Aero Modeller

May 1973
15p
U.S.A. & Canada 75c.

INCORPORATING
MODEL AIRCRAFT

MAP HOBBY MAGAZINE

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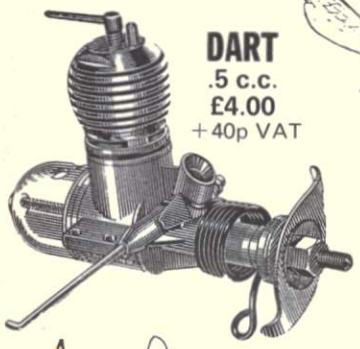

DART
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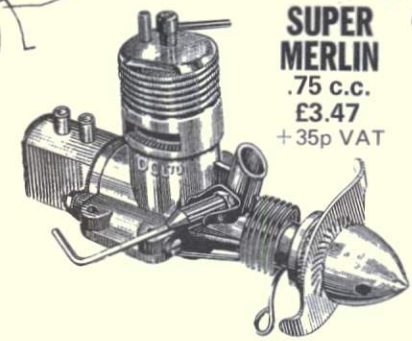

SUPER MERLIN
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at your model shop !

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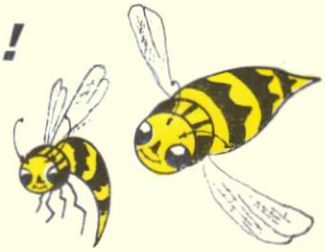

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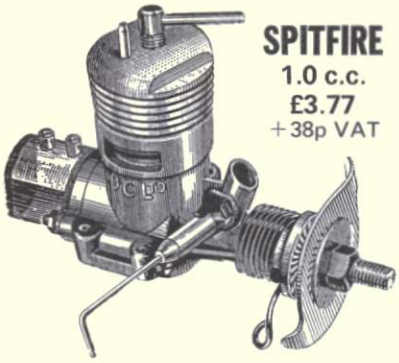

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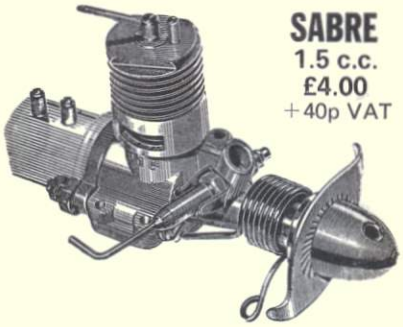

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The FOURNIER RF5 72" SPAN MOTEUR – PLANEUR

(1829mm)

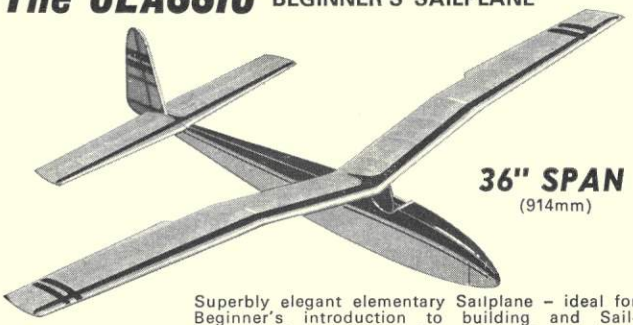
A TWO-IN-ONE SOARER AND RADIO SCALE

FOR ENGINES 1.49 to 2.49 RACING DIESEL OR GLOW (0.09 to 0.15 cu. in.)

Very-near-to-scale Auxiliary Powered Soarer and Sport Plane for Intermediate 2-Channel Proportional Radio on Rudder and Elevator only.

Ideal for Hillside Soarers who like to fly power when the wind drops. Flown best on hillsides in moderate to strong winds! (loading 16 oz.)

The CLASSIC BEGINNER'S SAILPLANE



36" SPAN
(914mm)

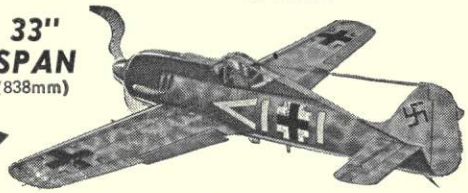
Superbly elegant elementary Sailplane – ideal for Beginner's introduction to building and Sailplaning! Complete kit of parts – die-cut balsa formers and ribs. Full layout plans.

COLT CONTROL-LINE TRAINER

19" SPAN
(483mm)

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

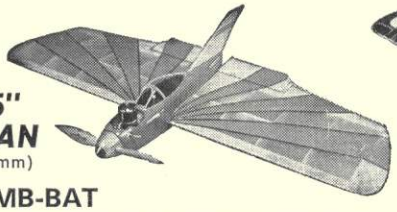
33" SPAN
(838mm)



F.W. 190 A3

Combined Flap and Elevator Scale Stunter for 3-5 c.c. motors. Ideal for 'Glo-star'.

See these super Veron kits at your dealer and check their latest list prices during tax changeover!



25" SPAN
(635mm)

BOMB-BAT

Bat-wing Lightweight Stunter for combat or Stunt. Ideal for Webra 'Record' or 'Sport-Glo'.

BEE-BUG

Snappy Stunter for 1 c.c. motors.

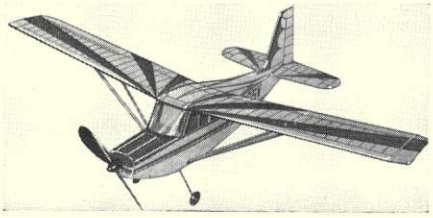
TWO KWIK-FIX PRE-DECORATED FLYING SCALE

CESSNA SKYWAGON
23" SPAN (584mm)

All die-cut and decorated parts! Dead easy to build! Plastic Prop. Pre-shaped Undercart with fitted Wheels. Rubber Motor. Pictorial Plans. Realistic performance.

CHAMPION CITABRIA
22" SPAN (559mm)

EASY-TO-BUILD, FUN-TO-FLY!



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Australia: Pizzey Ltd., 1 Clark Street, Richmond, Melbourne, Australia
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May 1973 Volume XXXVIII No. 448

CONTENTS

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

Subscription Department: Remittances to Model & Allied Publications Ltd., P.O. Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE (subscription queries Tel. Kings Langley 62692/3). **Direct subscription rate £2.35** per annum, including December edition and index. $6 (U.S.) for overseas subscribers.

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

MODEL & ALLIED PUBLICATIONS LTD.

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

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

COMMENT

An F.A.I. class combat International event has been announced by the Model Club of Three Frontiers. 101 Rue de Lorraine Cosnes et Romain, 54400 Longwy, France. The event will be held on 16/17th June at the Aerodrome of Zonguyon Villette by permission of the Steel Mines Aero Club, but competitors are requested to arrive on the previous day (Friday) to settle into tented accommodation, and to collect documents, meal tickets, etc. The entry fee is 60 NF (about £5) and there will be both Individual *and* Club prizes, cups, medals, etc. Entry forms indicate that six Pilots make up a club team. Situated close to Belgium, Luxembourg and Germany, the trip appears to be just a six-hour drive from the channel ports, and sounds like a fine challenge for a wagon-load of combateers – we have the details for those interested.

With meetings such as this, and the highly successful Dutch meeting of last year (and which will be repeated in '73) combat must surely be approaching the situation when it will be given full World Championship status. At present it is only a Provisional F.A.I. class, but when the rules have been fully sorted-out, tried under practical conditions and agreed to by all the various Nations, then it too will be able to hold its own with the other 'recognised' categories.

on the cover

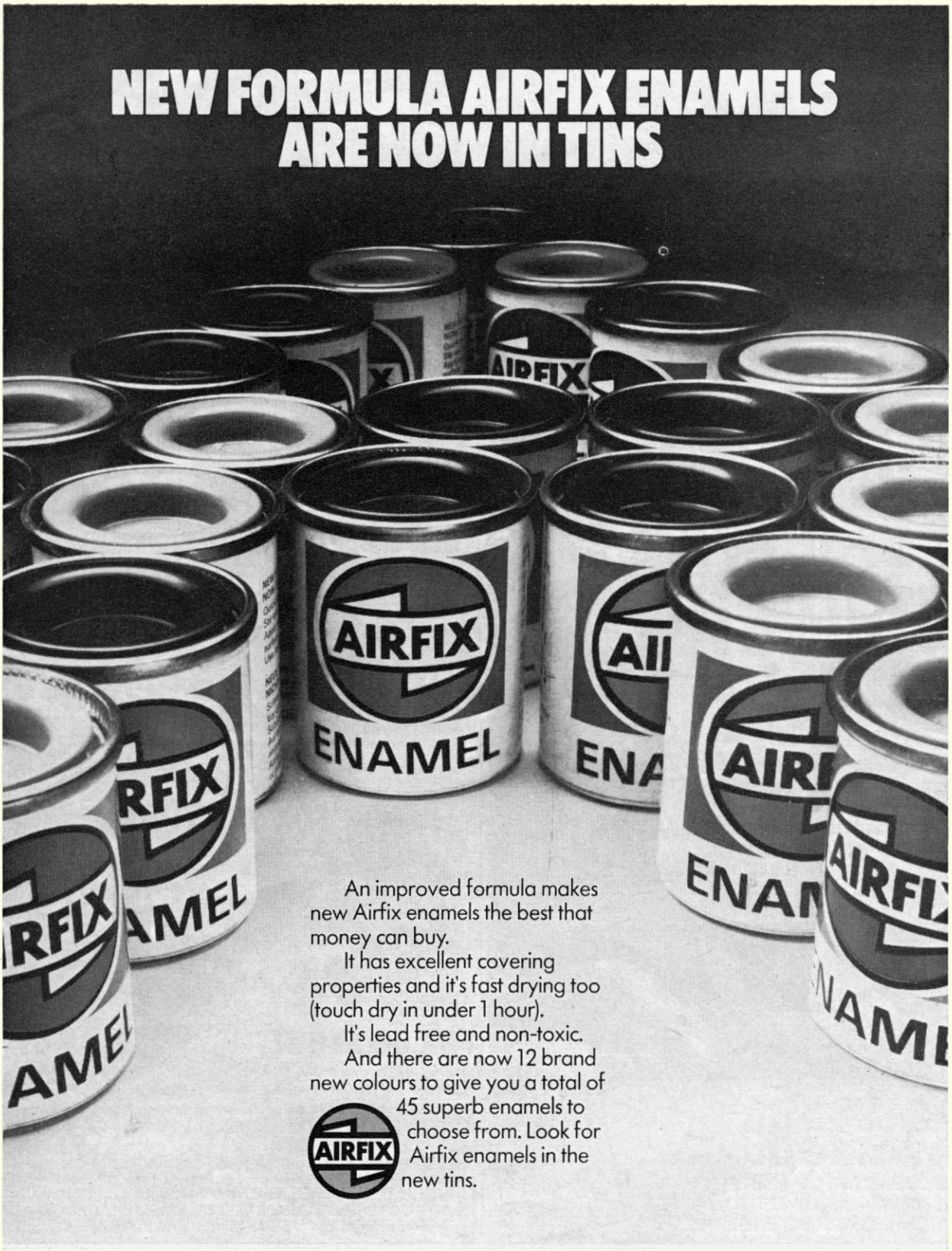
The spirit of Coupe d'Hiver is captured in this moment as Canadian Dr. Savage's model is prepared by Brian Cox (holding) and Ian Dowsett (winding) for a 102-second flight at Le Plessis – Belleville on February 24th. Dr. Savage left his model with Ian when he returned to Toronto. It has a new wing since placing 34th in the 1972 event. Unfortunately, the winding hook broke, damaging the 18½ x 15 in. prop irrepairably in the second round, so terminating a fine effort by proxy. See report in this issue.

next month

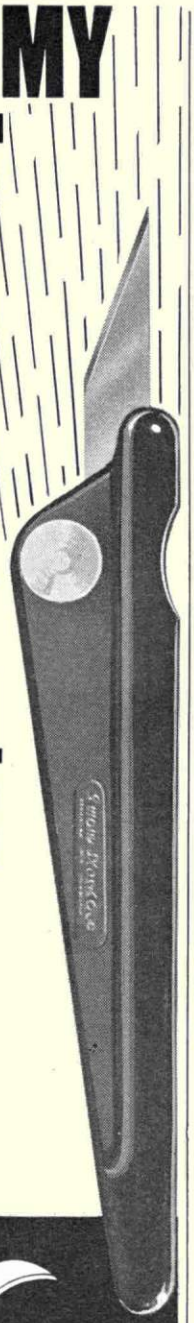
Control-Line Goodyear Racers are not only easy to fly, they also provide an ideal introduction to competitive racing, being easy to build and quick to produce. Plans for David Giles' **Mike Argander Special** detail an attractive, highly-successful racer, ideal for this class. **Propellers for rubber** models – just how can you produce them easily? Ron Coleman explains various methods. Our **beginners series** details the fitting of a dethermaliser, and also shows how to make 'running repairs' to a glider.

Two free plans plus all the regular features are also included in the information-packed June issue – on sale May 18th.

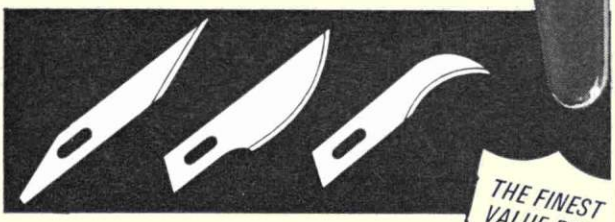
Made and printed in Great Britain by Graphic Art Services (Brighton) Ltd., Burgess Hill, Sussex RH15 9EH, for the proprietors, Model & Allied Publications Ltd., P.O. Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE. Published by Argus Press Ltd., 12-18 Paul Street, London, E.C.2, to whom all trade inquiries should be addressed. Registered at the G.P.O. for transmission by Canadian Magazine Post.



THIS ECONOMY CRAFT TOOL CUTS RIGHT ACROSS ALL OTHERS FOR VALUE!



We designed this knife for all light cutting purposes – the quality is high – the price is low. Three spare blades in different shapes are available, making a cutting tool of unbeatable value for money.



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128 pages featuring hundreds of working model aircraft, illustrated almost entirely by photographic reproductions of the actual models, plus span, brief description and graded for ease of construction. Also selected engine list with tabulated data; index to illustrated plans, X List of vintage, unorthodox, novel plans, many other classifications, useful articles, order forms. Also good selection of trade advertisements. 15p post free.

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FOX STUNTERS

Control Line sport flying is essentially aerobatics – naturally. Fox engines, the 29, 35 and 36 have led the Control Line stunt field for so long that we've lost count of the many, many such contest wins achieved with these motors. But the record speaks for itself . . for Control Line Stunt, use Fox!

FOX 29 STUNT £5.67

WEIGHT ..... 7 oz. R.P.M. 12,000
DISP. ... .299 cu. in. WITH 9-6 PROP
Use Fox B silencer

The Fox 29 has the same cylinder, piston and head combination that proved so successful in the early racing 29X models. It is now fitted with a brand new crankcase and a new crankshaft with more counter-weight. This motor starts well and runs smoothly. We feel that it is by far the finest running plain bearing 29 that you can buy. It has studs to take the B Size Fox Silencer.

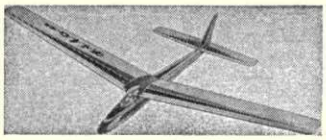
FOX 36 STUNT £5.67

WEIGHT ..... 8 oz. R.P.M. 11,000
DISP. ... .359 cu. in. with a 10 x 6 prop.
Use Fox B silencer

FOX 40 STUNT £7.19

WEIGHT ..... 9 oz. R.P.M. 11,000
DISP. ..... .399 cu. in. with 10 x 6 prop

JOHN D. HAYTREE, Fox Manufacturing Co. (U.K.)
40 BUCKERIDGE AVENUE, TEIGNMOUTH, DEVON
Distributed by 'VERON' and IRVINE ENGINES

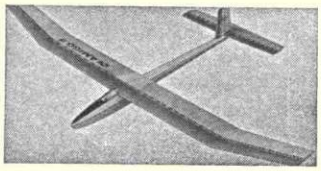


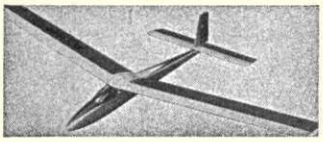
FILOU SAILPLANE Price*

50" span sports-type sailplane which converts to auxiliary power (pylon mount extra). Kit contains quickbuild plan, printed and die-cut sheets of balsa and ply, canopy, wire parts, tissue covering, decals and miscellaneous items. Model also recommended for R/C flying.

AMIGO 2 Price*

Here is a real contest-type sailplane, 78¾" span and total area 694 sq. in. Extensively prefabricated, the kit includes die-cut and printed balsa and ply parts, milled and slotted stripwood, ready-formed tow hook, canopy, tissue covering, decals, etc., etc. The Amigo 2 also adapts readily to pylon power and is ideal for R/C (R/C installation plan included).



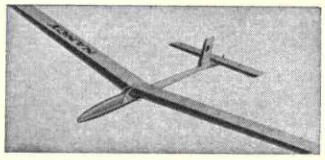


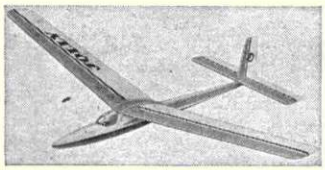
DANDY Price*

A kit designed for rapid assembly with die-cut sheet, preshaped fuselage parts, milled and slotted stripwood, canopy, cement, tissue covering, decals, etc. Span 63". Total area 540 sq. in. Can be converted into a powered glider with pylon mount and .049 engine.

NANCY Price*

Another design in the popular A1 class. Span 48¾". Kit includes milled fuselage nose section, die-cut sheets, milled stripwood, preshaped wire parts, tissue, adhesives, decals, etc., plus a two-colour exploded drawing and plan. Quality of the prefabrication is exceptional! The Nancy is also complete with auto-rudder and dethermaliser.





JOLLY A1 Price*

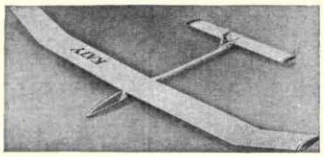
A 45" span Quickie model. This kit is extensively prefabricated and very complete. Model takes pylon mount for conversion to power. Kit contains quickbuild plan, printed and die-cut balsa, ply parts, strip, dowel, wire parts, tissue, cement, decals, etc.

Also **BEGINNER** Price*

39" span semi-scale appearance sports glider; prefabricated kit form.

KATY A2 Price*

Ultra modern towline contest glider. Quickie kit includes milled fuselage nose, wing fairings and other parts moulded in plastic, die-cut balsa parts and all other items needed to complete this super high-performance model quickly and easily. Conforms to A2 specification and includes all the latest ideas in design. Wingspan 67¼". Length 39". A very complete and recommended kit.



CIRRUS Price*

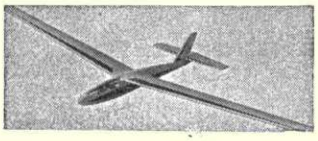
Giant 118" span. A fabulous kit with finished fuselage mouldings in ABS plastic, precut wood parts, complete hardware, moulded canopy, control horn, cement, covering material, etc., etc.

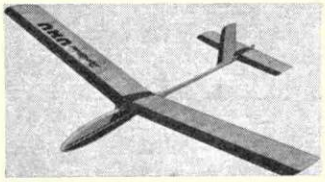
Also **CUMULUS 2800** Price*

110" span. Injection moulded parts. Ideal for R/C!

FOKA (SCALE GLIDER) Price*

Wingspan 102". This outstanding kit includes a Finished One Piece Fuselage moulded in high-impact plastic with other parts in balsa and ply (mostly fully shaped). Also prefabricated wire parts, canopy, hardware, adhesives, covering material, decals, etc. Detailed plan plus an Overlay Plan showing R/C installation.





