tooth-picks etc.).

### New Approaches in Low Winds

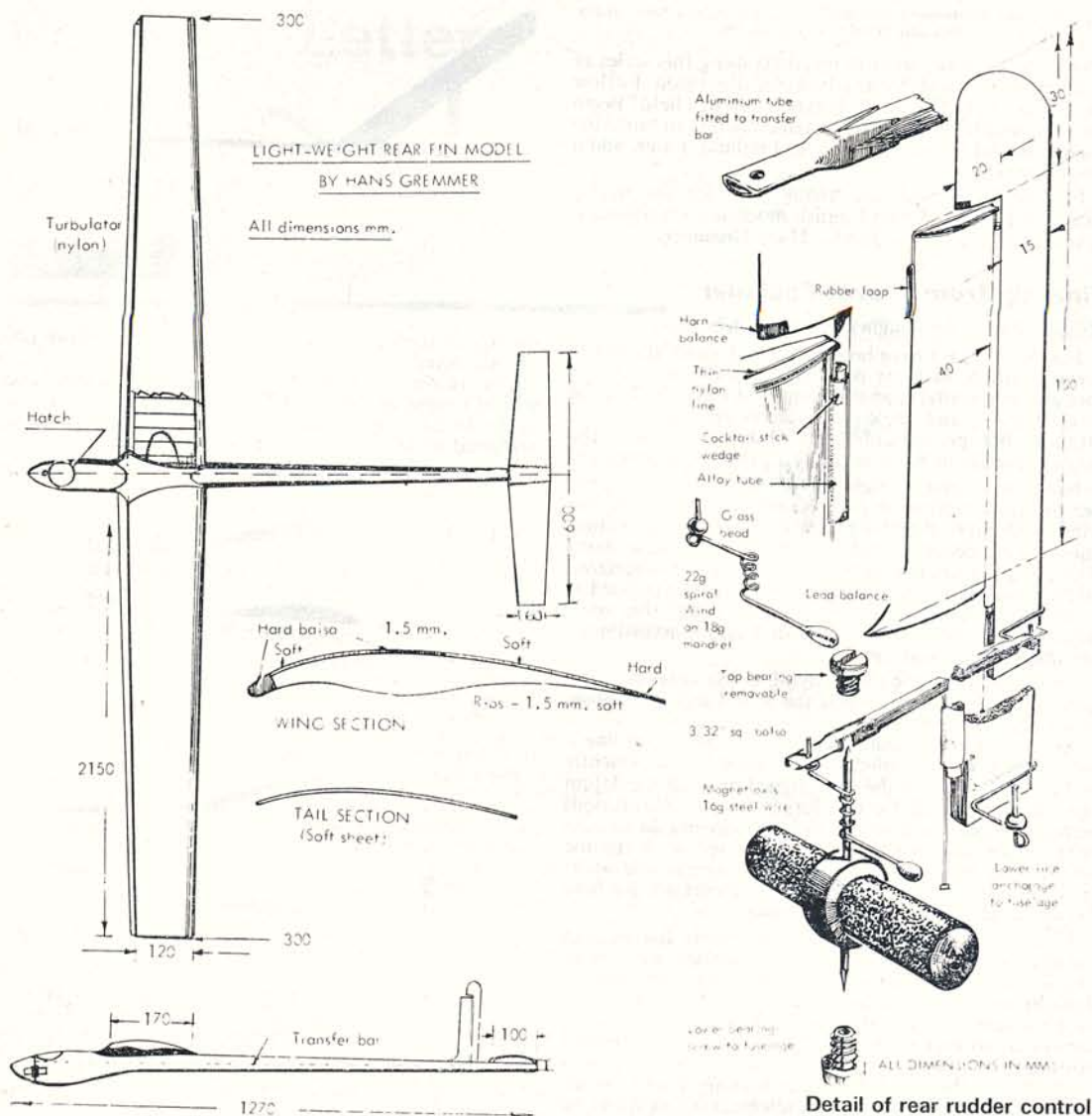
In Continental competitions many modellers are helpless with low wind. They simply fly their models straight ahead until they go out of sight, which happens very easily, for the timers can only see the rear view of the model! Therefore, the straight flight course should be interrupted by a special circling mechanism as described in the sketch page 193 April '68. Another device has been developed by Herr Weichselfelder of Germany. His idea is to interrupt the straight flight course several times; but only for short periods. Even if the model circles into a downdraught the first time, the next interruption may lead it into an upcurrent which balances the first loss. This method is very suitable for small slopes. With weak wind the model achieves a duration flight if it crosses the lift-zone several times. Herr Weichselfelder demonstrated his mechanism at the first slope soaring competition in his district near Stuttgart, becoming the winner. The device, is not at all difficult and does not cause too much work. Only a hatch is necessary for the Tatone-timer and a few 'fingers' made of plywood and attached on the timer-disc. As the timer-disc turns *anti-clockwise* the 'Fingers' touch the rudder from the right side and press it to the left whereupon the model circles right until the 'fingers' release the rudder. Remember that the Tatone-timer only turns once in its run of six minutes. One interruption can be for the duration of one or two circles, that is about 30 or 60 seconds respectively. Therefore you need a set of finger-arrangements with as many fingers as you want interruptions. Before mounting such a mechanism, you should have a provisional attempt with fingers made of cardboard to find out the best arrangement. Astonishingly enough, Herr Weichselfelder claims that a distance of 38 mm (1.1/3 ins) would be sufficient to prevent the metal timer affecting the magnet.

Herr Weichselfelder's device is considered a serious landmark in magnet flying techniques. It would prevent the fiasco of 'Good eye soaring' in slope-competitions, loss of models and the troubles of retrieving.

Left: Weichselfelder's steering system as described in the text, also below. Note the clockwork timer system which drives 'fingers' to touch the rudder and so interrupt the normal magnet steered pattern.







### Flat Hills and Low Winds

Very poor lift is produced by low winds on flat hills. This means that a model must have a very low sinking speed, as is achieved by lightweight models with a good gliding angle. Therefore a rear rudder model with high aspect ratio wings might be suggested, which is a matter for experts. Here are some hints:

Build tapered wings for aerodynamic reasons. Apply a high performance airfoil with pronounced under-chamber, rounded leading edge and a wire-turbulator. Use veneer varnish and not a coloured lacquer as the latter needs a thicker coat to cover the surface entirely. Apply as thin as possible. Cover the model with a sufficiently strong paper. Wings with light-weight paper very soon become old and fragile, looking ugly with

dozens of patches. Eventually the very-often repaired cover weighs more than one originally covered with a heavy paper.

A high performance model can be built with a weight of about ten ounces. If the fuselage is of good, firm rolled sheet balsa, ballast may be added up to about seven ounces. This means that the model can be flown at wind speeds from 5 mph up to 12 mph. Then a strong wind model must be employed. With two different models, a wind speed range from 5 to about 25 mph and sometimes more might be created, this without additional mechanisms.

### Summary

There are so many ways of controlling a model by magnet-steering; equally there are many problems. They



Typical calm conditions design with high aspect ratio wing, forward rudder and rear fin.

should be discussed at club meetings using this series of features in *Aeromodeller* as a basis for discussion. Follow the advice of the first English experts on this field! Begin with the simplest construction, remembering to build the magnet model for strong winds in England. Later, add a circling mechanism.

Finally, I want to say 'thank you' for the hearty reception I enjoyed from English modellers on the occasion of my visit to England. - Hans Gremmer.

## Final tip from Trevor Faulkner

### Rigging Angles for Magnet-steered models

For some time I have been concerned about the 'nose-down' attitude in flight of many model soarers. I had thought, originally, that the combined optical effects of foreshortening and angle of view gave an illusion of the attitude, but photographs and observations from the side of models in flight tended to prove otherwise.

Now of course, Uncle Frank (Zaic) has already demonstrated that most models will tend to fly with the wing at about  $6^\circ$  positive to the airstream (forget datum lines and incidence as such, just think of the base chord line). This in turn, means that if the airstream is horizontal (with respect to the ground) the wing will be inclined at  $6^\circ$  to the horizon: if the airstream is 'tilted' this angle (again with respect to ground) will itself tilt accordingly. See diagrams 1a and 1b.

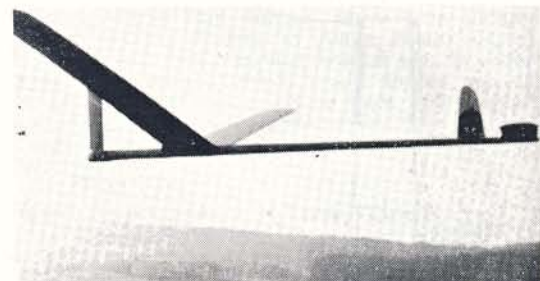
1b is relevant to the model flying in the airstream on a good soaring slope, note that the airfoil section is nose-down.

At this point, we can re-introduce that datum line - with respect to which models are often most conveniently rigged - and imagine the wing rigged at  $3^\circ$  to the datum line, the tail (which we can forget for this illustration) being arranged for a stable glide. (Diagrams 2a and 2b refer). Note that the wing will put itself at  $6^\circ$  to the airflow and by so doing incline the datum line at  $3^\circ$  to the horizontal. Again, 'tilting' the airstream, we note the model to be included, nose-down.