UHU Mk. III GLIDER Price*

Designed specially for beginners, with all parts extensively prefabricated and assembly kept as simple and straightforward as possible. Ideal for junior club contests! Capable of soaring performance and with superb towline stability! Span 43¾". PLUS, of course, a wide range of Graupner glider and power model accessories which you can see at your local model shop.

Graupner

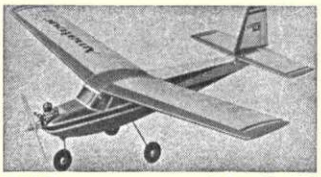
BO 209 MONSUN Price*

All-sheet 21½" span scale model for rubber power. Complete kit. One of the latest additions to the Graupner range featuring the latest ideas in prefabrication.

ALSO

MINI-PIPER Quickie Price*

Diecut all-sheet model. 29" span.

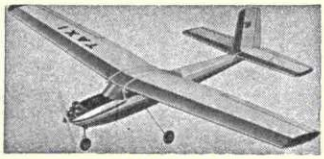


AMATEUR Price*

43¼" span. Kit includes full-length diecut balsa fuselage sides, diecut sheet and ply, shaped wire parts, wheels, hardware, etc. Takes engines up to 1.5 c.c. for free-flight or radio control. One of the best sports-type power models available today, with semi-scale appearance and a proven flying performance. Ideal as an R/C trainer.

TAXI Price*

Kit includes die-cut balsa-ply and ply parts, preshaped engine mount, bulkheads and fairings, milled stripwood, shaped wire parts, scale-type wheels, cement, covering material, decals, etc. . . . 'Quickbuild' plan and separate R/C INSTALLATION PLAN. Wingspan 59". Engines .15 to .35. Ideal for 2- to 8-channel R/C.

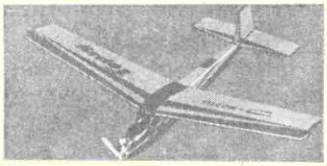


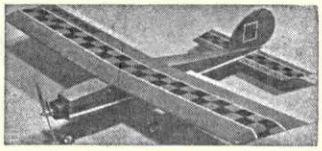
CESSNA 177 CARDINAL Price*

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

TOPSY 32" span Price*

Topsy is a long-time favourite in the Graupner range for free-flight sports with engines up to 0.5 c.c., but is equally suitable for rudder-only R/C (engines up to 0.8 c.c.). Kit contains quickbuild plan, printed and die-cut balsa and ply, shaped wire undercarriage, RECORD wheels, tissue, cement, decals and miscellaneous parts.



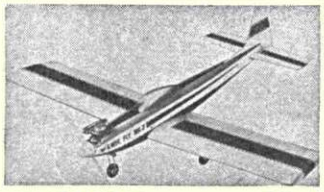


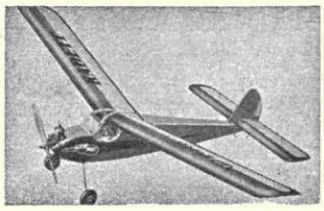
MIDDLESTICK Price*

Wing span 55". Length 38¾" overall. Wing area 611 sq. in. Tail area 124 sq. in. Weight approx. 3¾ lb. (up to 5 lb. with radio). Suitable for .40 engines. Assembly time is reduced to a minimum with plenty of precut parts, including precurved, preglued fuselage sides.

KWIK FLY Mk. III Price*

This kit makes an authentic duplicate of Phil Kraft's WORLD CHAMPIONSHIP winner. Kit includes glued and curved fuselage sides, shaped wood parts, diecut balsa and ply sheets, formed undercarriage wheels, canopy, hardware, etc. 59½" wingspan. Wing area 657 sq. in. Engines up to .61. Acclaimed as the Finest Kit yet for R/C 'multi' or proportional.





KADETT Price*

High wing F/F sports model, in the traditional style. Kit is complete down to hardware, wheels, adhesives, decals, etc. A popular favourite for 'Sunday flying'.

NEW GRAUPNER KITS

TERRY 41½" span power and the magnificent 90½" span **AS K14 SAILPLANE** – the most advanced kit of its type yet produced! Check both at your local model shop!

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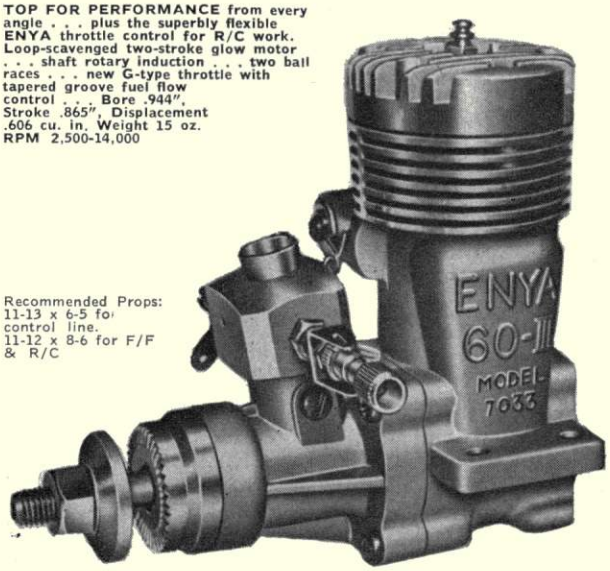
TOP FOR PERFORMANCE from every angle . . . plus the superbly flexible ENYA throttle control for R/C work. Loop-scavenged two-stroke glow motor . . . shaft rotary induction . . . two ball races . . . new G-type throttle with tapered groove fuel flow control . . . Bore .944". Stroke .865". Displacement .606 cu. in. Weight 15 oz. RPM 2,500-14,000

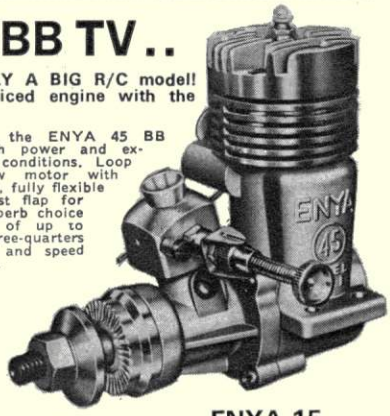


Recommended Props:
11-13 x 6-5 for control line.
11-12 x 8-6 for F/F & R/C

ENYA 45 BB TV..

POWER ENOUGH TO FLY A BIG R/C model! This is the modestly-priced engine with the BIG PERFORMANCE!

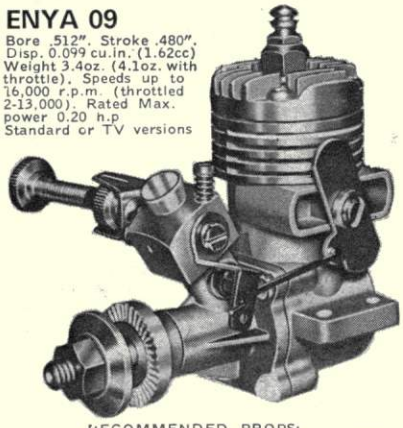
Expert aeromodellers pick the ENYA 45 BB for its easy starting, high power and extreme reliability under all conditions. Loop scavenged two-stroke glow motor with twin ball race main bearings, fully flexible throttle and coupled exhaust flap for precise speed control. A superb choice for radio control models of up to 5 ft. span, with over three-quarters of a horsepower available and speed range 2,000 to 13,000 r.p.m.



Bore .878". Stroke .756". Disp. 0.457 cu. in. (7.5cc) Recommended Props: 11 x 6 for Control line: 11 x 5-6 for F/F & R/C

ENYA 09

Bore .512". Stroke .480". Disp. 0.099 cu.in. (1.62cc) Weight 3.4oz. (4.1oz. with throttle). Speeds up to 16,000 r.p.m. (throttled 2-13,000). Rated Max. power 0.20 h.p Standard or TV versions



RECOMMENDED PROPS:
7-8 x 6-4 for control line; 7-8 x 4-3 for F/F; and 8 x 4-3 for R/C.

ENYA 15

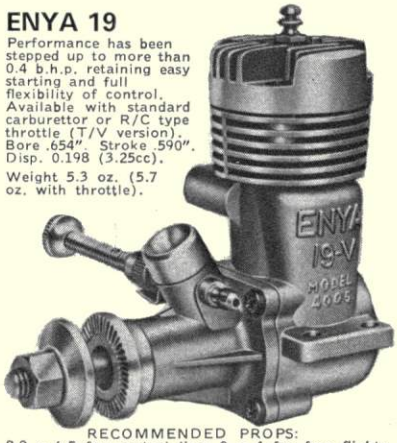
Bore .590". Stroke .551". Disp. 0.15 cu. in. (2.47cc) Weight 4.8oz. (5.2oz. with throttle).
An international contest size motor. Develops 0.53 h.p. with speeds up to 16,000 r.p.m. Available with standard carburettor or R/C throttle (T.V. version).

RECOMMENDED PROPS:
8 x 6-5 for control line; 8 x 4 for free flight; 8 x 4-3 for R/C

ENYA 19

Performance has been stepped up to more than 0.4 b.h.p. retaining easy starting and full flexibility of control. Available with standard carburettor or R/C type throttle (T/V version). Bore .654". Stroke .590". Disp. 0.198 (3.25cc).

Weight 5.3 oz. (5.7 oz. with throttle).



RECOMMENDED PROPS:
8-9 x 6-5 for control line; 9 x 4 for free flight; 9-10 x 4 for R/C

ENYA 35

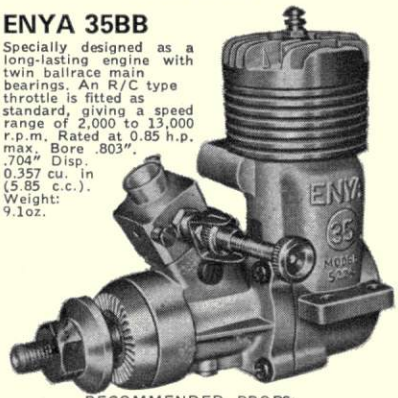
Rugged, dependable plain bearing glow motor for larger sports models. Supplied with alternative heads for low (7.5:1) or high (9.1:1) compression ratio, to match straight or doped fuels. Bore .803". Stroke .704".

Disp. 0.357 cu.in. (5.85 c.c.). Weight 7.7 oz.

RECOMMENDED PROPS:
10 x 6 for control line: 10-11 x 5-3 for free flight; 10-11 x 6-4 for R/C

ENYA 35BB

Specially designed as a long-lasting engine with twin ballrace main bearings. An R/C type throttle is fitted as standard, giving a speed range of 2,000 to 13,000 r.p.m. Rated at 0.85 h.p. max. Bore .803". .704" Disp. 0.357 cu. in (5.85 c.c.). Weight: 9.1oz.



RECOMMENDED PROPS:
10 x 6 for control line; 10-11 x 5-3 for free flight; 10-11 x 6-4 x 6-4 for R/C

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Enya 35	£8.75	35 TV	£10.80
Enya 35 BB TV		£11.95	
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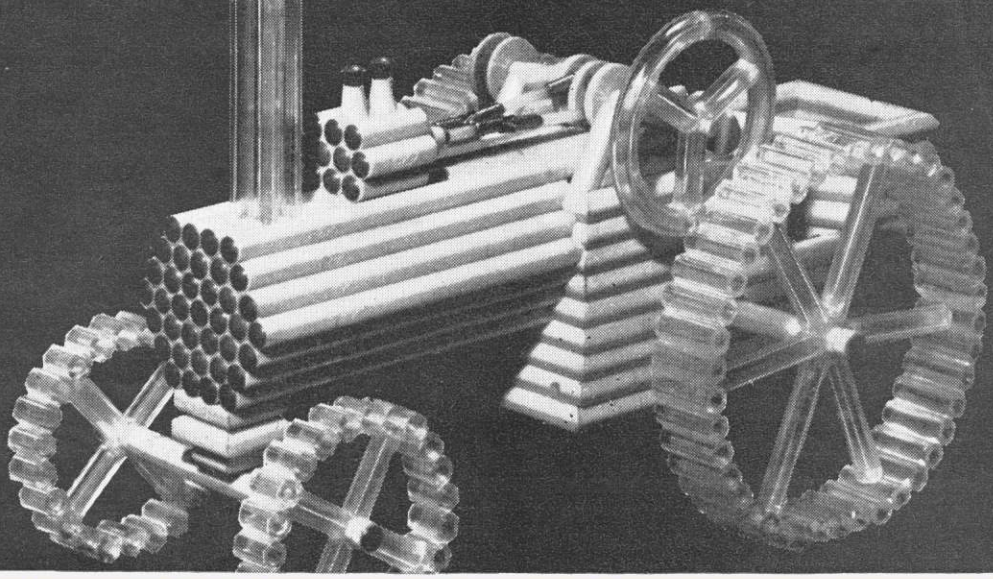
(Mr. Laurie Burrows Traction Engine)

Don't throw away your old Bic Crystal ballpens, collect them from your home or office. Cut them, glue them, bend them and fuse them to make even more fantastic models for 1973. With a little imagination you can convert a used pen into the holiday of a lifetime.



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Entries for the first half-year must be received by May 31st, 1973. Competition rules available on request.

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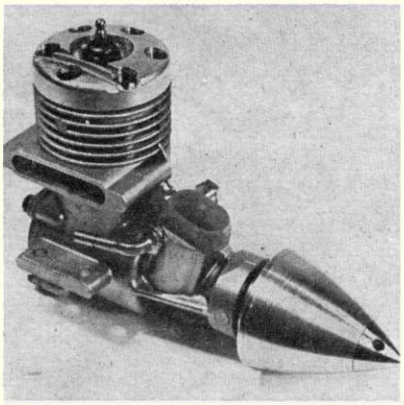
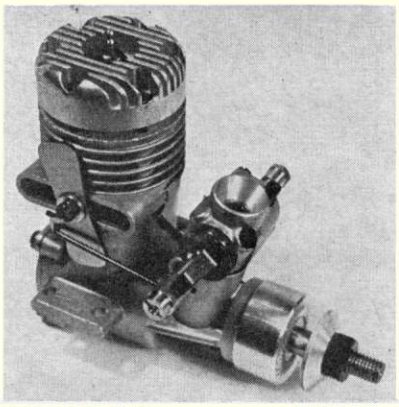
The advent of VAT from 1st April, 1973 is not all bad news, whilst the situation on radio-control equipment has meant the full implementation of the 10% tax, the situation on Super Tigre engines has meant a reduction in prices of 7%. The column shown below indicates our new price schedule which will remain in force until the middle of the summer when we have been promised an increase from the Italian factory.

The delivery situation is not very good owing to industrial strikes of a Political nature, meaning that the factory is only working at 60% of its capacity. This has already put the delivery programme four months behind and has delayed the introduction of the new X Series engines. A recent telephone call from our American parent company has indicated that the first shipments of the production X15 engine should be made at the latter end of April.

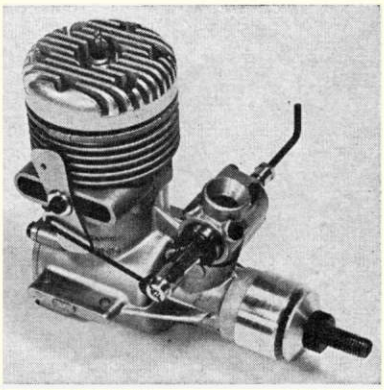
This reduction in output has at least allowed development work to continue and the new X40 engine has appeared in prototype form earlier than expected and pre-production samples are being evaluated at this time.



G 15 F.1 GOODYEAR **£12.58**



G 21/46 R/C **£17.01**



ST 60 BB R/C **£19.30**

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G21/29 R/C M	£21.25
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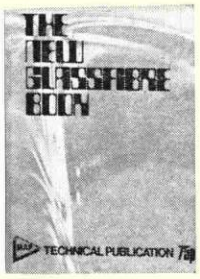
157 THE NEW GLASSFIBRE BOOK



It is now over 10 years since the first title on this subject, Glassfibre for Amateurs, was produced and whilst most of the techniques and materials are as originally described, a great deal of additional experience has been gained, so that a new book treating the subject differently has become desirable. In these pages, which are laid out for very easy reference, the author deals with 'GRP', glass-fibre materials, resins, fillers, pigments and parting agents; moulds, tools and equipment, basic techniques, castings, moulded shapes; roof lights and panels, GPR tanks, boats, cars; modelling and domestic applications, garden pools, repairs, trouble-shooting, designs in GRP. Appendices.

8¼ in. x 5⅞ in. (A5). 126 pages. Profusely illustrated in line drawings. Drawn-on card cover. **£1**

173 AERO MODELLER ANNUAL 1972/73

From the worlds model press over 40 of the leading designs of the year, each dimensioned and scaled to aid the model builders. Contest winners, Champions, the unusual, experimental sport and contest types of all classes. Big feature on miniature flying scale models with CO_2 engines with tabular and graph data. Magnet steering techniques from the experts of Nuremberg; model design criteria; Loads of airfoil data; making polyester model structures plus hints and tips to cover all aspects of Aeromodelling. Larger than usual edition.

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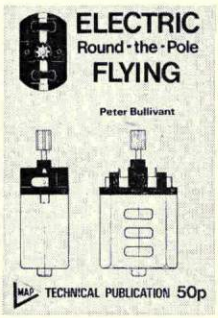
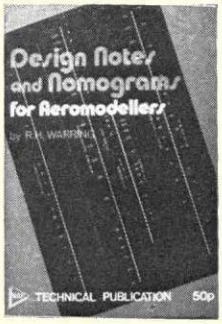
126 ELECTRIC ROUND-THE-POLE FLYING



A compact and full appraisal of all aspects of electric-powered round-the-pole flight from which the experimenter can produce all the needs for operation either at home or the clubroom. Liberally illustrated, and written from long experience by Peter Bullivant, the text includes data on choosing the motor, fitting propellers, gearing and direct drive, scale and novelty model subjects and rules for club contests. Highly recommended to all who seek a novel and rewarding indoor model flying activity.

56 pages, size 8¼ x 5¾ in., stiff cardboard covers. 49 photographs, 19 diagrams, 56 pages, 4 model plans. List of suitable designs, Actual-size drawings of four suitable electric motors. Diagrams cover various pylon heads and controllers. **50p**

171 DESIGN NOTES and NOMOGRAMS FOR AEROMODELLERS



by R. H. Warring

Vital data for the designer, conversion scale, tabular facts and criteria, plus the famous Nomograms which have been long in demand for the serious contest modellers. These charts enable involved design factors to be determined quickly. Drag, Aspect Ratio, Power loading, Reynolds Number, Rate of Climb, Rubber Power, Downwash plus many other vital charts.

56 pages International A5 size 8¼ x 5⅞ in. Stiff card cover, saddle stiched. **50p**

172 DRY CELLS, BATTERIES AND ACCUMULATORS

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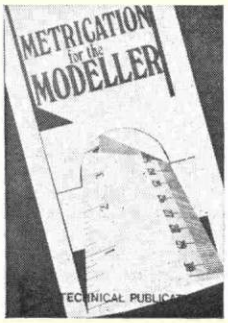
8¼ x 5⅞ in. (A5 size), 56 pages, 2 colour cover, numerous illustrations, graphs, tables and diagrams. **50p**

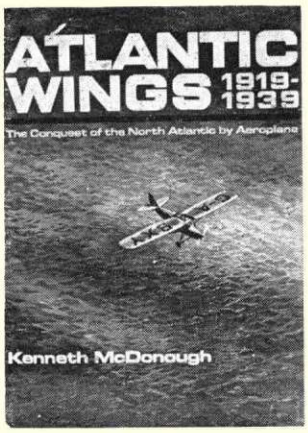
170 METRICATION FOR THE MODELLER



The main object of this book is to provide the modeller with figures and information for making conversions from English units to metric units and vice versa, when necessary to match the availability of materials, etc.

At the same time it aims to go a little further and explain the relationship between the various alternative units which crop up in both systems, with the particular object of making sense of conversions. All that is needed is to look up the appropriaate section—Linear Measure, Areas and Square Measure or whatever you are involved with and find all the information you need in condensed form.

8¼ x 5⅞ in. (A5 size), 40 pages, numerous tables and charts, 2 colour drawn on cover. **45p**



6 ATLANTIC WINGS

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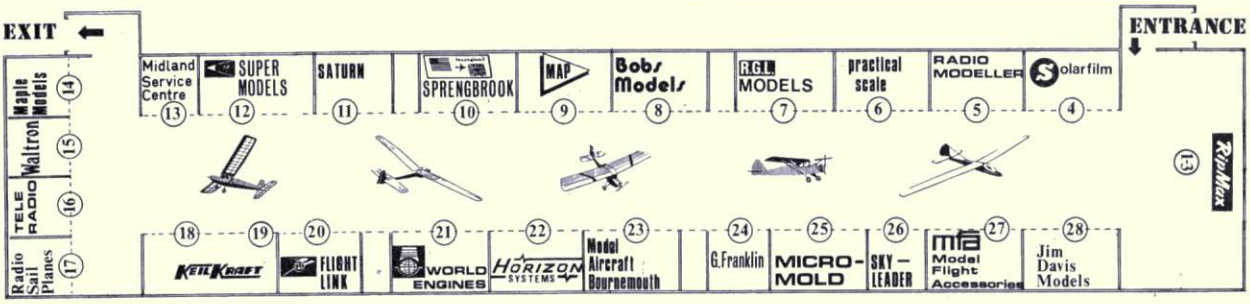

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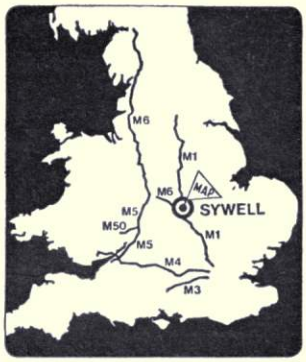

SUNDAY 22nd and MONDAY 23rd APRIL at SYWELL AIRFIELD, Northants

Heard at the HANGAR DOORS

JAMES HAY STEVENS, Aeronautical consultant, author, journalist, artist and pioneer model kit designer died on March 3rd, aged 59. While his activities were largely concerned with general aviation of which he had profound knowledge, our older readers will recall that his name was to be found in every copy of *Aero Modeller* from Vol. 1 No. 1 until his commitments as a Senior Technical Officer to the Ministry of Aircraft Production prevented any further modelling. He was the originator of 1/72nd scale and the first to produce authentic scale drawings of aircraft for model making. At first he worked to 1/36th scale but the model collection became too large, and the drawings would not fit the magazines. So he halved the size and created what is now the 'World's Standard Model Scale' With J. J. Holaday's fondly remembered 'Skybird' scale kits (see December 1970 *Scale Models*), Jim Stevens did more than establish a standard scale, he set a challenge of quality in illustration, accuracy and completeness. His influence on aeromodelling was immeasurable. Through *The Skybird, Aeromodellist, Aero Modeller, Air Review* and *Air Stories,* J.H.S. maintained a constant flow of information on scale modelling. His understanding of aeroplanes and ability to deal with highly technical subjects in a simple, understandable way, made him a much respected journalist. His books included *Scale Model Aircraft* and *The Shape of the Aeroplane.* Each was illustrated with his own delightful sketches, enjoying a unique style, sometimes copied, never bettered. Though 20 years old, the latter title is still our first recommendation to any young person wanting to know the whys and wherefores of aeroplane development. Like 1/72nd scale, this book remains a respected tribute to James Hay Stevens, a man who had flying in his blood, and the will to pass his knowledge on for others to enjoy.

MODELLERS ACCIDENT PROTECTION INSURANCE which we offer as a special service to all regular readers of M.A.P. periodicals has been reviewed. Effective from 2nd April, 1973, we are obliged to increase the fee for all new and extended memberships. The standard fee is increased from 50p to 75p. These increases are due to the higher premium required by our insurers, but have been kept to the lowest possible figure compatible with their charges.

DUE TO THE INTRODUCTION OF V.A.T. to all plan sales from April 1st, 1973, all prices shown in the Plans Handbook should be adjusted as follows when ordering. The new price now includes packing and postage in addition to Value Added Tax.

HANDBOOK Plan price	V.A.T. P. & P. (inclusive)
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50p	60p
55p	65p
65p	75p
75p	90p
£1.00	£1.15
£1.25	£1.40
£1.50	£1.70
£2.00	£2.20

Orders above £2.00 add 10% (10p in the £) to retail price in Handbook.

THE IMPORTANCE of practical Air Education is recognised by the announcement that Derek Piggott is to receive the Air League Scott-Farnie award for 1972.

Derek is Chief Flying Instructor at Lasham Airfield, Hampshire. The citation states: *'Derek Piggott has made outstanding contributions to furthering air education through his enthusiastic and practical encouragement of a very large number of people to be involved in various facets of aviation, in particular gliding, during the past two decades.'*

Many thousands, the majority being members of the public, have come under the influence of Derek Piggott's infectious enthusiasm to develop their own potential in flying. An instructor at the R.A.F. A.T.C. Gliding Instructor's School at Detling, Derek Piggott went to Lasham in 1954. Flying centred there, under his overall direction, allows some 2,500 people per year to experience airborne activity. Derek has also flown extensively as a film pilot, *'Mag Men', 'Blue Max', 'Darling Lili'*, etc., and has written a practical book on the whys and wherefores of gliding. He also happened to be the first pilot of a successful man-powered aircraft in the U.K. and has flown a wide variety of flying machines from 'heavies' to 'airships'.

Modellers, however, will be more acquainted with his achievements in two Wakefield teams and as a pioneer member of Croydon D.M.A.C. Derek was among the first to fly C/L stunt and once shook everyone by arriving at a contest with a symmetrical model – that is to say, one which looked the same either way up! It had two undercarriages to cope with clockwise or anti-clockwise take-off!

FIRST EVER helicopter rally in Great Britain will take place over the Easter weekend (April 22nd, 23rd) at the R/C Expo '73, organised jointly by *Radio Control Model and Electronics* magazine and *The Barnstormers Flying Circus.* In addition, there will be some 25 manufacturers and distributors showing their latest wares, while there will be continuous model flying displays, interspersed with full-size flying by the Barnstormers, the Army's Blue Eagles helicopter team plus the Rothman's Aerobatic Team – now equipped with Pitts Specials in lieu of their previously used Stampes. All in all, a great show for the whole family – don't miss this opportunity to see all that's new in R/C modelling at Sywell Airfield, situated just north of Northampton.

WORLD CHAMPS inclusive air tours by scheduled airlines, with local hotel accommodation at Wiener Neustadt (F/F) August 13-20th and Gorizia (R/C) September 9-17th are described in brochures now being prepared. Approximate cost is £80 in each case. Send S.A.E. to Editorial Offices for details – no telephone calls please!

ALTERNATIVE mode of reaching the Free-Flight World Championships is being arranged by John O'Donnell. Travel would be via coach, and the cost just £25 per head including ferry charges, but *excluding* meals or accommodation. Persons interested in this trip should write to John, c/o these offices, enclosing S.A.E.

It is with deep regret that we announce the death on April 9th of D. A. Russell, founder of *Aero Modeller* and *Harborough/Harleyford* books. A full obituary will appear next month.

ERIC HERBERT concludes his feature on Carrier Deck Landing models with plans of his 34 in. span design for 0.35-0.60 cu. in. motors

THE CONTROL LINE 'carrier' contest is an ideal event for the competitor, combining as it does the chance to show your skills in both building, flying and, of course, engine preparation. As was discussed in my article in the April issue, it is not too difficult a class to fly and it does offer much scope to the inventive. The main problem has always been the lack of a suitable carrier, but now that the ever-active **Three Kings** club have made the *HMS Flycatcher* mobile, this should no longer be a problem for contest organisers. However, even without a 'proper' deck to land on, one can always rig up a temporary affair by pegging out arrestor wires at the side of a runway. The event is certainly a 'crowd puller', ranking with R/C scale as a major attraction.

The *Firebrand* model is suitable for either the American Class 1 or Class 2 and with an increase in wing area to 300 square inches plus the adoption of a ½-inch wide sheet fuselage and a .35 cu. in. motor, could be used in the 'Profile' class. In this country there is, as yet, just one class with no restriction on engine size (other than the F.A.I. limit of 10 cc.) and in fact the model, as drawn, should have a good, flying performance with any engine from a 'hot' 2.5 cc. to a 10 cc. R/C glow. For competition flying the obvious choice is either a 'rat race' .40 or an R/C 60, which develop around the same maximum power. A profile version was also built and it was found that an Enya 29 provided more than adequate power.

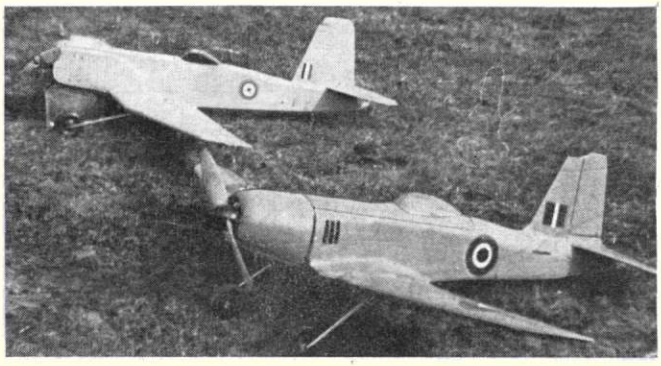
Construction is by no means difficult, but neither is it in the 'beginner' category – especially with regards to the control system which must operate smoothly without binding. As with all contest models, keep a careful eye on the weight – when flying at low speed an excess of ounces can be quite a handicap! However, also bear in mind the stresses involved in an arrested landing – make sure that the arrestor hook and undercarriage assembly are carefully and strongly assembled. Epoxy resin is most useful in these areas.

Firstly, cut the bottom wing sheeting to shape and mark the rib position on the top surface. Now make up the 'heart' of the system – the control plate assembly. If you prefer, you can, of course, substitute a Roberts 3-line control unit instead of the 'do it yourself' item illustrated. With the control system installed on the ply undercarriage mount, glue the whole unit in position. Add the leading edge and ribs while the bottom sheeting is pinned flat to the building board. Notch the leading edge and score along the sheeting at the dihedral breaks, then lift and block up each tip one inch as shown. Run cement into each break. When dry, unpin then carve and sand the leading edge to section. Make up the leadouts, leaving them overlength and add the throttle, flap and elevator pushrods.

The flap areas should now be cut from the bottom sheeting and hinged with nylon tape. Next, add the flap L.E. followed by the flap torque arms, which are retained/pivoted with tubing and nylon patches. Epoxy the tip weight in place, glue the wing trailing edge in place at the flap areas, then sheet the entire upper surface. Cut the tip sheeting to size, glue in place then carve and sand to section. Install the leadout guides as shown.

Now for the fuselage. Cut out the ply front former and make up the dural engine mount – this is bolted to the rear crankcase cover and is then, in turn, bolted with a 1/8-inch ply spacer to the former. An alternative would be to utilise a commercial engine mount. If using a rear-induction motor, the position (and size) of this former would need modifying. With the engine position determined, remove the engine and glue the front former to the ¼-inch soft sides. Cut out the tailplane and drawing the fuselage ends together, glue in position. Glue the fin in place. Make up the hook assembly, complete with rudder and flap coupling wires and epoxy to the fuselage. Fit the rudder, cutting a hole in the fuselage sides as required to clear the horn.

Join the wings to the fuselage, again using an epoxy adhesive, then complete the linkages and test for easy



In the foreground is Eric's original 'Firebrand', which unfortunately met its end recently when a take-off from grass was attempted – be warned! Behind is a profile version of the same design, built for an Enya 29.

action. The bottom sheeting may now be added, as can the top decking – note that the area from the nose to behind the cockpit is a removable hatch, giving access to the fuel tank, etc. The cowling is best made in glass fibre, for durability, but may be built up as described on the plan, if desired.

The dummy fairings are made from scrap, soft, ½-inch sheet, while the wing/fuselage joint should be reinforced with glass-fibre cloth – as should the front former. Apply glass-fibre resin around the inside of the cowl and around the fuel tank bay. Fair in all joints with car-body filler.

Cut out slots in the wing lower surface to take the undercarriage wire and clips, then sand the whole model smooth. Brush on two coats of sanding sealer, sanding lightly between each. Next, apply a coat of grey primer which will help to show up parts that need more attention from the sand-paper block. When satisfied, dope on lightweight tissue all over. Add two coats of dope and a further coat of grey primer. Sand smooth with wet or dry paper and continue with grey primer and wet or dry until an even, smooth surface results. Preferably, spray on the finishing coats, then add the transfers, cockpit cover and fuel proofer.

Run the engine/tank combination on the bench until familiar with its operation and ensure that all flying controls move freely in all throttle positions. With a .40 cu. in. motor a 9 x 8 inch propeller can be used for test flying, or an 11 x 8 inch for a 60 cu.in. unit.

Do not allow carrier models to take off from grass, as the hook tends to catch and turn the model in. However, it can be hand-launched quite safely if you do not have a tarmac practice site. For contest flying I prefer to use a wooden propeller, which is intended to break on hitting the deck, thus stopping the engine. If this does not happen (unknown!) the engine can pick up again as the lines go slack and the model will fly off the deck, losing all those hard-won points.

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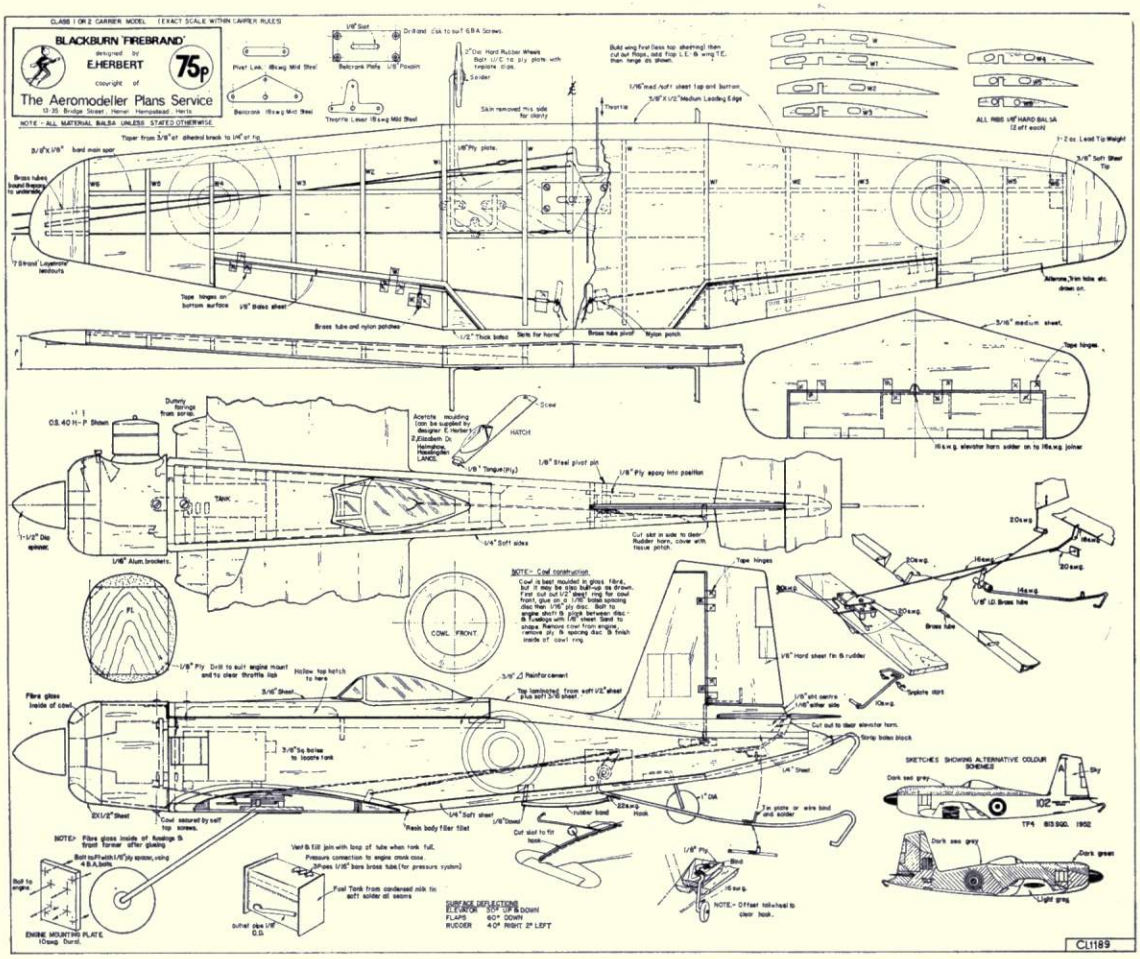
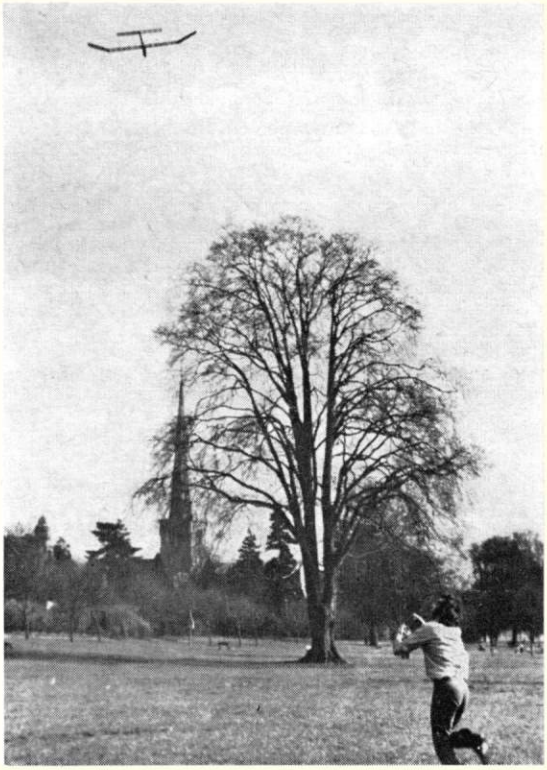




BACK TO . . .
. . . SQUARE ONE!

Part V: in which we detail pre-flight checks and trimming of the Mercury Swan glider

ASSUMING that you have carefully followed our advice on covering and doping you should, by now, be the proud possessor of a glider with perfectly flat, true flying surfaces and with no warps or twists to be seen. However, this happy state of affairs is not always the case, so it is wise to recheck these points.

Firstly, the tailplane. Sight along the leading and trailing edges. Are they straight, or do they bow either upwards or downwards? Holding the unit horizontal at arms length, does either or both tips warp in any direction? If a bow is evident, it may not be too serious – indeed if the bow is symmetrical and not too severe (i.e. less than ¼ in. at maximum depth) it may be ignored, provided that it is not warped. Warps will cause the model to turn significantly, often disasterously.

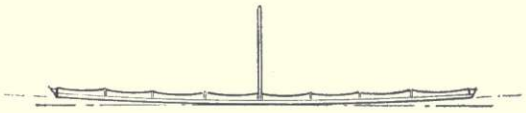
Now look over the wing. It is unlikely that the centre section (or tips) will be bowed as their construction is much more rigid than the tailplane, but warps are a distinct possibility. Again, check by eye – hold the wing surfaces horizontal, then tilt slightly until both the leading and trailing edges are visable. They must be parallel. If unsure, check by placing on a flat surface – any tendancy to rock will reveal the presence of the unwanted warp. The wings are warped? Don't despair, they can be removed, but remember next time to take more care when doping and pinning the structure down as detailed last month.