As the balance of moving components for magnet models has always been stressed as extremely important, my immediate reaction from following this line of thought was to discard the conventional ideas of rigging as irrelevant. Ideally, the model fuselage will remain horizontal so that the magnet post maintains a vertical position.

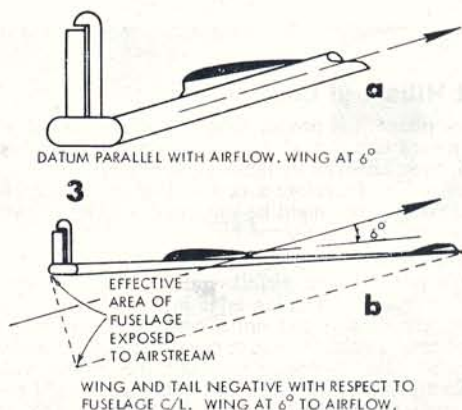
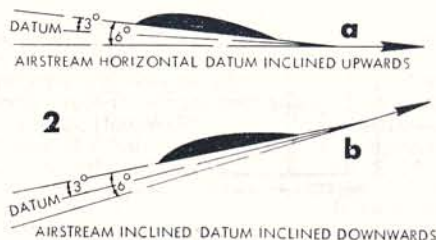
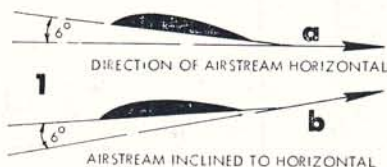
Of course the whole steering housing could be inclined to the datum line; but the construction could be difficult and an easier solution would be to rig the wing at a negative angle to the datum line, see diagrams 3a and 3b. The price one has to pay for this solution is the higher fuselage drag due to the exposure of a greater effective area at  $90^\circ$  to the airflow. This is a typical example of the 'Swings and roundabouts' compromise existing in any design field. My observations on this theme tempted Herr Gremmer to do some more analytical homework. He calculated that, on a 'normal' hill the airflow over the model could, because of the curve induced by the slope, give up to  $\frac{1}{2}^\circ$  increase in the effective longitudinal dihedral of the model. The effect of this could be hazardous if the model is trimmed for optimum performance at its minimum angle glide. On reaching 'straighter air', the  $\frac{1}{2}^\circ$  bonus disappears, and under elevation with little reserve stability could become apparent.

Unfortunately, these comments follow the 'rule of thumb' approach to design, but results so far have proved encouraging since my models now usually finish



up rigged at  $-5^\circ$ ,  $-8^\circ$ , to the datum, and fly more obviously 'level'.

The 'Hanger' is, I know, set for  $0^\circ$ ,  $-2\frac{1}{2}^\circ$  rigging, and will of course, fly like this. These angles were chosen so as not to confuse anyone unaware of the reasons for my preferred incidence set-up (or, as the Editor so delightfully expresses it) the 'angle of dangle'.





# Readers' Letters

## Airtech 'Off'

Dear Sir,

I would like to inform all the people who have attended the Open Free Flight Rally that AIRTECH MFC have run for the past two years, and who were looking forward to this years' that no such event will be held.

The main reason for the cancellation of this event is due to the attitude of a small minority of the competitors who attended last year's rally.

T. D. Smith

Aylesbury, Bucks.

## Hopeful?

Dear Sir,

It would appear that top contest flyers in this country are using standard flying machines which can be relied upon to give 2:15 to 2:30 performances in non-lift conditions, and automatic maxes in lift.

This is putting a premium on tactical flying. In view of this, would it not be possible to reduce the time spent in recovery by arranging for the model to land *upwind* of launch? Pylonius reminds us that flight times were low in the beginning of contest modelling and have risen. Perhaps a contest judged on duration, provided only that the model lands upwind of the launch, would foster rapid development along these lines and give the contest flyers a better chance of catching lift several times while conditions are optional.

I should like to see the theories involved discussed by others better informed, and hope you will be able to print some designs.

Edward Warner  
(Armchair Aeromodeller)

London N.22.

## Lighter than Air

Dear Sir,

Can you please help me? I have designed a flying model of an airship, based on a copy of the Graf Zeppelin D.L.Z. 127, enclosed is a rough sketch of my design.

As I am a novice at aeromodelling, I would like to know please, do you think it will fly? Has it been tried before? And if so was it a success? Also what would be the restrictions using Hydrogen in a flying model.