There are, in fact, several ways of removing these unwanted guests, perhaps one of the best is to re-dope the offending section (top and bottom surfaces) with a thin dope mix and then to re-pin to the building board, leaving them in this position for about a week. However, if you are keen to go flying, the simplest way is to use an electric fire. Hold each end of the offending structure so that you are twisting the whole piece in the opposite direction to the warp. Wave gently in front of the electric fire to spread the heat evenly. After about 30 seconds you will find that the whole structure is warm and the tissue has slackened off slightly. Still holding in the amount of twist you desire (it should be equal to the degree of warp in the opposite direction) move to a cooler area and wait for a couple of minutes. On releasing the structure you will find that the wing will settle midway between the amount of warp and the twist you applied; in other words, it will be flat. If this is not the case, repeat until it is, remembering that the correcting twist you hold in will decrease by approximately half in cooling. This method is quick and easy, but beware, the original warp may 'creep' back in, so check before each flying session.

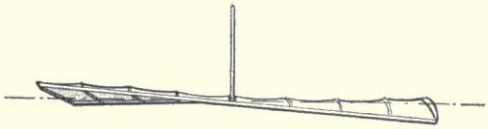
Now to assemble the model, using thin elastic bands approximately 1½-2 in. long. Put two or three bands over the end of the fuselage, lay tailplane in place, then stretch the bands over the fin and around the dowel. Make sure the tailplane is straight and will not rock. The wings are retained by bands passing around the dowels fore and aft of it. Use at least three bands to each dowel for security and to prevent the wings from moving. Check that the wing is 'square' to the fuselage, adjusting if necessary.

Before leaving for the flying field, there is one last task to perform: balancing the model. The centre of gravity (C.G.) is clearly shown on the plan and the model must balance on this point when the wings are supported on finger tips either side of the fuselage. Behind the noseblock is the weight box. Take a balsa knife and cut out a hatch for this compartment. Add lead or any other material until the model balances. Our model needed quite a lot of ballast, so much indeed that there was not enough room in the weight box! Our 'solution' was to add lead to the box plus Plastacine on top of the nose until the C.G. was correct. Not very neat, but practical.

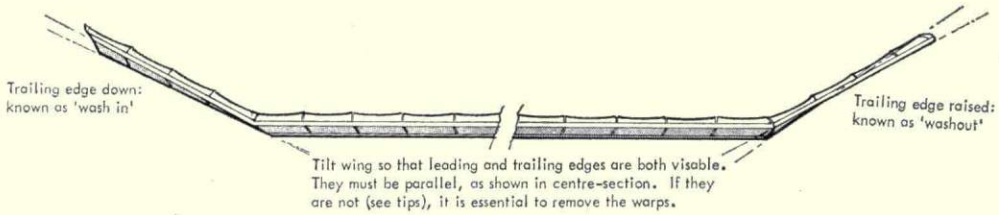
When going to the flying site it is advisable to take a small 'field kit' with you, consisting of balsa cement, scraps of tissue, balsa knife, a few pieces of balsa sheet, pins and some small strips of 1/32-in. plywood. This will



Tailplane bowed – if slight and symmetrical this is permissable



Tailplane warped – must be corrected



enable you to make any 'running repairs' which may become necessary. The other essential equipment needed is, of course, a tow-line – a length of 100-150 feet of 10/12 breaking strain nylon fishing line would be fine. Attach a small (up to 1 in. diameter) curtain ring to one end, with a small flag of nylon or even tissue fixed some two feet from this.

Ideally, your flying site should be free of any obstructions and the wind, if any, very light. Assemble the model once more and be doubly sure that the surfaces are square to the fuselage and securely held in place.

Face into the wind and hold the model by the fuselage, under the wing. Launch from shoulder height, keeping the model level with the ground or even pointing slightly downwards. Aim for an imaginary spot on the ground, some 20 or 30 yards away. Do not throw the model hard, but push gently yet firmly. Above all, do not launch with the nose up. Watch carefully how the model flies. Did it dive rather sharply towards the ground? If so, take a small piece of 1/32-in. ply, approximately ¼-in. wide and ½-in. long and place beneath the trailing edge of the tailplane. Try again. Same result? Then add another piece of ply packing.

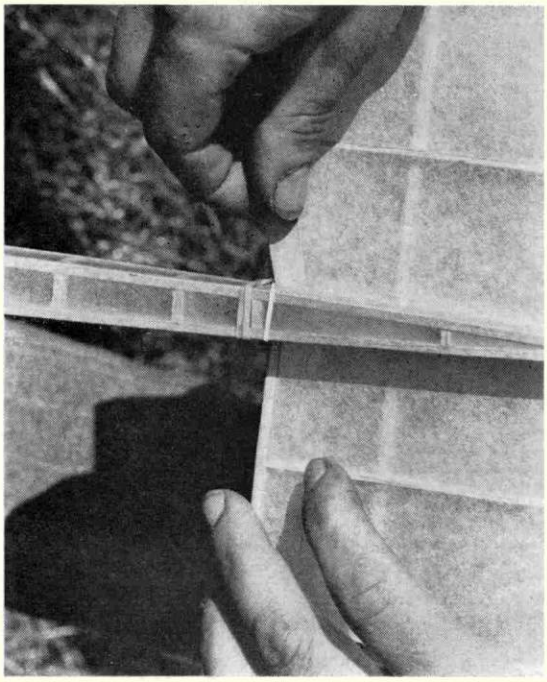
However, if the model's nose clearly rises as it slows down, then suddenly falls, gaining speed, and the flight resembles a person coming down a flight of stairs, then add the packing under the leading edge of the tailplane. This situation is known as a 'stall'. Add packing to either the leading or trailing edges until a nice 'flat' glide results. Actually, before adding packing it is a good idea to make several launches, just to make sure that the model is at fault, not your launches. It is best to use ply as the trimming material, as balsa, being so soft, can 'squash' up after a while, reducing its thickness, thus spoiling the trim.

When satisfied with the glide (actually, our model needed no such trimming, we were lucky, it flew just as built), now is the time to try a tow-launch.

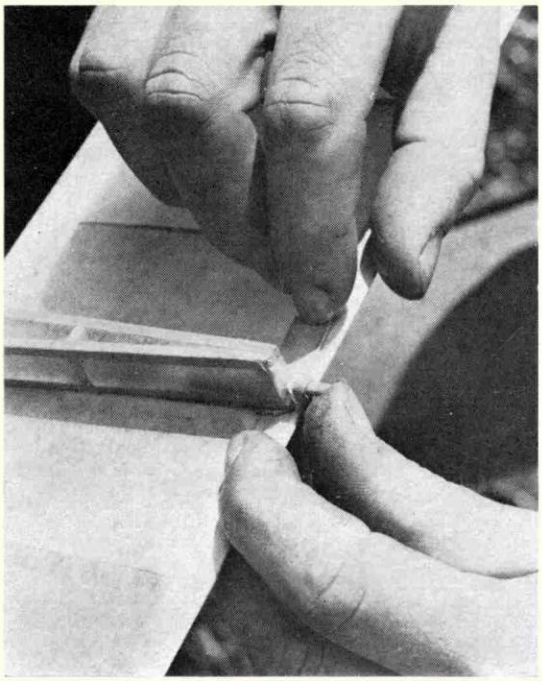
Place the ring on the tow-hook and run-out approximately 50 feet of line. Your helper should hold the model slightly nose up at an angle of approximately 20-30° from the horizontal. Walk back to your end of the tow-line, checking that you are both directly in line with the wind and facing into it. Wrap the line once around your index finger to give yourself proper control, then call to your assistant to start running just as you do. Keeping the line taught, your helper should release the model as soon as he feels it begin to lift, with the line being tight. Keep running, but with your eye on the model and pulling evenly. If the model veers off-course, then run in the same direction. Do not run in the opposite direction – you will

Continued on page 253

If the model tends to stall, then a ply packing piece should be inserted under the leading edge of the tailplane as shown. Use ply wood as the packing material as it will not be crushed by the tailplane.



Illustrating how a packing piece is installed under the trailing edge of the tailplane in order to reduce any diving tendencies. Use 1/32 in. thick ply as the packing material, and add just one piece at a time for fine adjustment.



READERS' LETTERS.....

Dear Sir,

So Polyoxy oils, according to your article in the December issue, reduce overheating, lubricate beautifully and, at the same time, cause rapid wear. There is an inconsistency here and I do not believe it. It would be worthwhile to consider how an oil lubricates. Ideally, it would form a thin layer a few molecules thick situated between two sliding, metal surfaces such that these surfaces would not come into contact with one another.

It should also be sufficiently resilient to withstand metal to metal contact due to pressure and should not break down or oxidise in the process.

In motor car engines, it would have detergent, anti-oxidant and cooling functions as well. But for model aeroplane engines only the first two properties plus that of detergency are of importance.

A straight mineral oil, on its own, will only partially fulfill these functions; the greater its viscosity, the better is its ability to withstand pressure and the better is the piston seal, but this is only at the expense of producing lacquer in the bore and on the piston. A Brightstock SAE.130 is an example of such an oil.

Mineral oils are divided into two groups on the basis of the molecular or sub-microscopic structure. PARAFFINIC oils have straight chains of carbon atoms whilst NAPTHENIC oils have their carbon atoms in the form of rings. From the practical point of view, paraffinic oils produce a hard carbon whilst napthenic ones provide a 'fluffy' soft carbon. Ideally, the paraffinic ones should be used in the crankcases of 4-stroke engines, whilst the nepthenic in 2-strokes. However, napthenic oils are not as stable as paraffinic oils, especially under high temperature and pressure conditions.

So for 2-stroke lubrication, though a napthenic oil is desirable, a paraffinic one is often used with additives to disperse the carbon. The majority of additives other than the detergent, fall into two groups. The first are systems to increase the viscosity of the oil already present. Multi-grade oils contain these polymers and it is possible to purchase these substances separately under brand names to add to oil. In the combustion chamber these break down to form 'gum' and for this reason should not be used in 2-strokes.

The second are substances which coat the metal surfaces in one form or another in the hope of preventing metal contact. Many of these are zinc compounds and are already present in multi-grade oils, while others are derived from Molybdenum Disulphide and can be purchased separately again under brand names.

There is a third group to which surprisingly little attention has been paid. These are not, in themselves, either viscosity-increasing agents or lubricants but have the ability to bind a good oil to metal surfaces such that a layer of this oil will remain in place under very arduous circumstances. In other words, so long as the type of oil is correct, wear and friction are reduced to a very small factor. The most prominent in this third group are the Silicones.

Now, it is very difficult to induce a Silicone to go into solution in a mineral oil such that it will plate a hot metal surface, and aero modellers are not advised to try. A silicone-based oil can be obtained from Rupert Ledger and Co. Ltd., Airfield Estate, White Waltham, Maidenhead, Berks.

I have been experimenting with this form of Silicone oil in the lubrication of a model petrol engine, an Astral 5.9 cc. This engine is connected to a generator so that a measure of the power output can be obtained. To date, experiments suggest that the basis of a good model engine lubricant should be a Brightstock as supplied by Castrol with an SAE.140. This is bonded to the metal surfaces of the engine by the Silicones. The Brightstock is diluted in a highly purified, paraffinic white oil to which is added a small quantity of Redex to combat any formation of lacquer by the Brightstock.

The Astral engine which has now run for three years with various combinations of Silicones is often run for two hours at a time under load and there do not seem to be any signs of wear.

Since a Diesel engine can be run on a paraffinic system, I am formulating a Diesel fuel on the same principles. Since the performance of traditional castor oil, with its tendency to lacquer can be surpassed by mineral oils, with Silicone and the correct detergent, I am surprised that the model diesel engine fraternity persists in using castor oil since it is so easy in their case to take advantage of a straight mineral system. The addition of this special Silicone in minute quantities to the fuel of a glow plug engine whilst running on a castor oil system, can increase the r.p.m. by several thousand.

Cobham, *Dr. M. S. Bingley,*
Surrey. *B.A., Ph.D.*

We have subsequently received a sample of diesel fuel formulated with Silicone oils from Messrs. Rupert Ledger and Company, and will report our findings in due course.—Ed.

Modellers' Rights

Dear Sir,

I feel obliged to bring to your attention a couple of points from reading the March *Aero Modeller.*

The first concerns 'Clubmans' remarks on South Essex M.A.S. – there is a curious lack of logic here. Modellers may form only a tiny minority of the local population – 150 out of 120,000 was mentioned. Quite frankly, it wouldn't matter if modellers were in a minority of 1 in 120,000, the Council would be obliged to provide facilities – where such facilities reasonably exist. Here, in Enfield, we have six flying sites protected by the bye-laws. The population is more than six times that of Southend and we have approximately half the number of flyers – I would suggest that if Clubman's summary is correct, then Southend's modellers could be losing out on the present basis!

The second concerns the letter from Junior modeller P. D. Hykin of Wallington – I presume he refers to the disapproval of juniors by the Croydon Council and the interpretation placed on this authority's requirements by the **Three Kings Club.** Let me put it on the line – the Croydon Council have **no** powers under their existing bye-laws to impose any restrictions on model flying in Croydon's Parks and Open Spaces. Furthermore, the Council's requirements of Public Liability Insurance for £250,000 (a quarter of a million!) is unlawful and designed to out-price practical insurance in Croydon for model flying and compel flyers to go outside the boundaries of Croydon. My advice to Master Hykin is to ignore the Council and the Club – obtain reasonable insurance cover certainly, but provided you are not a nuisance or danger to other lawful users, you can give the two-fingered salute to the Council and the **Three Kings Club.**

I wonder, Mr. Editor, if you could entice the Three Kings and the Croydon Council to answer my letter?

Enfield, Middx. *G. J. Bushell*

Reply No. 1

Dear Sirs,

As P.R.O. of what, I feel sure, is his local C/L club, I would like to answer a number of points made in Mr. P. D. Hykins letter published in your March issue. The passage in question reads as follows:-

'Reception at the local C/L club proved a dead loss, no junior members unless sponsored proves prohibition. Official comment is that the Council disapproves of junior members.'

Firstly, the Committee of this club have never been approached by Mr. Hykin with regards to membership.

Secondly, 'no juniors unless sponsored' proves several things, none of which are prohibition of juniors. The idea behind sponsored juniors was two-fold, to ensure that the junior had an adult member to guide and advise and also to ensure some measure of control over his conduct, the adult being held responsible. Not that irresponsible behaviour is restricted to juniors, the S.M.A.E. Insurance fiasco proves that, however that is another matter.

Lastly, I would be interested to know which official commented that 'the Council disapproves of junior members'. What exactly is meant by 'the Council'. I am not quite certain. The club committee? Surely, our sponsorship idea disapproves that.

The local borough councils? They have no control over membership of this or any other club.

If Mr. Hykin is as keen as he will have us believe, I am surprised he did not try a bit harder. If he is still interested in joining this club, then I hope he will contact me at the address below.

No club that is worth joining will ever turn away a prospective member, and this club is no exception.

143 Mersham Road, *P. Mason,*
Thornton Heath, *P.R.O.,*
Surrey CR4 8NT. *Three Kings Aeromodellers*

Reply No. 2

Dear Sir,

I read with much dismay the letter from George Bushell concerning the attitude one should adopt when confronted with a council bye-law, or a club doing its best to implement its suggestions, in order to promote a good, public image and carry on our hobby without antagonising local residents. After all, they don't all share our delight in the sight and sounds of model aircraft – and that sound does travel.

We have found the Croydon Council very fair with any dealings we have had with them. Well, yes the insurance stipulation is rather high, £250,000, but not impractical where C/L is concerned, working out at 65p per member and we also pay a nominal fee for the lease of the old runway – well worth the money.

Ah, you may say, well why can't R/C models fly there? They also had their chance and, like us, gave the Council a public demonstration but one model 'glitched' (I think that's the term) about a quarter of a mile from the runway, fortunately *away* from the main London-Brighton road, but can you imagine that happening on a busy, sunny day about 10 o'clock on a Sunday morning!

We used to have an old term back in the 'dark days' *Barrack room Lawyer*, and many a man has regretted taking advice from those individuals. I think the same thing can be said when trying to fight a local council if they really dig their heels in. Perhaps George was lucky with the Enfield Council – with Croydon, do us a favour, don't do us any favours!

Regarding Master Hykin, if he approaches a Committee Member and gets someone to sponsor him, there should be no difficulty; if he is a keen modeller and equips his motor with a suitable silencer, then we will welcome him, but not if he makes rude gestures as George advocates.

Streatham, *Wal Cordwell*
London S.W.16. *Chairman,*
Three Kings Aeromodellers.

Editor's Note:
Wal Cordwell also sent a copy of George Bushell's letter to an official of the London Borough of Croydon for his comments. In essence, this spokesman replied that the Croydon Council **does** *have the power to control the flying of model aircraft on any open space land under its jurisdiction and that the Three Kings Club only received permission to use the old airport site following a successful demonstration to Council members. A similar demonstration, given in 1958, was less successful and permission was refused on that occasion. As for the insurance cover requirement, this was certainly* **not** *designed to out-price the aeromodellers. The figure of Public Liability Insurance cover for £250,000 is applicable to all organisations who wish to use Croydon's facilities or arrange fetes, fairs, etc. This amount was chosen on the advise of the Director of Finance's recommendation.*

BACK TO SQUARE ONE

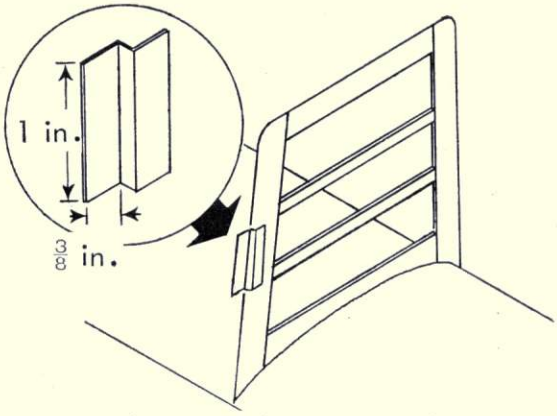
Continued from page 251

merely worsen the situation. Also, do not pull too hard on the line. If there is even a mild breeze, with a model as light as the Swan you will find that it climbs rapidly – in a stronger wind you may even have to walk towards the model to slacken off the line tension. As soon as the model is overhead, slacken off the tension, the line will drop away and the model will glide. Watch its performance carefully. If is stalls off the line, i.e. it loses speed, the nose rises then falls and the speed builds up, then this is probably due to you jerking it off the line. Be more careful next time! Is the glide too steep? Is there a tendancy to stall? Has it a sharp turn or does it fly straight into wind?

Diving or stalling should be cured by re-trimming the tailplane as previously described. However, if there is just a trace of a stall and the model glides dead straight, then do not alter the tail. Instead arrange for the model to turn in a large diameter circle – this will probably avoid the stall. This may be done by offsetting the tailplane (with its fixed fin) slightly, but a better solution is to glue a small trim tab to the fin. This may be made from the aluminium foil such as supplied as dishes with various precooked pies, etc., which is easily cut with scissors. Using an impact adhesive, such as Evostick, glue a piece approximately 1 in. high, $\frac{3}{8}$-in. wide to the trailing edge of the fin and bend to suit. Gliders fly best in right-hand circuits, so bend this tab approximately $\frac{1}{8}$ in. to the right. Try again and adjust if necessary.