My model is nine feet long and two feet at its widest diameter, it has four gas containers (Polythene), of approximately 50 cubic feet, overall, this will give a lift of about 4 lbs., it is powered by three .2 cc. lightweight petrol engines, five engines would overpower it, to keep to the original design, two engine cars would have free propellers.

Of course, it would be radio controlled for rudder, elevator, and engine control to compensate the weight of the engine fuel being used up. I have incorporated a slow release gas valve.

The complete model should weigh about 3 lbs giving a lift of 1 lb under load. I am not sure about the aerodynamics of an airship and the biggest problem I think is

whether I can fly it without having full control of gassing off for landing, etc.

This may be a pipe dream, but after reading several books on airships, I want to have a go at building a flying model but seek your advice in case it turns into a white elephant.

J. J. Lemon

London SE5.

*Pipe dream or not, the man you should contact is: R Morse, North End, Straithe Road, Repps, Potter Heigham, Norfolk. Mr Morse is a specialist in model airships with a vast fund of knowledge and experience of the subject. We also suggest you contact Mr. J. Edgecombe, Flat A, 6 Willow Road, Hampstead London N.W.3.*

## A matter of trim

Dear Sir,

Re 'Questions and Answers' for your Golden Wings readers in March issue. Fancy suggesting that this simple trim tab idea should only be used on the lower surface of the wing!

Seeing that many of their younger readers will be interested only in trimming the lightly loaded—slow flying model it follows that many of the models will be trimmed to fly not far from the stalling point. Adding a trim tab of the suggested form can often take the wing tip right past the stall as well as increasing the drag on that wing by a large amount. It doesn't take much common sense from here to see that the opposite trimming effect can easily result.

One only has to look around some of the local flying sites to see the bewildered faces of many (not only youngsters) trying to puzzle at this reverse trim effect.

No, always put the trim tab on the upper surface of the wing that is needed to drop IT WILL ALWAYS WORK ON ANY MODEL. Let's face it, if the model has a warp, some performance will be lost whatever way we try to do the correction.

Sandy Beds

C. Bashford

## Canadian view

Dear Sir,

I believe that the so-called 'strategic' flying really gained International status with Erichsen's win in '63 and from then on the competitors jumped on the bandwagon and the officials tried to figure out some way to stop it. Well—why was it necessary to fly tactically?

The answer was inequality. You will notice that this mainly involved Gliders and for good reason. On a strictly F.A.I. class model the Power jobs will do at least 3:30 and some close to 4 minutes. A Wakefield will do 3:30 (or should do) but an A/2 won't better 2:45. These figures are for so called 'dead' or 'still air'.

In the open class the picture gets worse, a rubber job will do 5 or 6 minutes, a power job nearly as much, but I have yet to see a glider do much over 3 minutes. Why the inequality? We all fly in the same air, no

wonder the glider boys have to find lift to get their maximums; as for the fiascos at the World Champs they will stay fiascos until they get rid of the launching area (50 x 100). At the C.I.A.M. meeting I tried to see that this was not incorporated but everyone else voted for it.

In Toronto we are going to try the following method for A/2 flying in the hope that the sport will again become one of individual effort.

This so-called strategic flying has made A/2 development non-existent and until something is done, it will remain so. The sooner the towlines are lengthened by about 20 or 30 feet to allow bigger aeroplanes, the better it will be for everyone. No longer will it be necessary to 'steal' someone else's lift. Let's change the rules until an A/2 can do the same 'still' air time as a Wakefield and a power job, why should there be such injustice?

Toronto 7, Canada

P. J. Allnutt

## The Toronto Glider Control Method

There will be a minimum of two Gates at least 100 yards apart in a line perpendicular to the wind direction. A gate consists of two poles about 10 feet apart.

The Gate Director shall declare the Gate opened and closed. He may close the Gate if some other aeroplane flies in front.

1. A/2 flyers MUST launch with the tow line passing through a Gate.
2. A flyer may tow as long as he likes after leaving the Gate, BUT may not tow towards an aeroplane already airborne.
3. There will be a time limit in the Gate. The time limits shall be five (5) minutes (slow Gate) and two (2) minutes (fast gate).
4. At the expiry of the limit, if the contestant has not started to tow, he must (without penalty) retire to the end of the line for either Gate.
5. The Gate is closed as soon as a flyer commences to tow from the Gate. It remains closed until the aeroplane is downwind of the Gate.

Because of the probability of a line-up, contestants are advised to fly as early in the round as possible. Although flying of other events downwind of the A/2 Gates will be allowed (i.e. using someone else's model as an indication of lift)—the deliberate use of a pilot model will be grounds for disqualification.