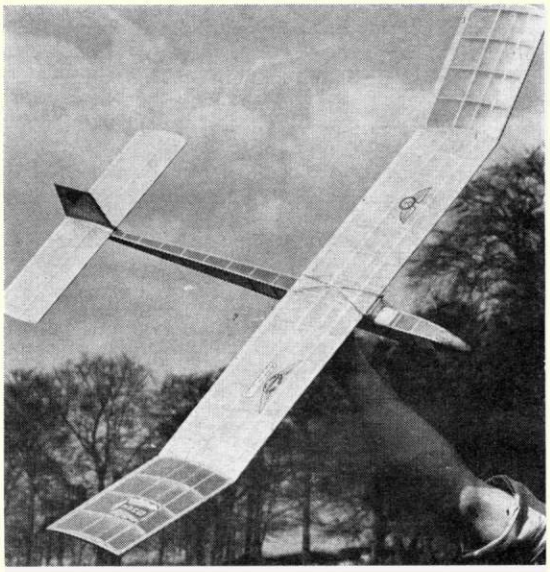
When quite satisfied with the model's performance, it is wise to glue the packing pieces in place permanently, then try the model on longer lengths of line, up to approximately 150 feet. Trim the model to fly in right-hand circles of around 150-feet diameter.

Next month: Fitting a dethermaliser and making repairs.



Glue stiff aluminium foil trim tab to trailing edge of fin to provide turn on glide.

With the flying surfaces straight and true, plus the centre of gravity in the correct position, your glider should have a good performance, but only if it is carefully trimmed as described.



CONTROL LINE NEWS

SINCE WE published the plans of his *Commodore* control line stunter in the February issue, Claus Maikis has sent further details of the latest techniques which he uses for moulding his own cockpit canopies. Firstly a balsa pattern is carved to shape, with a plywood 'grip' cemented in the underside. This pattern is then given several coats of sanding sealer, rubbed down between each coat, until the surface is perfectly sealed and smooth – this is essential as any defects would show on the finished product. The sheet of celluloid is cut well over-size, then two hardwood spars are screwed along each of the long edges. A wire (18 swg) frame is then bent up as shown in the picture and the ends plugged into holes drilled in the spars, thus enabling the celluloid sheet to hang freely. The balsa pattern is then gripped in a vice and the celluloid sheet on its 'hanger' placed in the oven. Watch the celluloid carefully as it is heated – as soon as it begins to smell and smoke, quickly remove and pull the sheet over the mould – a second person should at the same time pull the plastic down at the front and back of the mould. Gloves should be worn by both people, while the whole operation must be carried out quickly as the celluloid rapidly cools and 'sets'.

O.P.S. News

1972 was a very successful year for Italy's O.P.S. speed team – they won all the 10 cc. events held in that country while, in October, they at last broke the record with an official flight, although this had been achieved in practice on several occasions. First Manfredi Muzio raised the existing record to 281 km/hr, then Gualtiero Picco equalled it, only to be beaten by Carlo Sandella who managed to better it by 2 km/hr. Somewhat slower was Piero Muzio with 257 km/hr, but he was using an experimental engine which had never been flown before, made entirely in magnesium which reduced the normal weight of 570 grammes by 170 grammes. Unfortunately, although the motor was as fast as the best in the first few laps, the power dropped off dramatically towards the end of the run – crankcase deformation being suspected. Incidentally, the O.P.S. team found that by using 75:25 methanol/castor fuel in lieu of 80:20, the speed increased by 7-8 km/hr – presumably the motors were running too hot on the latter mix.

Meanwhile, in the States, Glen Lee has recorded 186 mph with an O.P.S. using 40 per cent nitro fuel and monoline (the Italian rules require F.A.I. fuel and two-line control). He was rather disappointed with this speed, hoping to beat the 200 mph barrier, and indeed he should with a hotter fuel, especially since the Italians are doing so well. At present his better speed could be accounted for almost entirely by the lower drag of monoline control, so the potential is obviously there. Another of Glen's problems is lack of suitable propellers. The Italians are using Punctilio 10x9s reduced to 8½-inch diameter, while with high nitro the engine should turn another 1-2 inches of pitch – a size which seems hard to get. Step up production, Mr. Nixon, please!

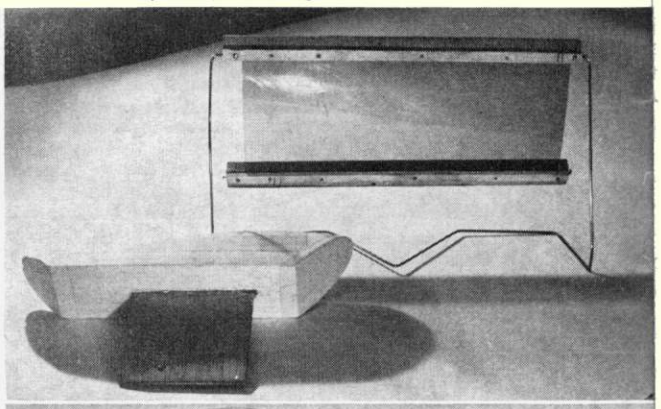
The engines used in the above competitions were the new 'Red Head' series with a few modifications which will be incorporated in the 1973 series. Pipes used were 34 cm. long overall.

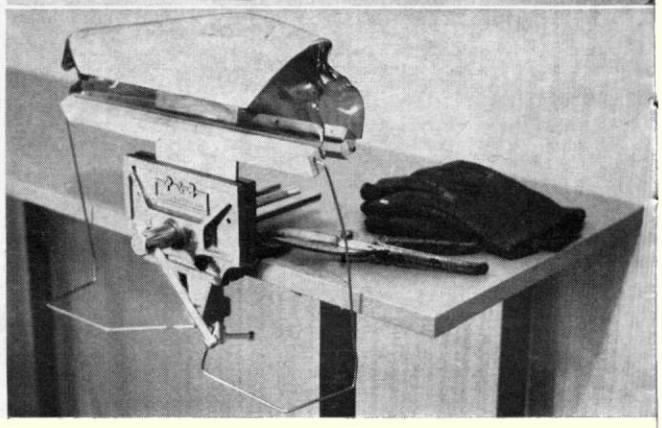
Combat – a knotty problem

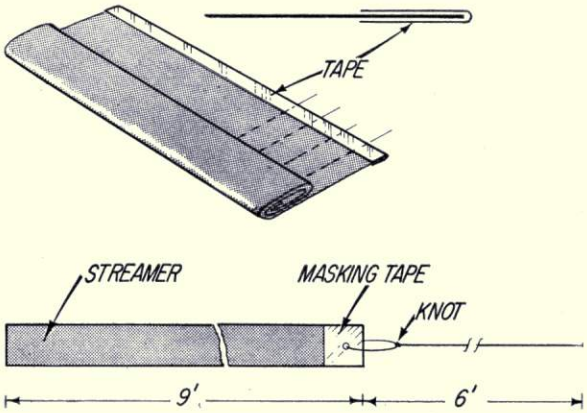
Combat fliers have, in the past, gained something of a reputation for being an argumentative bunch – but now and again there are certainly grounds for disagreement, particularly concerning the streamers used. Most combat organisers make up streamers with rather weak cotton or thread but Frank Smart reports that it is much more satisfactory to use thin (slightly less than 1/16 in. diameter) sisal string. He first came across streamers made with this form of attachment at the '72 Dutch International and has since had experience with them at the South Bristol Meeting as well as using them at the Southern Gala. What are the advantages?

First of all, the string is much stronger than thread and although it can be cut by the propeller it is possible that the string will collect around the engine's prop. driver, pulling the models together. This is quite a deterrent, after you have done it once. . . . In practice, Frank tells us that he and his club mates now fly more tactically, following the opponents model around rather than going

The basic ingredients for moulding a large cockpit canopy, as detailed by Claus Maikis. Top picture shows the pattern with ply handle, together with the celluloid hanging from its wire frame, ready for placing in the oven. Below, the operation completed with the hardwood strips pulled down over the pattern. Note the gloves – use them!







for the older 'hit or miss' attacking method. This makes flying a little easier once the knack is acquired – and, in any case, is the method used by the best fliers anyway – just watch Vernon Hunt as an example. Another factor in favour of string is that the streamer does not revolve, shortening the thread – the full six-foot length nearly always sticks out straight, which helps keep the attacking model at a little safer distance. The stronger string also deters those types who break the string during a change to the reserve model, hence bringing the streamer close up to the model while another 'fiddle' that is prevented is that of the pit crews removing the thread (with knot) from a model after a collision. This is often missed by scorers as the thread is so fine it is hard to see.

Another neat idea from the Dutch was the method of attaching the string – they simply folded a 2-inch width of masking tape over the end of the crepe streamer and using a paper punch, made a neat hole through which the string was passed and tied in a loop. This stops the string from 'squeezing' up the end of the streamer. It has been found that the easiest way of producing streamers *en masse* is to fold a length of masking tape over the edge of a sheet of crepe paper, before cutting it into strips with a straight edge and balsa knife used against a flat board.

New racing goodies

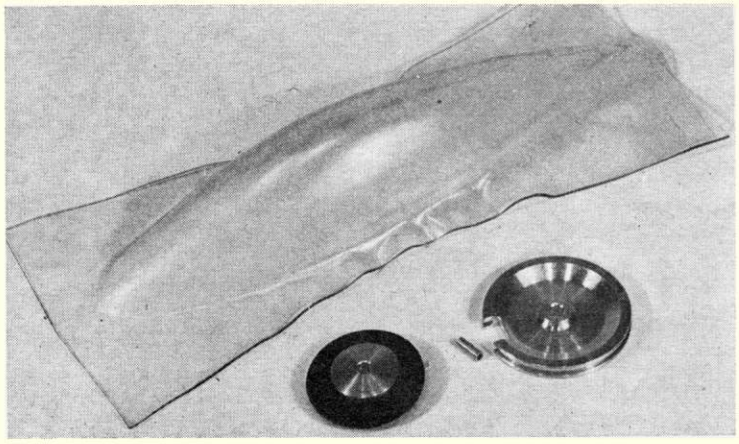
It is always good to be able to mention the availability of specialised accessories for the contest enthusiast. This is not due to inherent laziness on our part – there must be many people who lack the time and/or facilities to produce some of the more essential hardware – this being particularly true for team-racing enthusiasts. There is certainly a big demand for such niceties as fuel shut-offs, special carburettors, tanks, etc., for F.A.I. team race. Many readers will recall that some time ago we reviewed such hardware made by the ace German enthusiast Konrad Kaul. Unfortunately, over-demand and lack of time forced Konrad to cease production of his superbly-made items, but not before they became much sought after, literally all over the world. Now, however, his friend and sometime pilot, Gunther Schwarz is prepared to make these same items, plus other 'goodies' such as circular bellcranks, allen key headed comp screws, etc.; an international reply coupon sent to him at 7145 Markgroningen, Ludwig-Heyd-Str. 6, West Germany will produce a complete list. Gunther used to help Konrad in his previous range of accessories – so the quality of workmanship should be assured. We hope to review more of these items in due course.

In the meantime and rather nearer home, John Daly comes to the rescue of those who need good, 1-in. diameter wheels. If you have ever tried to buy suitable wheels from your local stockists, then you will appreciate what an excellent product John is making! The tyres are of a very hard compound mounted on a large diameter aluminium hub – from which they will *not* depart. Price is 50p each – and as they say, tried, proved and highly recommended! Another item from his workshop is a lightweight circular bellcrank, ideal for burying in the wings of either F.A.I. or Goodyear racers and this is priced at just 35p. Write to John at 262 Adswood Road, Stockport, Cheshire.

You just might be interested in one of his MVVS 2.5 cc. diesels, specially tuned for Goodyear racing as well. Priced at £15 they are prepared in exactly the same way as his own units which have proved so successful. Regret we have not had a sample, though. . . .

At the same time his pilot-associate, Dave Clarkson, has produced some bubble canopies suitable for F.A.I. team racers, moulded in thick P.V.C. Although not as crystal clear as acetate, they are nonetheless transparent and certainly tough. Dave advises that these be glued in place with a P.V.C. adhesive – nothing else will do the job – and that only a thin smear of this adhesive should be used to avoid melting the material. Good value at 25p, available from Dave at 31 Conway Road, Cheadle Hulme, Cheshire.

Availability of all such components can only be for the good of healthy team-race support – it certainly gives the novice to competition racing a chance to compete on more even terms with the experts.



Team race accessories from Messrs. Clarkson and Daly. The cockpit moulded in transparent P.V.C. measures 6 in. long, 1½ in. wide, ⅞ in. high and is very strong – well worthwhile if your model tends to 'turn turtle'. Tyre compound on the alloy hub is of a very hard nature, and will not come off even under severe usage. Drilled to fit 10 s.w.g. In the foreground is the circular bellcrank, which measures 1⅜ in. in diameter. Leadouts should consist of stranded Laystrate, wrapped 1½ times around the unit and retained by crimping up the tube which is then soldered to the lines and positioned in the cut-out shown. Drill your own pushrod hole to suit your preference.

24th INDIAN NATIONAL CHAMPIONSHIPS

as reported by Prasanta Banerjee

ORGANISED by the *All India Aeromodellers' Association*, the 1972-73 Nationals attracted a record total of 276 contestants. Held at Behala airport (near Calcutta) the Championships were once again lucky with the weather, it being bright, sunny and warm, with a generally light breeze (around 5 mph) plus weak, but abundant, lift.

First event of the day, **Open Glider**, was flown early in the morning and with 62 entries had the most activity. Winner was Cadet Stanam Singh, all the way from Punjab, with a brand-new *Lucifer*. Stanam flew 'on his own' and managed three flights in rapid succession, all in good air – to log the only treble of the event. Second was Calcutta's Deepak Bhowic, with two maxes and a 'hole' with his usual *Meanderer*, whilst Tapan Das and Om Praksah Mehrotra tied for third place.

Fifty-eight enthusiasts entered in **Open Power**, and once again A.P.S. designs dominated. Top place went to Cadet A. K. Halder who just missed maxing out with his auto-rudder-equipped *Eliminator*, but still had a clean lead over Sunava Roy (flying a *Eureka)* and Cadet Tapan Baghchi who flew an earlier version of John O'Donnell's *Pendleton Fault*.

Flown concurrently, **Control Line Stunt** had around a dozen entries and was decided by the aggregate score of two rounds. The scores tended to be a little lower than the previous year and Vanu Majumdar won despite a 'below par' performance with a small-area (.19 powered) *Crackshot* – a design based on W. Morley's *Thunderbolt* from A.P.S. Speed (2.5 cc) did attract a lot of entries, but only two managed to record a score. Winning speed was 95.2 mph and was provided by Vanu Majumdar's solid balsa-winged O.S. Max model that was flown on two lines.

Focal point of interest of the afternoon session were the two radio events. **Single Channel** (confined to 'bang-bang' users) was flown first and resulted in a win for Irshad Anwar with a very fast, semi-symmetrical wing, *Bazz Bomb* type design. Powerplant was a 'past-prime' Moki S-2 glow engine turning an 8 in. x 6 in. propeller. Radio used was MacGregor superhet. **Multi Aerobatics** was poorly supported but provided a spectacle that the huge crowd of onlookers (estimated to be around 5,000) obviously appreciated. Top was Siddharta Roy who flew an impressive pattern and took the event by a handsome margin. The model used was an extensively-modified, clipped wing *Super 60*, that sported a Merco 29 and Futaba R/C. Second, a long way behind the leader, was M. Jalan with an Anwar-designed *Circus* (Enya 29), while young H. Jalan was third flying an O.S. 19 *Schoolmaster*. Both Jalans used Skyleader proportional outfits.

Precision (F/F scale) was flown next and saw a win for Somnath Ghosh's well-documented Taifun Hurrikan powered *Monocoupe*. Runners up were Nilmoni Ghosh (Mills .75, *Auster Alpine)* and Vanu Majumdar (A.M. 10 powered *Chipmunk)*. Payload was closely fought and was won by Cadet Debu Ghosh's Fog 1.49 'stretched-out' *Tomboy*. Surajit Bose (P.A.W. 1.49) was second just ahead of Provash Dhar's A.P.S. *Pay Day*.

The **Aero Modeller Challenge Cup** (Open R/P/G) was flown late in the afternoon and had ideal conditions. Little thermal activity was evident and the eventual winner, Cadet Om Prakash Mehrotra, had to work hard for his treble max score. His *G-90* A/2 is to a 'conventional' layout and utilises the Kaczanowski GF 6 airfoil section. Following places went to Subhas Das with a *Lucifer* and Deepak Bhowmic with his usual *Meanderer*. Despite power being the usual favourite for this event Pravash Dhar could only manage a fourth with an A.M. 35 equipped *Swiss Miss*.

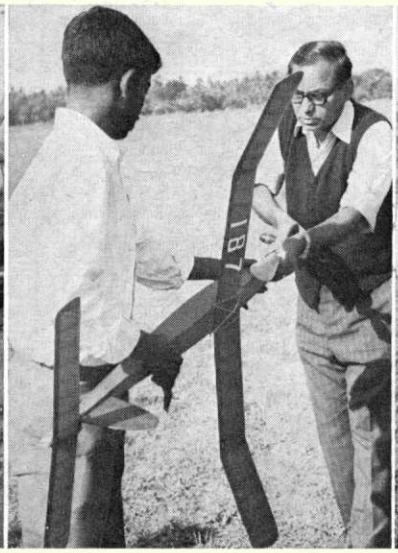
Open Rubber had just 12 entries and was topped with comparative ease by T. N. Sreivastava (Indian Airlines) with one max and two respectable flights from his Open model that features A.P.S. *Ohio* surfaces atop a 'normal' Open fuselage. Ravi Kumar and A. K. Banerjee filled the minor positions.

F/F Seaplane had 2 x 3 minute maxes, compulsory R.O.W. plus a two-minute flotation test. Power models were allowed a maximum engine run of 20 seconds. There were 32 entrants for this year's event but the drop-out rate was phenomenal. Just four competitors – all flying power – managed to 'qualify'. First place went to Surajit Bose whose P.A.W. 2.49 *Eliminator* (complete with foam-cored and balsa-sheeted floats) made quite the best R.O.W. of the day on its final flight to total around four minutes. Long-time floatplane enthusiast Tapan Bagnchi provided second with but a single flight from his ancient Fresl-designed *Achilles* from the A.P.S. Third was H. Biswas, despite dunking his best model on its first flight. His final flight with a *Topsy* was rather more successful and placed him just in front of Cadet A. Chowdhury with a *flying boat*.

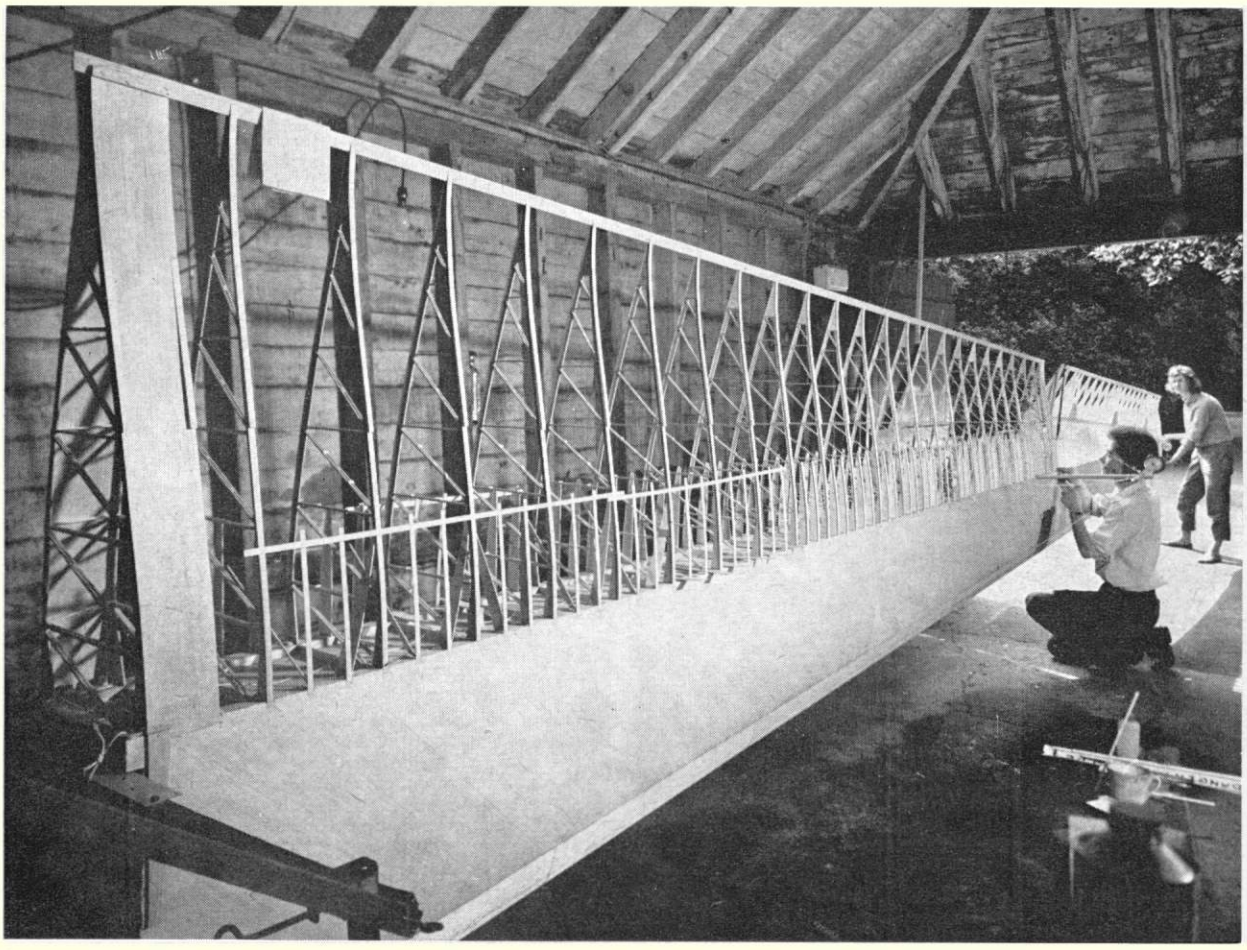
Prizes this year included trophies, engraved plaques and cash, and were presented by the wife of the Governor of West Bengal at a fairly formal affair held at the A.I.A.A. Headquarters in Calcutta, a couple of days after the Championships.

Subhas Das with his 'Lucifer' which was placed second in the Aero Modeller Challenge Cup – seen here after a little 'tree-covery'!

T. N. Streivastava begins to wind his winning Open rubber model which features 'Ohio' flying surfaces. Has a 14-strand, 3½ oz. motor, 20 x 32 in. prop.



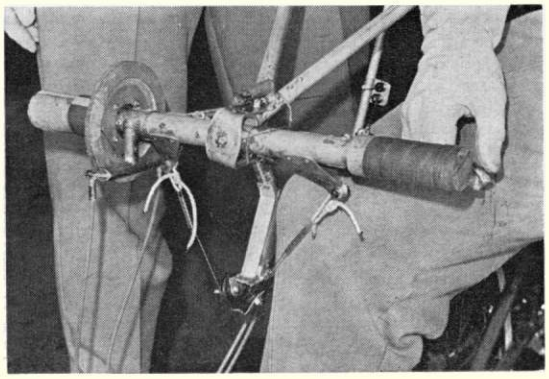
Sachin Mondal, a keen junior flier, placed fourth in the glider event with his well-built 'Altair'.



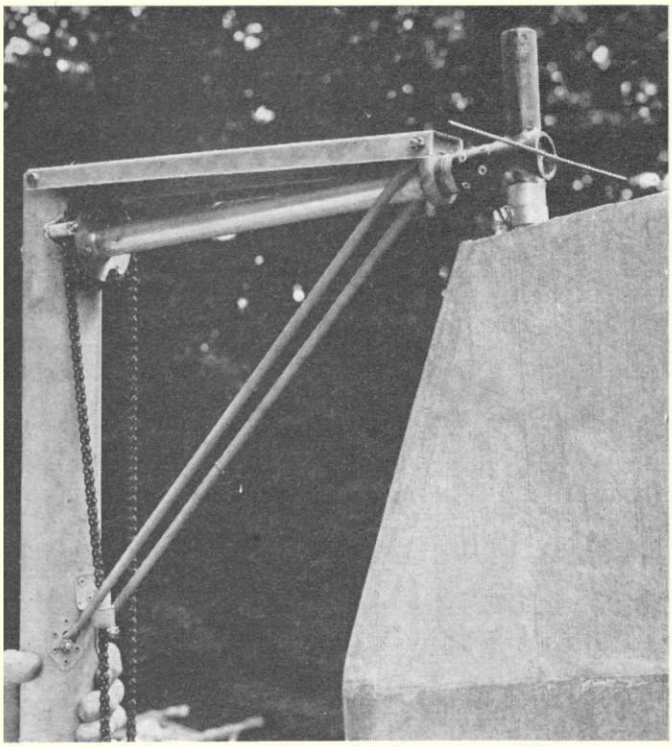
Part 3 of Chris Roper's description of his man-powered aircraft

JUPITER

THE PILOT POSITION I chose was that of the conventional cyclist, for the simple reason that cyclists had been doing very well with it for several years, so why change? I borrowed pedals, cranks and wheel, from the bicycle world, while the chain was a standard Renolds item which stood up excellently to the abuse of being twisted through 90 degrees in the drive up to the propeller. I made the sprockets from light alloy sheet, using the standard steel ones as templates, while all the other transmission components were specially made, including the bottom bracket spindle which was like the standard item for cotterless cranks except being designed to run inside ball bearings. It was also slightly longer than normal so that the pilot's feet are spaced farther apart, thus giving more room for a decent width of wheel. Now as half the world read with their cornflakes on 20th March, that wheel buckled – thus it would seem that there is not really very much future for the concentric wheel and pedal layout. Granted, two aeroplanes have used it (we each thought of the idea independently), but I feel there must be a better way. This bottom bracket spindle and



Just some idea of the enormity of building an 80 ft. span wing is shown in Kenneth Bray's heading picture which also reveals the problems of working space. When the wing panels were joined, the tips protruded outside the building, where they consequently warped if the sun was over-generous! At right, the control system is very simple – a modified motorcycle twist-grip on the right gives elevator control, while another on the left operates the rudder. The handlebars pivot for aileron control.



The pylon head is lightly braced to support the propeller hub. A standard Renolds chain stood up well to the abuse of being twisted through 90° from the cycle sprocket to the prop drive Pylon itself is from a convenient piece of 2½ in. diameter light alloy tube.

the wheel hub, which was drilled to take standard spokes, was made by Gronland Ltd, a local firm who worked from my drawings, although they never knew what the parts were for! I made as many of the other machined parts as I could in the workshop at St. Barnabus School, Woodford Bridge – to whom I am much indebted.

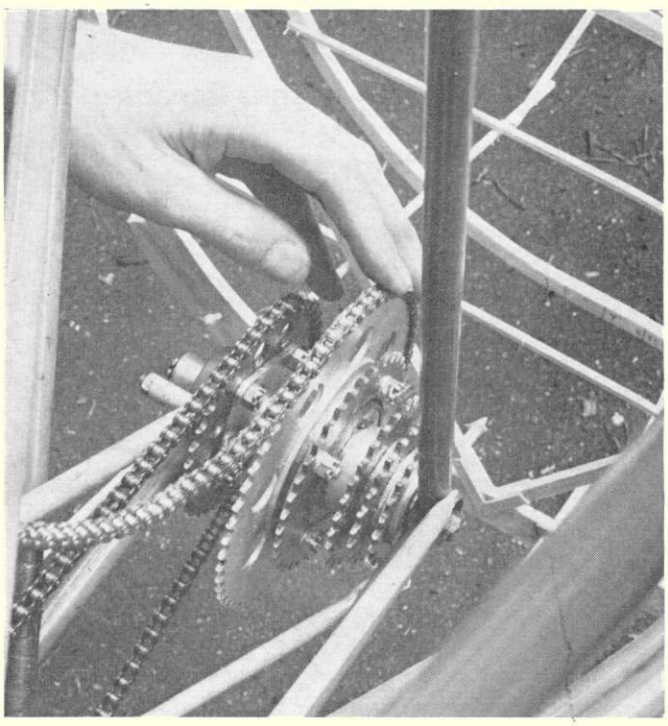
The shape of the fuselage is the result of a series of logical steps – firstly a fairing had to be put around the pilot, then a rear portion was needed to fix the tail upon while the wing was mounted high to reduce interference drag and to keep the tips well clear of the ground. The propeller was then mounted in the only space left, with a pylon to support it. The shape at the base of the pylon is most critical as if this is done without care the interference drag can be excessive. The rule I followed was never to have any one component decreasing in thickness adjacent to another component decreasing in thickness; thus the top of the fuselage above the wing is arranged to fair into the wing before the thickest part of the wing. The pylon does likewise, but I broke the rule slightly by having the pylon tapering off adjacent to the fuselage tapering off, but knowing this, I chose a section for the pylon root with a narrow taper on the aft part, i.e., a slim section with maximum thickness fairly far forward. As the photographs show quite a lot of the 'nose' comes away for pilot access and it proved useful to have this size 'door' to get at the transmission for adjustments. The pylon tip has a removable fairing in a similar way for propeller shaft access, as also at the tail there is a rectangular access panel held on by rubber bands. If we wanted access to anywhere else inside, the only thing to do was cut away the covering.

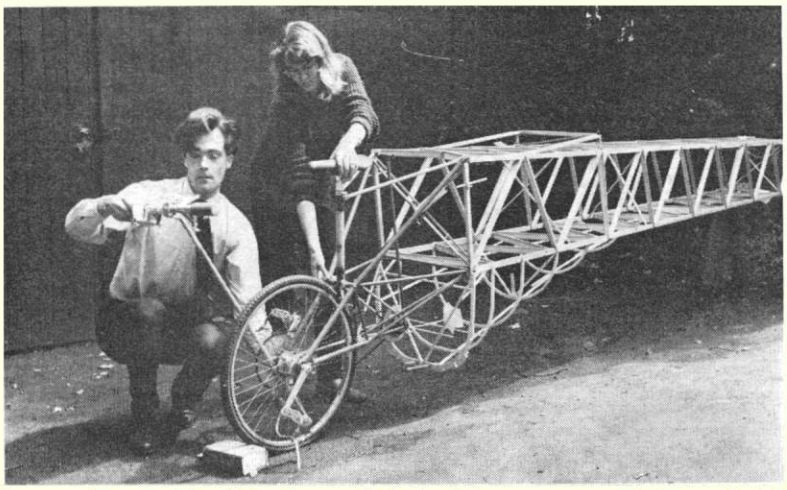
The light alloy sprockets were made by hand, using the standard steel ones as templates. All the transmission components had to be specially made or adapted from standard racing cycle parts.

I considered several materials for the seat frame, but it is all very well looking at tables of strength to weight ratio and thinking what exotic material you would like, but when you have actually got to make it, it has to be some material you can cut and join, or get someone to cut and join. Thus I chose standard aircraft 22 swg steel tube of ½ in. and ¾ in. diameter. I did the cutting and a local cycle builder, who has now retired, Frank Lipscombe, did the joining by his standard brazing method he used for his racing cycles. The frame itself is a 'space frame', i.e., the tubes do not all lie in the same plane, so a highly complicated jig was necessary to hold them while being brazed. I got around this by first making up flat sub-frames; that is, where two or more tubes do lie in the same plane I got these fitted and brazed together first, then the sub-frames were jigged together to make up the entire seat frame. An idea of the lack of resources that were available for the building of *Jupiter* can be gathered from the fact that we had the jigged-up, but as yet unbrazed, seat frame mounted on a board and carried this to the cycle shop, a three-mile walk.

The rear fuselage was built in what, in an aeromodelling magazine, I can only describe as the 'standard' method. Slab sides were made up first on the bench from spruce longerons tapered as per the wing spars and then diagonal girder bracing of 'H' section (made from two strips of spruce, one of balsa). The front of this was made to mate with the seat frame to which it was bolted. The fuselage sides completed, they were jigged up on the bench and the top and bottom made up of bracing strips as for the sides. Yet another component of *Jupiter* was complete.

The tail components were made in very much the same way as the wing, the all-moving elevator having a spruce box built up like the rear fuselage – a mistake on my part





A local cycle builder brazed the 22 s.w.g. standard aircraft tubing to make up the space-frame construction of the 'cycle frame'. Jigging up this frame was quite a problem – as was its transportation to the brazer – it had to be manhandled on a board to his premises, a journey of some three miles! Remainder of fuselage follows conventional model aircraft practice and bolts to the frame part. Conventional cycling position was employed for the pilot, although the wider front wheel meant that the cranks are further apart than normal.

because the assembly of the thousand, that's right, one thousand, bracing strips threatened to delay the whole project. I should have specified ply panels as on the wing. The fin and rudder are all balsa, being built up with diagonal bracing strips in the same way the lower fin acts as a fairing for the tail wheel shock absorber, which I made from laminated spruce. Another mistake was that the tail wheel is non-castoring, which doesn't matter once you are flying, but it did make manoeuvring on the ground quite an operation.

The pylon structure consists basically of one $2\frac{1}{2}$ in. dia. by 24 swg light alloy tube, which I happened to have left over from a previous project. It has proved just about stiff enough to carry the vibrating load of the chain tension and propeller thrust, without excessive deflection. We tested the transmission as early as we could – just the bare structure tethered to the ground and a dummy prop. What we were interested in was whether the chain would 'twist' as we wanted and that the pylon or anything else would not fold up. Above all, of course, we wanted to make sure that the propeller would actually go round when we pedalled! It gave out some ghastly noises which we attributed to the chain jumping a tooth and we thought we had rectified this by fitting a guide where the chain went over the top sprocket. However, this tooth-jumping occurred again and was finally solved by having a spring tensioner, as on a derailleur gear. Otherwise the transmission worked O.K.

Now the fuselage wanted a fairing. The rear part just had the slab sides covered in Melinex, but a more elegant shape was chosen for the nose. The horizontal hoop frames were made-up first, from 'H' section strips made from 1/16th sheet balsa. These frames were then lined-up to the wing ribs and the vertical ($\frac{1}{4}$ x $\frac{1}{2}$ in.) posts added. The stringers at the top and bottom at the nose of the fuselage on *Jupiter* were made from laminated 1/16-in. sheet to make up a $\frac{1}{4}$ x $\frac{1}{4}$ in. section. When laminating these up I found that I could never quite get the curve I aimed for, so the only way to do it was to make one and then find a place where it would fit.

Having made the nose of the fairing, it was assembled to the fuselage and the sides made to fit. By this time the machine had moved to Halton and in John Potter's choice of silver Melinex was, at last, looking like an aeroplane, having all the usual parts in more or less the usual places. We could disconnect the wheel drive and have a go at driving the propeller. I did this and promptly stripped the thread in one of the cranks. I did not know then that you need special pedals for light alloy cranks. Morale took a downward plunge. What else was there that I did not know and might show itself up? The thing might look like an aeroplane but there seemed an awful number of other bits that I might not have got right. The question was, would it fly?

At left, pilot Flight Lieutenant John Potter tries the 'hot seat' for size in front of R.A.F. Benson's hangars. Nose cone has yet to be fitted. Note how he wears white cotton gloves – this is to prevent his hands slipping on the controls due to perspiration It can get pretty warm in the 'cockpit', especially when pedalling like mad to maintain altitude.

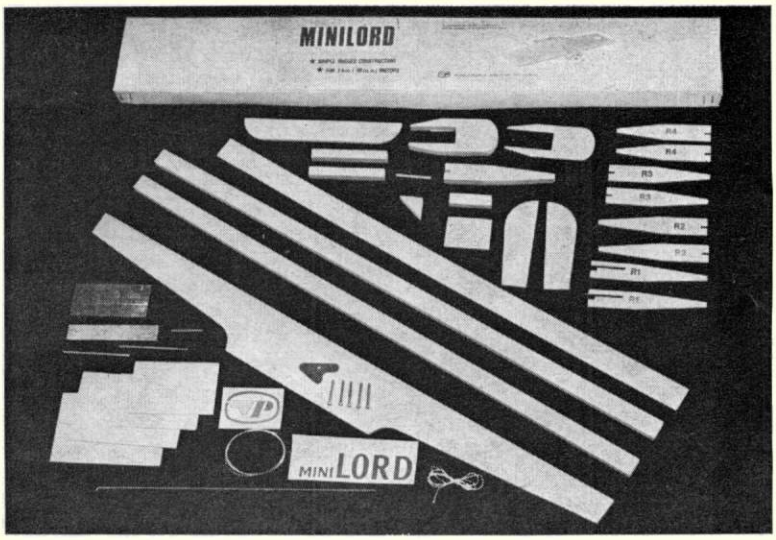
The pylon for the propeller is streamlined with balsa strips and, like the rest of the aircraft, covered in silver Melinex. Propeller itself has never been modified since it was built, although provision was made to enable the pitch to be readily altered.

PEGASUS MODELS

MINILORD

a 25 in. span control-line model for 1.5 c.c. engines

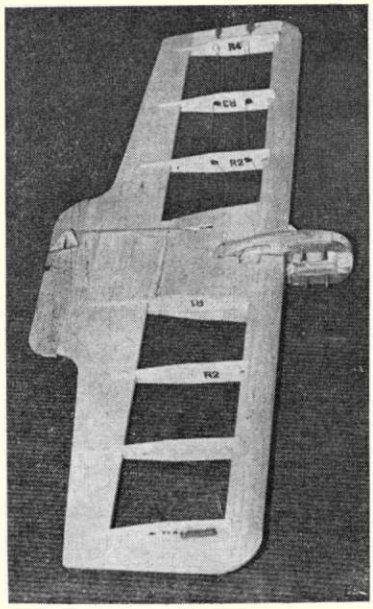
Kit reviewed by HARRY TIMMS



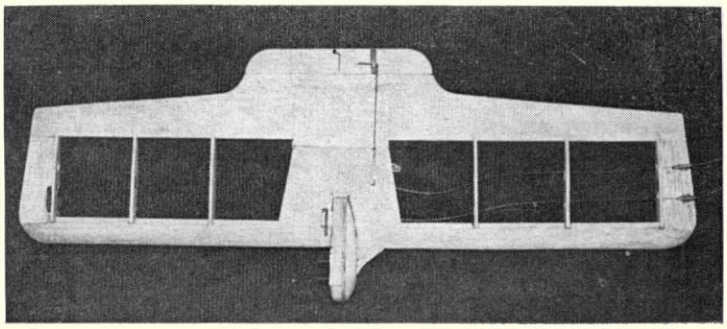
Spread of components at right reveals the utter simplicity of this design – plus the completeness of the kit's contents. Even the thread for stitching the elevator is supplied!

INITIAL IMPRESSIONS when inspecting this kit were very good, the balsa being of high quality and the ribs accurately die cut. All materials in fact proved just first class and this is the first kit I have seen that even includes thread for the elevator hinge! The instructions were clear in the main but very brief. One almost gets the impression that the makers intend this model for experienced modellers, but for my part I would have thought that junior flyers and beginners form the major market for a 1.5 c.c. combat model. If this is the case, then I feel the instructions could be expanded, for example parts are stated as 'glued' together: to an experienced 1973 modeller, epoxy would be employed around the engine mounts not any old 'glue' – this point I feel should be made on the instruction sheet.