## Northern Heights 'Off'

Dear Sir,

It is with regret I must inform you that the Northern Heights Gala Day has been called off.

Due to lack of funds and various other problems that have cropped up the Club has been forced into this decision. We of the Northern Heights are sorry that once again the Gala Day is missing from the calendar of events; but we must get our priorities right and trying to run a Gala Day on a shoestring is not one of them.

It is to be hoped that the Northern Heights Gala Day will once again be an annual event but more of that anon.

V. Botta, Secretary

(This date, September 22, is now to be used for the SMAE events postponed from March 24 due to Foot & Mouth restrictions — Ed)





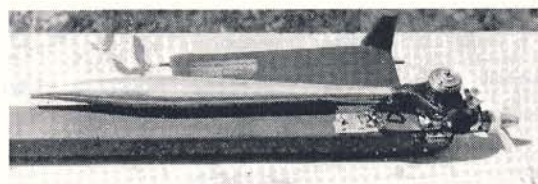
## S.M.A.E. Southern Gala **ODIHAM MAY 5th**

AN INCREASINGLY westerly wind, sufficient in strength for at least two combat types to fly powerless consecutive eights, kite fashion, marred the S.M.A.E. Southern Gala. Fortunately the direction gave a goodly length of airfield for free fliers and visibility was excellent for timing even three minute maxes.

Worst hit were the free flight events as reported on page 377 by John O'Donnell.

If entries are anything to judge by, Combat is still the most popular C/L class and a large entry flew throughout the day. The final, won by Richard Wilkens although decisive was not excessively active. Strange to say Richard was not flying his 'Early Bird' but used a Swedish 'Ruteress' with a Copeman Special Oliver Tiger. A fair entry (8) in  $\frac{3}{4}$ A T/R, low entry (5) in B T/R but assorted Rats (and Mice) present shows trends in this department. Taylor/McNess won B with an eight year old Carter McCoy Special model in 7.34.2.  $\frac{3}{4}$ A times were fairly slow, the winners, Longhurst/Heath flying a very neat model with an Oliver Tiger Cub and Bartels  $5\frac{1}{2} \times 8\frac{1}{2}$  in., glassfibre propeller. Unscheduled was C/L Stunt which attracted half a dozen or so entries (Telepathy?). Like free flight, this event was affected by wind. Mick Reeves of Wanstead must possess steel nerves. It was heart stopping the way he flicked his slow flying model into a wingover, the lines slackening half way up to snatch sickeningly again over the other side.

Top left: Al. Wisher demonstrates single handed launching of an A.P.S. Pelican. Model went O.O.S. to land at Royston. Top right: Aeromodeller Trophy winner, Doug Spreng, assisted here by John Dumble. Doug, John and Harry Brooks form the firm making SprengBrook R/C equipment. Centre Right: On one of Trevor Payne's high climbing power models was a Cox T.D. with a tuned length pipe.



The **Aeromodeller Trophy** event for multi R/C aerobatics run off as part of the Southern Gala, certainly had its fair share of multi jobs spread in a thin even layer! Dennis Hammant paid the price for taking advantage of lunch time inactivity and Ray Brown also smashed a very nicely-built 'Bar-Fli'; both in interference suspect circumstances.

Though strong winds made going difficult for some competitors, performances by top fliers such as Doug Spreng, Chris Olsen and Mike Birch displayed excellent compensation for wind effect. Leader throughout the contest was Doug Spreng - he's lost only one contest since coming over here from California last August, closely followed by Chris Olsen 2nd, and Mike Birch 3rd.

Lower left: Combat winner Richard Wilkens with Oliver powered 'Ruteress' of Swedish design. Capable of very tight manoeuvres. Lower centre: E. Drew of Bristol and West won Open Glider. Note intricate pattern of tissue covered tailplane. Lower right: After losing his Open Power model R. Baggott of Birmingham flew his 1/2A job into winning position with 1:09 in unopposed flyoff.





# CLUB NEWS



NO, THE FLYING ANIMAL inset in our insignia of the month is not a Russian space dog. But what animal is it? It has me foxed. Anyway, a neat, compact little badge from the Market Harborough M.A.C.

Talking of space, you don't need a satellite to chart where all the bad weather's going to these days! It's enough to make you take up plastic kits. And so to our first news item...

Details of the **Scottish Aeromodelling Association's** club championship event for the Caledonian Shield comes from the **Glenrothes A.C.** They had the honour of organising the F/F section of the contest at Barry Buddon Army Camp, Monifieth. Weather was dull, but not so the model flying which benefitted from the near absence of wind and a few surprising warm updraughts. Six clubs took part, providing some twenty entries. No details of contest given, but top club was **Clyde Valley Fliers**, with **Scot Mac** second. Glenrothes itself had to be content with a fourth place.