Construction began following the instructions religiously, if Pegasus don't know how to make a *Minilord* better than I, then they ought to! At this point snag No. 1 reared its head; the plan has an abbreviated outer wing panel, and after a lengthy perusal of box lid, plan and instructions I could not find the actual span marked anywhere. Knowing that models of this type have the inner wing longer than the outer I measured the rib spacings shown and deduced the correct span. This point will no longer arise as the manufacturers now include a separate sheet with the rib spacings, span, etc., marked. The self-jigging design of the leading edge, I thought particularly neat – it would be difficult to build a warped wing. Following directions the wing 'fell' together with the control system installed, (the way in which the bellcrank platform interlocks with the main wing structure and engine pod being particularly effective), I then set about the fuel tank. The method of construction allows you to solder both the tubes in place before the end and side piece is installed. This enables you to solder the pipes (which are soft brass or copper, and easily bend to shape) internally thus making a very rigid and solid tank. This installed, I set about making the engine nacelle. Our worthy Editor had supplied me (via Gig Eifflaender) with a new P.A.W. 1.5 D.S. diesel and here snag No. 2 arrived. If the engine bearers were 'glued' to the 1/16 in. ply plate as instructed the engine fouled the ply, i.e. the bearers were not deep enough. If the ply were cut away the structural integrity, as our colonial cousins would say, would be impaired. Now I may be old fashioned but I do not like spruce



These two pictures of the uncovered model show the conventional 'combat style' construction. Very strong yet easy to build, and well able to withstand the inevitable 'bumps' into the ground.

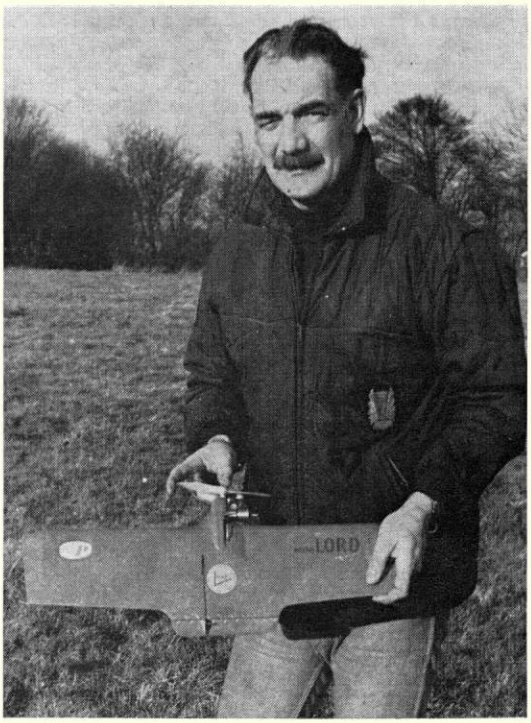


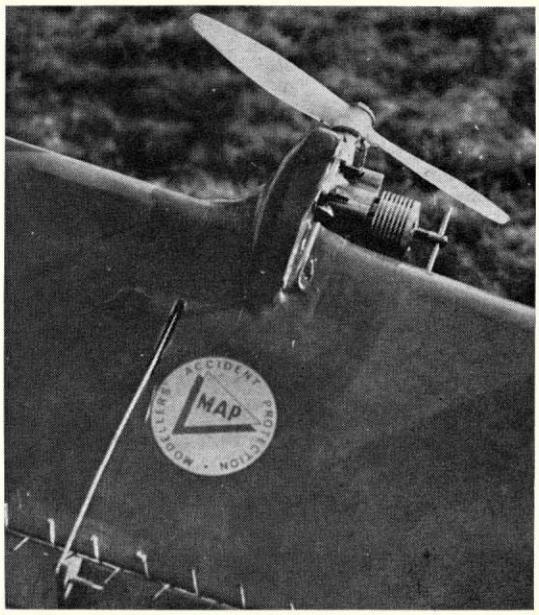
Engine used was the new 'DS' series PAW 1.49, which provided more than adequate power – indeed, the model proved quite rapid, even when flown on three-strand, 50 ft. long control-line wire. Would recommend shorter lines in windy weather.

engine bearers so I epoxied 1/16 in. aluminium to the tops of the bearers, cut out the ply base plate, and epoxied another 1/16 in ply base plate to the first which gave clearance to the engine crankcase. As a further insurance the engine bolts were epoxied in the bearers, the $\frac{3}{8}$ in. balsa cheek epoxied in place and the whole mess clamped up and left 24 hours. A phone call to *Pegasus Models* revealed that our kit was a 'test shot' and that the bearer size is in fact $\frac{3}{8}$ in. × $\frac{3}{8}$ in. – we were just unlucky – and so this problem does not arise in any kit sold, a fact which a check on stocks available proved.

When I came to assemble this little lot to the wing I found that it needed to be $\frac{1}{8}$ in. further forward than shown on the plans, to achieve balance in the most forward position marked. I think that the trailing edge and elevator materials supplied must have been a little heavier on the prototypes. Now because of this, and the 'mods' at the front end, the all-up weight seemed a little on the high side so a major departure from the plan was taken. I decided to cover in Solarfilm instead of nylon and dope as specified.

The structure is amply strong and very rigid so I did not expect any problems, especially after seeing the Editor's lightweight P.A.W. 2.5cc powered Solarfilmed combat 'thingies'. Incidentally, our Pete has a nylon-covered *Minilord* so we know that they work that way as well, in fact the all-up weight of each were practically dead-on 9 oz. After the construction was finished I totalled up what had to be bought to finish the model: I made it P.V.A. glue, epoxy glue, a little fuel proofer, 2 ft. of red Solarfilm and two fishing swivels for the line connections. This, I think, is a very low count, the lowest I have come across.





Summing up the construction and structural design, this is obviously the work of people who know their business and have lots of experience building models to take knocks. Any criticisms I have made should be read bearing in mind that this was a first-run kit and those in the shops have been revised.

The model was flown on a very cold but sunny day. The new P.A.W. 1.49 D.S. (a new model in that the timing has been revised for running with a silencer, with sub-piston induction now eliminated plus the adoption of a squish head) seems very powerful for its capacity. We used a KeilKraft 7 in. × 6 in. prop and the recommended fuel mix, and found that cold starting was only reasonable – but bear in mind that the temperature was below zero, definitely not good 'diesel weather' and hence not a fair test.

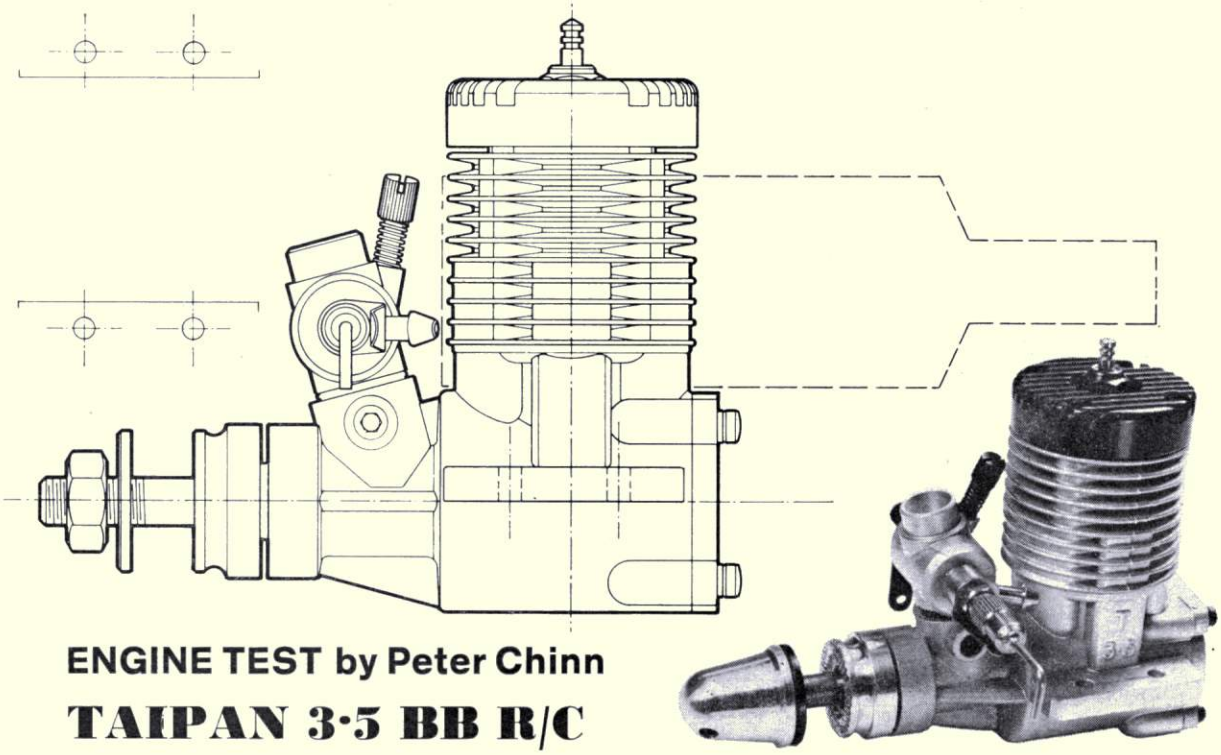
The *Minilord* was flown on 50 ft. of light Laystrate lines. **Pegasus** told us that it would out turn a *Warlord*, on 50 ft. lines, and though we thought this might be a somewhat rose tinted view, we were forced to agree! It certainly flew better than my *Orchrist* with P.A.W. 19BR.

Even with the centre of gravity in the most forward position indicated, the model had a *very* small looping radius, and proved to fly identically whether upright or inverted while the controls were also very smooth around neutral – in short, highly aerobatic without being 'twitchy'. The P.A.W. pulled the model round very quickly and ran well through all manoeuvres proving not to be over-sensitive to adjustments.

On reflection, I do not think that the Solarfilm covering was a good idea in this case – it is certainly adequate but the model is not as stiff as the prototype covered in nylon. We later 'dinged' a wing tip when the engine cut overhead.

In short, this is a remarkable little plane and I would think an excellent stunt trainer and fun-type combat flyer. I was likewise impressed with the P.A.W. 1.49 D.S., in fact both model and engine are very good value for money at £1.65 and £5.50 respectively (inc. V.A.T.)

No, the 'Minilord' is not really that small, it's just that when the reviewer is some six-foot-six, it seems that way. Motor and model proved an ideal combination for fun flying, or, of course, for ½A combat use.



ENGINE TEST by Peter Chinn

TAIPAN 3·5 BB R/C

TAIPAN ENGINES, distributed in the U.K. by *Model Aircraft* (*Bournemouth*) *Ltd.* and by *Performance Kits* of Sandy, Bedfordshire, are made by Gordon Burford & Company Pty Ltd., of Henley Beach, South Australia.

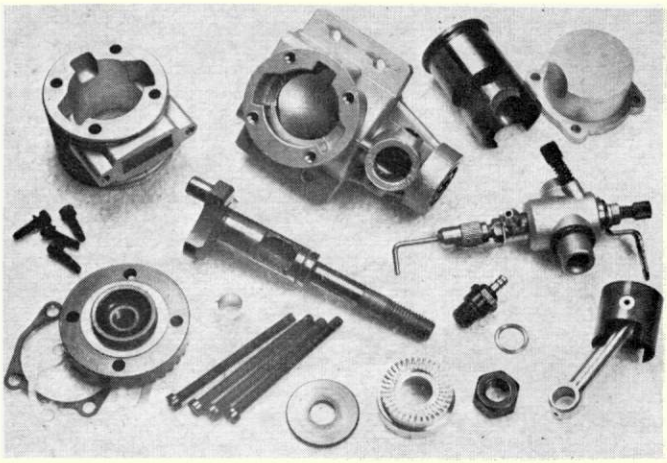
The Taipan 3.5BB is the latest Burford contribution to the popular .19-.21 cu. in. (3-3½ cc.) group and a very worthy addition it is too. Put into production last November, it is a development of the plain-bearing 3.5 cc. engine introduced a few months previously. The engine submitted for test was the throttle-equipped, aircraft type. There is also an R/C car version with larger bore carburettor and heat sink-type head and one presumes that a standard free-flight and control-line version will also be obtainable, as in the case of the plain bearing model.

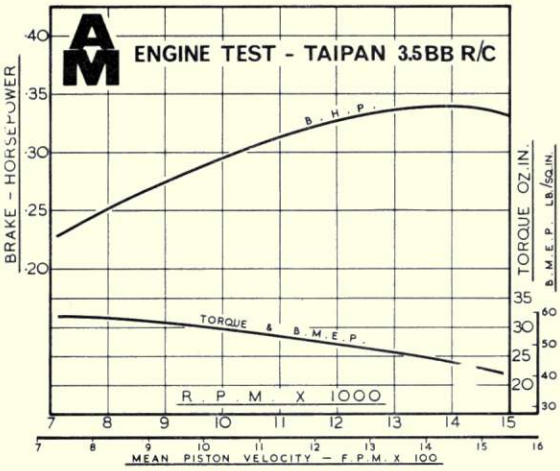
Like most glowplug engines of its size and type, the Taipan 3.5BB is a beam-mount engine with shaft rotary-valve induction and a lapped piston. It is different from the general run of '19' and '3.5' engines, however, in that it features the Schneurle loop scavenge porting system now widely used for racing-type engines and to facilitate the production of the cylinder casing with its special transfer channels, the body of the engine is made in two parts, the cylinder casing separating from the crankcase just below the level of the exhaust duct.

The cylinder porting consists of a rectangular exhaust port of moderate area (37 sq. mm) which remains open for 136 deg. of crank rotation. The two main transfer ports, located fore and aft, are opened at 59 degrees before BDC and are angled to direct gas flow away from the exhaust port. The third port, circular in section and inclined steeply through the cylinder wall, opens a couple of degrees later than the main transfers. The flat-crowned piston, as befits this type of porting, has no baffle and the cylinder-head forms a bowl-shaped combustion chamber surrounded by a narrow squish-band. A good, substantial conrod is used and the gudgeon pin, closely fitted in the piston bosses, has aluminium pads.

Unlike the majority of quantity produced model engines, the Taipan uses gravity die-castings, rather than pressure die-castings, for the crankcase, etc., but these are exceptionally well turned out and have a finish that is no less pleasing than that of a well-executed pressure casting.

A barrel throttle-type carburettor, somewhat resembling that of the Austrian HP R/C engines, is used. In this, the throttle barrel moves sideways as it rotates towards the closed position and, in so doing, the idle-needle installed in the barrel enters the fuel jet and adjusts the quantity of fuel admitted, according to engine speed. The effective choke area of this carburettor at full throttle is approxi-





mately 8.5 sq. mm which is quite moderate for an engine of this size and should ensure good fuel suction through manoeuvres. The rotary-valve has rectangular ports and is timed to remain open for approximately 196 degrees of crank angle, opening at 36 deg. ABDC and closing at 52 deg. ATDC.

For use on the Taipan 3.5, there is a special Taipan silencer of the venturi or extractor type. It fits neatly on to the Taipan's exhaust duct with two socket head cap screws and is provided with both a priming hole and an optional tank-pressurisation nipple. The silencer consists of a gravity-cast cylindrical chamber through which is fitted an 8.6 mm i.d. extractor tube having three 22 x 1.3 mm slots, giving an exit area of 86 sq. mm.

The Taipan is a little heavier than the average ball-bearing R/C glowplug engine of its size, but it is strongly made and should stand up better than most to the rigours of everyday model flying.

Performance

From the first, the starting qualities of the Taipan were excellent. Running-in and initial rpm checks were carried out on a straight methanol/castor fuel and the Taipan seemed quite happy on this. However, it was slightly better on our standard 5 per cent nitromethane test fuel, gaining a couple of hundred revs on a 9x4 prop. and firing more smoothly.

As the performance curves indicate, the peak output recorded (with the Taipan silencer fitted) was approximately 0.34 bhp at 14,000 rpm. This output is 35 per cent better than we recorded from the 3.5's predecessor, the Taipan 19BB R/C that was featured in the November 1967 issue. It puts the Taipan very definitely in the upper performance bracket among R/C engines of this size.

The most outstanding feature, however, was the exceptionally high maximum torque recorded on test. This was reflected in the engine's ability to turn quite large props. much faster than any of its rivals. It is the sort of engine that one could use equally well in a large, slow-flying, R/C trainer or in a fast, aerobatic model.

The prop. speeds we recorded on test included 9,500 rpm on a 10x5 glass-filled Super-Nylon, 10,100 on a 9x6 Taipan glass-filled nylon, 11,100 on a 10x3½ Top-Flite wood, 12,000 on an 8x6 Taipan glass-nylon, 12,200 on a 9x4 Top-Flite nylon and 12,800 on an 8x6 Power-Prop. wood.

Our test motor was only the second one off the production line. It was submitted to us exactly as it had been put together by one of the regular assembly workers and it had not been run.

This was done purposely in order that the engine could be regarded as a typical example, but we are not so sure that this effort, on Gordon Burford's part, to be scrupulously fair, was not tempting fate just a little too far! In practically all respects, the Taipan performed faultlessly. The one exception was a spot of bother we encountered with the idle screw. Having adjusted the main needle-valve for the optimum fuel/air mixture strength at full throttle, this was made too weak when the idle screw was adjusted for a satisfactory idle mix. In other words, the idle screw had to be screwed in so far that it did not withdraw completely when the throttle was re-opened.

We got over this, partly, by backing off the main needle several turns so that, in effect, the taper on the idle screw was controlling both the top end and the idle. This was not the complete answer but, by switching to a Fox R/C plug (the new Taipan R/C plugs were not quite ready at the time of testing) we managed to obtain a satisfactory compromise.

We are pretty sure, however, that the solution is a simple modification to the idle screw – i.e., a coarser taper – so that it weakens the mixture more rapidly as the throttle is closed. Our guess is that unless our particular engine was a totally isolated example, the manufacturer has discovered and already rectified this problem.

The Taipan silencer is not particularly quiet, which is understandable since the area of the extractor tube slits is 2.3 times the area of the exhaust port, but it causes no loss of power. On the contrary, we found that it actually added a couple of hundred revs – apparently due to the scavenging effect of the extractor tube.

To sum up, this is a nice engine. It is strongly made, well finished, easy to start and has plenty of power. We think that Australian modellers should be proud of it.

Power/Weight Ratio (as tested, with silencer): 0.55 bhp/lb.
Specific Output (as tested, with silencer): 98 bhp/litre.

SPECIFICATION

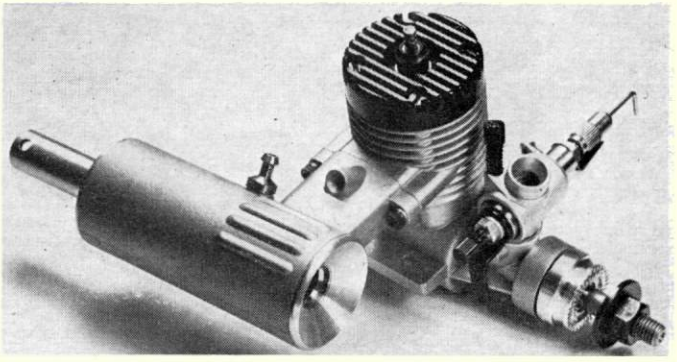
Type: Single-cylinder, air-cooled Schneurle loop-scavenged two-stroke cycle with throttle control. Crankshaft-type rotary valve induction and dual ball bearings.
Bore: 0.660 inch.
Stroke: 0.620 inch
Swept Volume: 0.2121 cu.in. (3.476 c.c.)
Stroke/Bore Ratio: 0.939:1
Checked Weight: 226 grammes = 8.0 oz. (less silencer)
281 grammes = 9.9 oz. (with silencer)

General Structural Data

Gravity die-cast aluminium alloy *crankcase* with integral front housing and detachable *rear cover*. Hardened, counter-balanced *crankshaft* with 10 mm o.d. main journal, 0.250 in. o.d. front journal, 0.218 in. o.d. solid crankpin and 0.285 in. i.d. gas passage and running in *ball journal bearings* front and rear. Gravity die-cast aluminium alloy *cylinder jacket* with drop-in hardened and ground steel *cylinder liner* flanged at top. Machined aluminium alloy finned *cylinder head* with black anodised finish and with .015 in. soft-copper gasket. Complete cylinder assembly tied to crankcase with four 1½-inch fillister head screws. Lapped cast-iron deflectorless *piston* with annular stiffening rib below gudgeon-pin and skirt cutaways front and rear. Fully floating 0.171 in. o.d. tubular *gudgeon-pin* with aluminium pads. Machined aluminium alloy *connecting-rod*, unbushed, with oil hole at big end. Die-cast aluminium alloy *carburettor body* with ground steel throttle barrel incorporating idle mixture adjustment screw. Adjustable throttle arm. Brass jet assembly. Machined aluminium alloy *prop. driver* mounted on shaft via alloy split taper collet. Beam-mounting lugs.