Poorly attended, but rich in content. That is the way 'Turbulator', the newsletter of the **Crawley M.A.C.** describes their A.G.M., held earlier this year. The report of the Comp Sec., was particularly striking, with much success to proclaim both at home and abroad, particularly in the Coups D'Hiver field. Leading minimodel lights were the components of that incontestable partnership, Bill and Shirley Horton. Shirley making her feminist mark, and perhaps history, by becoming the Club Champion. One gloomy note, though; the wishy washy character of the club rally. Weather, apparently, was of the typical, pre-packaged English Gale variety: blowing and flowing. Lacking, too, was that extra bit of crowd-drawing publicity, the rallying bugle had sounded but a mute note across the water meadows. If one is to be held this year I'll sound off a few heartier notes. A representative flying programme has been worked out for the season, with an eye to encouraging the average clubster rather than the contest specialist. Mouse Racing and Coupe D'Hiver feature, as also does a Small Rubber Flying Scale event. This could be of interest, as it is limited to the 40 kit models in the Keil Kraft and Veron ranges. Slight modifications allowed: light woods if desired and your own prop/rubber arrangement.

I am told that quippy columnist, 'The Poacher' is a woman (not Shirley, surely?). This suggests that the poaching is of the culinary rather than the countryside type. Anyway, the cheeky madam says of the foot and mouth outbreak that it is not usually the four legged cow that stops the modeller from going flying...

There's nothing like taking things literally. And this the C/L entrant in the **Buckaneers Model Club's** Single Surface competition did in no uncertain fashion. Quite how he contrived the Spot Landing part of the schedule we are not told, but no doubt it had the judges running around in circles! Looking forward to golden autumn days, the club is to run the C/L Stunt and R/C events at the South Midland Area Rally to be held at Cranfield on September 15th. This is but one feature of a quite impressive club programme, which, includes, of all things, a talk on antique models. Well, I've looked down the Portobello Road... I can only assume that they are vintage models with Chippendale undercarriages. An appendix lists the awesome set of regulations covering model flying at Henlow Airfield. At least it provides a rigorous test for one's enthusiasm. Personally, I'd rather take a Coupe D'Hiver over the local park.

The Newsletter of the **Whitefield M.A.C.** is full of the joys of spring, or at least it reminds younger members that just now the hibernated creatures – and the young couples – are appearing in the woods, and hopes that the lure of the flying field will be greater than the lure of the woodlands. And, speaking of the wide open spaces, Whitefield, in common with many another club, can now skip freely through the daisies; the dreaded foot and mouth blight no longer plagues the fair fields.

If you live in the **North Western Area**, you will undoubtedly have got 'The Message', which is, of course, the Area newsletter. Good tidings to report on the airfield front. Negotiations between N.W.A., Officers, Warrington Club officials and the C.O. of R.A.F. Burtonwood, have resulted in a renewal of flying facilities on the drome. It would appear that the concession allows for R/C and C/L on two weekday evenings and C/L only on weekends. Of free flight – no mention.

The Multi event staged by the **Flying Druids M.A.C.** at Middle Wallop Airfield (lovely name that!) attracted quite a crowd: several hundred, in fact. And well worth their while, since the comp fielded an impressive list of 21 entries. Flying was to the full F.A.I. schedule, with best two of three flights and two flight lines operating. Winner was Mike Birch of Middlesex, second, Ed Johnson of Larkhill and

third John Reynolds of Bristol. A heavy fall of rain during the third round threatened a termination of the proceedings, but fortunately it did not persist, and the contest was rounded off to a successful end. A Single Channel event was scheduled at the same venue for the 12th May.

Usually we associate model flying with the highly geared, industrialised countries of this shrinking world of ours (and you can't blame it for shrinking), and we don't often hear of the gentle art being practised by the thronging millions of Asia. However, we have to hand the report of the **Delhi Model Club** as proof that model flying is enjoyed by all races and creeds. The report makes delicious reading – pure Michael Bentine. For instance, have you ever flown on a 'rainily-suicidal Wednesday for model air-crafts', or had a New Year tree donated by the Prime Minister? Come to that, has your club been given free accommodation and use of machines by a firm of taxidermists? There's a good joke there, but I forbear to tell it. Seems the main function of the club is finding the whereabouts for buying the elusive bits of model material. If you have nothing valuable to barter you might as well ask for the 'Chanda Mama' (Uncle Moon).

Congrats to the **Northern Area News** on getting its ton up. Which means, of course, that the current issue is the hundredth to roll off the mighty home press. And the high standard continues to be maintained, although Editor Ron Firth feels the strain from time to time, complaining that he has less and less time in which to do more and more. Perhaps he should take up a relaxing hobby – like model flying! Incidentally, the newsheet started out as a humble appendix to the minutes of the Area Meetings way back in the roaring Forties, and has gone from strength to strength, thanks to the hard work of such enthusiasts as John Pool, the former editor. The current issue is as full as ever of hard contest gen and the usual quota of top line plans. A challenging item is a letter from Andrew Crisp, who suggests that the Open Rubber should not be abolished so much as replaced; given the Coupe D'Hiver rather than the Coupe de Grace, in fact. Only Coupes and Wakes should be used for contest work; both being more practicable in this day and age than the 'Open bag of rubber'. They are rugged, performance restricted, and are recognizable enough not to require processing. I feel sure this view will have much support.

A mention in the **Bradford & Shipley Model Eng. Society's** Bulletin to the effect that aeromodelling is a very serious branch of the hobby model art will not, for the reasons given, find much favour among 'free line' aeromodellers. Some people might agree that the multi engine radio model, looking exactly like the real thing, is the absolute in aeromodelling, but many others will find an A/2 or Wakefield more artistically and creatively satisfying. For me any balsa and tissue artefact sends – well, just sends.

The arrival of the **RAFMAA** Newsletter indicates that aeromodelling in the R.A.F., still flourishes in its well organised way. And, by way of coincidence, we have a letter from Flt. Lieutenant A. T. Cheesley, in which he tells of the visit of two Danish model flyers, Nils Christianson and Tomas Koster, to mine host George French of the Anglia Club. And what model flyers! Tomas Koster is internationally famous as the 1965 Wakefield winner, which means that he can wield a pretty mean 40 gramme projectile, as, too, can his equally competent companion. The guests attended a mini comp held on Chobham Common. They looked aghast at our ankle crippling paradise as if it were some grim fairy tale, but, nevertheless, were gracious enough to demonstrate their talents. What impressed the company was the sheer professionalism of the lads as shown by their power model set ups. All flying surfaces were carried on frame jigs and fitted in specially designed model boxes. They also carried a speed circle type inertia engine starter. And this was only some of the marvellous gadgetry on view. Unfortunately, weather was against the flying of the Wakefield masterpieces they had with them, but just to prove how well equipped they were for strategic flying they had a thermal detecting device in the form of a bubble making machine which, if located upwind, identifies the updraught. Yet another gadget was a height finding apparatus – nothing more than a ping pong ball released from the model on motor cut and timed down to earth.

If ever you go across the sea to dear old Oireland, don't go with a shillagh under your arm so much as a model box. By which I mean



that the **Belfast M.F.C.** reminds British modellers that they are welcome to attend and enter the major Irish meetings. Dates of these are as follows: Ulster F/F Nats 14th September, Irish C/L Nats 6th and 7th July, Irish F/F Nats 6th October. All details from Secretary, Graham Dickson, Ulster Bank House, Ballyclare, Co. Antrim. A reference in the Newsletter to what appears to be a school club, the **Orangefield M.F.C.** It seems to serve as a model seminary for the more adult Belfast club. But not only is the groundwork put in in the school grounds but much up aloft work, too. A high incidence of tree'd models gives an intro to the many branches of model flying.

Further south, the **Model Aeronautics Council of Ireland** Newsletter has a few words to say on the difficulties of recruiting new members to the movement. It is argued that, since the model shops stay in business, there must be more than 200 model flyers in the land of Ulysses. Logical reasoning, no doubt, but here there is an analogy with mustard: there is plenty sold, but far more left on plates and in pots than is ever eaten. In other words, more sticks of balsa are sold than ever get airborne. Recruitment by advertising has been extensively tried, but without marked success. Still, it is hoped that ways and means will be found to attract people to the fold. By far the best form of publicity, as is suggested, is showing what a fascinating sport model flying is by example on all the open spaces.

The **South Wales R/C Society's Newsletter** got me a bit disorientated. It had all the zing, pace and jargon of the sheets we get from overseas, whereas the jargon of the British mags tends to be less effusive. However, upon reading closer I noted that much of the laconic wisecracking formed parts of quotes from overseas mags, but plenty of amusing home chat, nevertheless. For instance,

did you know that the Wales Independent Deterrent was a big white glider powered by two O.S. 30's, and which has the diverting trick of dropping large bags of flour on to car roofs. The glider does not require towing up - it is, of course, self-raising! The club diary of disaster has many a fearful tale of rigid wing models going orni-thopter, and write ups of write offs through motors cutting at near zero altitude. Human nature doesn't change, though. They laughed when the Mann monoplane crashed, and they guffaw just as delightedly when a multi spreads itself out on the tarmac like a wiring circuit diagram. A good article on chargeable button cells; useful to anyone with a high battery expenditure.

Yet another challenge to my shaky geography is the **South Island News**. But all those Maori placenames was the giveaway, and **New Zealand** it was. Far flung as this is, we are left in no doubt by the Editorial that model flyers are the same the world over. It suggests that model flyers are getting lazy; they like flying the models but loathe building them. No longer do we see the midnight oil masterpieces paraded before admiring eyes, this is the day of the strictly utility model, or so it would seem. But is this true or nostalgia for an over inflated past? Good models are still being built, from multi to Wakefield, but much of the painstaking work goes into practical detail rather than exhibition finish. Tip from down under. Did you know that double covering is the 'in' thing among A/2 and Power model addicts. Modelspan rather than Jap is recommended as it can be applied damp.

Well, that's all for this month. If yours is a club where things 'happen' drop us a line; so, too, if you have anything to publicise.

THE CLUBMAN

## Control-line Team Trials

BEING A World Championship year for Control Line models, the British Control Line Team Selection Trials were held at R.A.F. Upwood on April 21st. Ideal weather conditions prevailed, but unfortunately the performance of the various models was far from 'ideal' when related to International standards.

**Aerobatics** attracted but three entries, and Jim Mannell topped the results flying his rather ageing 'Mercury Crusader' with 3117 points; Mick Mayne took second spot flying a Merco powered 'Tony' with 3091 points, and S. Blake was placed third with 1679 points after a very premature engine cut during one flight.

**Speed** also attracted only three entries, with Brian Jackson and Bill Firbank taking first and second places respectively, both using T.W.A. 15's with tuned length pipes, in their last year's 'Pink Lady' model. Third place went to Gordon Farnsworth flying a Super Tigre G 15 powered 'Stuppi'.

**Team Race** was a little better supported with eight teams out of nine recording times. Brian Turner and Mick Hughes, without doubt Great Britain's most regular Team Race winners, topped the results (see table) with their consistent times. Second place went to Derek Heaton and Malcolm Ross from Leigh, who were flying a Don Haworth modified Eta, very similar to that used by Turner/Hughes. A new team for International events, that of Geoffrey and Robert Richardson, placed third flying a very attractive Eta Elite Mk. II powered model.

Several contestants in both Stunt and Team Race, who are well known for their prowess on the contest field, did not enter this year purely because they could not afford the expense of attending the World Championships in Finland. It does seem a very great shame that more financial support cannot be made available to allow all who would like to enter, to compete. This point is borne out when one considers that there is an ex-World Championship winning team amongst them.



(TEAM RACE)	(Above)				Average of
	1st	2nd	3rd	4th	
1. Turner/Hughes	4:58.3	4:47.3	4:55	4:52.2	4:51.5
2. Heaton/Ross	4:48.3	5:11	5:21	—	5.07
3. Richardson Bros	5:00	5:08	5:23.5	5:24.1	5.11

### (AEROBATICS) (First & Third below)

1. J. Manall	3117	(Mercury Crusader)
2. M. Mayne	3091	(Tony)
3. S. Blake	1679	(Mercury Crusader)

### (SPEED) (Below, left)

	1st	2nd	3rd	Engine	
1. B. Jackson	0	0	145	T.W.A. 15	(Pink Lady)
2. W. Firbank	0	136	0	T.W.A. 15	(Pink Lady)
3. G. Farnsworth	106	114	118	Super Tigre G 15	(Stuppi)





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## MECCANO Magazine



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1st FRIDAY  
MONTHLY

2/6

## Radio Models and electronics



## Radio Control Models

July RCM & E contains plans for 'Shoulderstrap'. A 37 inch span single channel sport R/C aircraft. This is a functional design, ideal for the sport/beginner. In 'Pilots Patter', Chris Olsen describes the technique of trimming a multi channel R/C model, an art which few R/C enthusiasts ever really master. Interest features include 'R/C World', with a round-up of R/C activities around the globe, an analysis of Flight Link's new Dual Control System for training potential proportional pilots, and a pictorial rundown at R/C car racing, now gaining great popularity in U.S.A. and Japan

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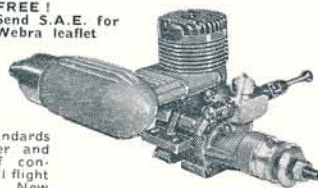
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