TEST CONDITIONS:

Running time prior to test: One hour.
Fuel used: (i) 75 per cent methanol, 25 per cent Duckham's Racing Castor-oil (Running-in).
(ii) Five per cent pure nitromethane, 75 per cent methanol, 20 per cent Duckham's Racing Castor oil (Performance tests).
Glowplugs used: (i) Taipan long-reach medium heat rating as supplied.
(ii) Fox long-reach R/C bar type.
Air temperature: 50 deg. F.
Barometric pressure: 30.10 in.Hg.
Silencer: Taipan extractor type as supplied.



FREE FLIGHT COMMENT

Roy Roberts and his 14-year-old son David both secured places in Chuck Gliders at the Worsley College meeting. This photo was reproduced on the sports page of the local Farnworth Journal.

THE PAST FEW MONTHS have witnessed quite a flurry of activity on both the outdoor and indoor scenes. As far as organised events are concerned, it has been the busiest winter for many a year. The period up to the end of 1972 was covered in my March *Comments* – but a lot has happened since then.

First contest of the New Year was the **East Anglian Winter Rally** held at R.A.F. Watton on 7th January. This area has run a Winter Rally for the past 12 years or so – purely as an 'internal' affair and without publicising it in advance to the 'outside world'. Nevertheless, the meeting has remained popular with their Area members who value such a get-together prior to the contest season proper.

Organiser, Lez Brambley (his spelling) sent me full results plus a comprehensive report that I have had to condense into a *Readers Digest* version. Attendance at the rally comprised almost all of the Area 'regulars' plus an unexpected contingent from Ipswich. The weather was very calm, but with a misty drizzle that caused the visibility to fluctuate constantly. At times an A/2 on top of the towline was not clearly outlined – whilst at others one could see across the airfield.

In these conditions Julian Hopper clearly picked the right moments to fly his rubber model, as he won the Combined Open event with a treble. Successive scores were low, but close, with glider and power models mixed quite evenly all the way down the list. Barry Halford placed second with an A/2, followed by D. Parker of Ipswich.

Combined F.A.I. was flown on a five-flight basis. There were more A/2s than Wakefields – and no power entries at all. Steve Bowles topped the results with almost 14 minutes, including three maxs, from his A/2. Mike Woodhouse was runner-up exactly a minute ahead of Barry Halford (flying Wakefield). The most unusual model came from Mike Johnson whose fifth-place A/2 featured a high A.R. vee-dihedral wing with a very thin airfoil section employing small, triangular turbulators close to the L.E. A short-nosed, glass-fibre rod fuselage carried an all-moving fin and a highly undercambered tailplane with the same dihedral angle as the wing.

The scheduled chuck-glider event was a non-starter – although Bob Wells could easily have made a fly-over. Perhaps the disinterest was due, in part, to the meeting only having one prize – the *Area Winter Trophy* (awarded this year for the 'Open' event).

* * *

A complete contrast, in almost every possible way, was provided by the **Northern Area's Winter Rally** at Topcliffe on 21st January. This was open to all, by virtue of its appearance in the 'Calendar' of several newsletters and featured half a dozen events all with guaranteed cash prizes.

Unfortunately, the weather man proved to be most unco-operative. A couple of days before the contest there was sufficient snow to deter even aeromodellers from long-distance driving. By the actual contest morning the Trans-Pennine motorway offered no problems to those who tried it and the usual N.W. support was assured. At Topcliffe itself the conditions were extremely cold with a strong, gusty wind – most unpleasant, especially when trying to cycle back upwind, carrying a model!

Far more people participated than I ever expected. There were a number of 'crack-ups' in the glider classes but all the rubber and power fliers were able to 'get away' successfully. The resultant flights were not always good, but that was hardly surprising.

Open Rubber was the most keenly contested with eight actual fliers, five of whom recorded the full quota of flights! Ron Pollard and Paul Lester retired with lost models, whilst my little, 36-inch model suffered from both an early-disappearance O.O.S. at 100 seconds and a rough landing thereafter.

Eventual winner proved to be Russell Peers with an *aggregate* of just under seven minutes – consisting of a max. and two short flights that landed inside the airfield. John Carter was second despite, or rather because of, a very poor third flight made in heavy rain right at the end of the contest. Ken Proctor edged out Ron Pollard by just one second for third place.

Open Glider looked an easy win for Terry Dilks, flying a much-modified *Pelican*. This has a one-piece wing, not to mention a D/T timer and a modern autorudder system. The last flight was lucky in getting 'help' after pulling off the line lowdown – but was superfluous in any case. Runner-up was N. Walton of York with one poor and one OO.S flight from a 'bitsa', using what looked like *Inchworm* components. I was third with a single-thermal flight, deliberately D/T'd early to assist recovery.

Power saw Russell Peers win over Brian Martin, thanks to making a short but crucial final flight just before closing time. Russell got less than a minute on the flight in question but it was all he needed to complete a successful day, even if expensive in terms of model damage. Brian's open model had a glass-fibre rod fuselage with *Dixielander*-style flying surfaces.

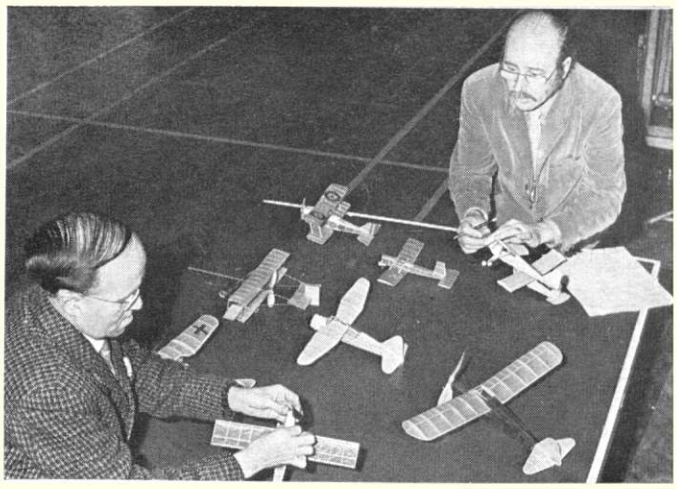
John Turner and I were the only ones to record scores in A/1 Glider and Coupe d'Hiver respectively, whilst Ewan Jones 'took' Chuck Glider from Ron Hoff.

Despite it being a financial liability, the organisers' decision to pay-out the advertised prizes can only be praised. Apart from providing some reward for those 'braving the elements', it also convinces them that the sponsoring Area also considers that the competition is of some importance.

* * *

After the preceeding account of the rigours of outdoor contest flying in the winter, the reader might well feel that there should be a less arduous way to enjoy aeromodelling. One solution is to fly indoors – undercover and out of reach of the weather!

For undefinable reasons, the N.W. Area has experienced a revival of interest in indoor free-flight over recent months. The Liverpool club was the source of this acitivity and their first real 'get-together' in the sports hall of Southport Y.M.C.A. was described in my March *Comments*. A repeat performance was arranged for 28th January and proved to be both well-supported and generally successful. The hall is small, being only 82 ft. x 50 ft. x 23 ft. high (to the bottom of the girders). There are those who decry contests in such venues as 'obstacle races' and of little interest to the real indoor enthusiast. There is some truth in the former contention – and even more in the latter. Certainly, it appears that low-ceiling events cater for a different clientele than do the meetings in Cardington. The restrictions imposed by a small site tend to act as a 'leveller' in more senses than one – and



Scale (not strictly Peanut) entries at Worsley being judged by Arthur Searle with Arthur Bailey in foreground. The attractive Westland Lysander seen in the centre would seem to be the result of our 'free plan' in the February 73 issue – how about a very light spray coat of paint to give it an air of realism?

far more modellers are prepared to participate.

The same attitude extends to the type of model flown. At Southport there was considerable interest in the 'Easy B', tissue-covered class and the event was hotly contested. In contrast, the other rubber event, for microfilm or 'non-formula' tissue models, was ignored to the extent of being cancelled. I was the only one with an eligible model and any interest in flying it!

Dave Barnes repeated his earlier win in the 'Easy B' contest, flying the same *Little Willie*. This design was featured as the free plan in the April 1971 *Aeromodeller*. Dave's two-flight total was just over nine minutes – and exactly three seconds more than my score. My design was unique in having tip-dihedral, useful as a recognition feature if nothing else! Phil Owen filled third position – one down from his December place.

Chuck Glider must be a N.W. speciality. Certainly the interest extends to the indoor variety and the event was well-fought. Experience had indicated that flights should be timed to tenths of a second, not merely 'to the second below' as is normal (outdoor) practice. The precaution was justified as Barry Kershaw took first place just a fifth of a second ahead of Mike Duce! Their flights averaged out at 21 seconds a time – which seems to agree with the usual expectation of one second per foot of available height! Roy Roberts was third, whilst his 14-year-old son David took the Junior award.

The best chuck gliders were large and light. Kershaw's winner had a 1/16-inch sheet wing, bent to undercamber and of 16-inch span by 4-inch centre chord with very shallow vee dihedral. The fuselage was 19 inches long, with 8½ inches between wing and tail and was cut from 1/8-inch sheet. Tail surfaces were from some carefully conserved 1/32-inch SIG balsa.

Biggest surprise of the day came from the Scale event that surpassed all expectations by attracting nine entrants. Most of these conformed to the 'Peanut' concept – but this was not a hard-and-fast requirement. Judging was performed by Arthur Searle who used a very simple points system. Models were placed in order as regards scale fidelity, flight realism and flight duration, the lowest total of placings gave the winner. This proved to be Mike Reeve's *SE5A* – remarkable in having a 6:1 gearbox and hence a short, powerful motor, driving a scale diameter propeller. Mike Duce was runner-up with a miniature *Poulin J.P.3* whilst Tony Evans took third with an all-sheet *Auster Arrow*. The models would hardly have delighted the 'true-scale' connoisseur – but that was hardly their builders' actual intention.

By the end of the indoor meeting just described, it was obvious that there would be plenty of support for another session. It also appeared worthwhile exploring the possibilities of another site. The Sports Hall at Worsley College of Further Education was one such possibility and offered the advantage of a more central location and rather more space. Its size was approximately 120 ft. x 65 ft. x 27 ft. (again quoted to the bottom of the roof girders). A possible drawback was its 'blown-air' style of heating. A brief experimental 'demonstration' with the heaters working had my Easy B rocking about in a manner reminiscent of an A/2 in a rough thermal!

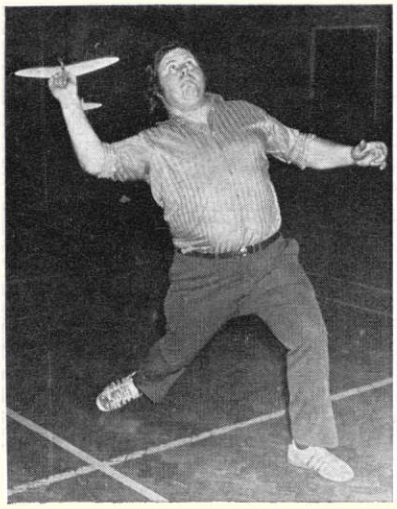
For the contest date it was arranged to have the heating switched off – but possible draughts in the hall remained a gamble. Rather than risk the embarrassment of long-distance arrivals being disappointed with the facilities, it was decided to restrict the 'handout' information to the relatively local North West. In the event this proved to be an unnecessary precaution – although there was drift along the hall – the air was smooth enough for some good flying.

In general the meeting followed the patterns of its predecessors, although it was 'under new management'. Although described as the *3rd Liverpool Indoor Meeting* the actual administration of the events was in the hands of Ian Allen (Falcons) and myself. The idea was merely to let the Liverpudlians get in a bit more flying!

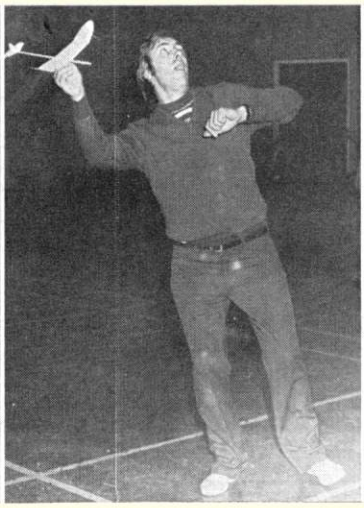
Clearly, it is inadvisable to fly rubber models and chuck gliders simultaneously in a small hall. Flying was divided into periods for rubber, glider and scale. This worked out well apart from some reluctance of the 'strong-arm brigade' to give way for the more delicate classes. It was also found necessary to suspend test flying of chuck gliders and clear the floor in order to give 'official' flights a fair chance of an unobstructed glide. This aspect in particular and the continuous activity in general, caused several participants to draw comparisons with the various Indoor Nationals held in the Manchester Corn Exchange, circa 1960.

The overall chuck glider winner proved to be Mike Duce despite temporarily lodging his best model in the protective netting surrounding one of the roof lights. Fortunately, his first four launches were

'Look out ceiling, here I come – hope its not too expensive to repair!' Barry Kershaw looks apprehensive as he launches his indoor H.L.G. at the third Liverpool meet.



Mike Duce picks his target as he launches his winning model at Worsley. Results were very close under this restricted ceiling – less than four seconds separated the top quartet.



Mrs. Searle, wife of the Scale judge, amused herself with a simple all sheet stick helicopter. Managed to reach the roof when she got the launch technique perfected.

good ones and totalled 86.4 seconds. Runner-up was Roy Roberts with 85, whilst third was tied between Brian Picken and Brian Kershaw. Rather than split the prize, this was resolved by flying off, on the basis of the best of two launches. Brian clocked 20 seconds and Barry just hit the girders trying that bit too hard. Prizes were also awarded to the best two out of seven juniors competing. Best was Nicholas Branigan whose 78.6 seconds total was well up to the 'open' standard. David Roberts matched his father's second place – and in consequence they were both featured in a sports-page photograph in the local *Farnworth Journal*.

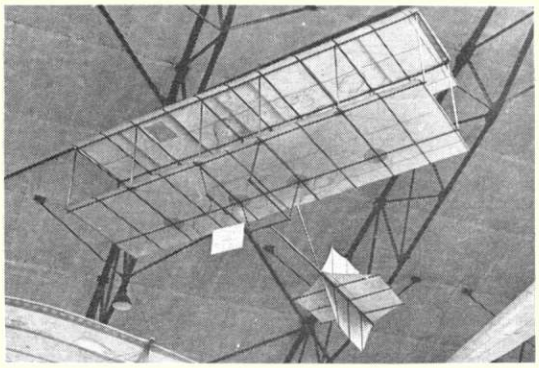
Easy B had a dozen entrants and lots of flying. With plenty of time available (11 till 6) it was decided to count the best three from any number of flights. Intention was to encourage flying and to reduce the effect of 'hang-ups'. Peter Branigan produced a replica of Andrew's American record holder – and became the first to surmount the five-minute barrier at these meetings. His success came from resorting to a larger size of rubber (around 0.060 inch) and finding his model had a very good cruise.

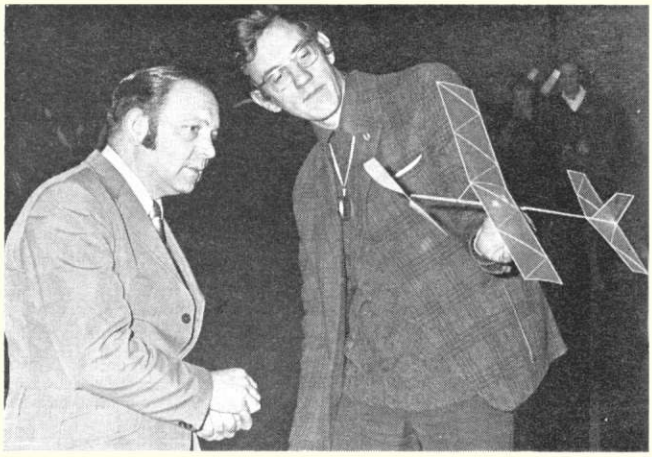
Eventually, I remembered the recommended procedure for low-ceiling flying. In essence this is to use *high* power and plenty of turns – but to 'throw away' the power-burst and fly only on the flat portion of the torque curve. This gives an approximation to a constant power output – and hence permits a gentle climb and a protracted cruise with little loss of height. In my case I had been using 0.048-in. Pirelli, 'rafter-banging' soon after launch and descending quite rapidly afterwards. Boosting the power to 0.055 in., winding up, then unwinding about 12 per cent of the turns before launching seemed about right for the hall. Certainly, it put a minute on my scores and resulted in an eventual first place with just under sixteen minutes for my best three flights. It might be informative if I add that I used an 11 in. x 25 in. helical propeller. Pete Branigan ended up in second position, comfortably ahead of his clubmate, Phil Owen. The 'Open' event *was* flown this time – but there was no one willing to make it a fight. My 15-year-old relic had lots more potential than was shown by its scores – but my efforts were concentrated elsewhere.

Scale was run on the same lines by the same judge as at Southport. More people had mastered the art of making their models fly and a more demanding static judging system could be needed. Certainly the flying proved decisive at Worsley – with Dave Barnes reputedly putting an Easy B motor into his *Volkesplane* and getting it up into the rafters. This edged Mike Reeve's *SE5A* down to second, just ahead of Tony Evan's with an all-sheet *Auster Arrow* that did nearly half-a-minute.

I have given considerable space to these local contests because I think that they could serve to inspire others. It would be erroneous to give the impression that the N.W. has a monopoly of indoor activity, as there has been a series of meetings at R.A.F. Brize Norton, Oxfordshire, over the past two or three years. For some reason these meetings have received little publicity, either in advance or afterwards. From what Ian Allen told me about the meeting that he attended at 'Brize' in February, it would seem to be more of a flying session than a contest. As the Sports Hall used has only a 30-foot ceiling, even if plenty of floor area, it is hardly the place for fully-fledged F.A.I. microfilm models. Nevertheless, Reg Parham cleared 13 minutes with such a design. More interest was evident in smaller 'mike' models of the 35 cm.-span variety, with Martin Shepherd and Butch Hadland both clearing ten minutes.

While in Paris for the International Coupe d'Hiver meeting (reported on page 276) John visited the Musee de L'Air where he saw this inspiration for an 'Easy B' design! Why not – it would also qualify for the scale category!





Ian Allen (right) shows off his 'Easy B' (to Pete Andrews' design) to college lecturer Walter Wallwork. Model relies on front wing posts bending under power to provide wash-in – there is no wash-in incorporated in the wing.

From what has happened up North it would seem that there should be plenty of potential indoor fliers – provided the right sort of meetings are staged. Not everyone is interested in 'little' contests – but American experience would seem to show that they could revitalise this launch of aeromodelling. Furthermore, it is evident that whilst many modellers will fly indoor in the winter, they will not 'drop' outdoor contests to continue 'under cover 'during the summer.

Those who treat Indoor seriously will, presumably, be content with the list of meetings arranged at Cardington during the period from March to September. The facilities available can hardly be matched elsewhere – certainly not on this side of the Atlantic – but the number of people who bother to use them is disappointingly low. There must be a moral in it, somewhere! One other aspect of the Cardington scene requires comment. Trials for the 1974 World Championship Finals are tentatively suggested for meetings held this May, June and July. Presumably this is the usual idea of giving the team plenty of time to prepare for the Champs. Personally I think that it can equally well give them time to lose interest and/or go 'stale'. As indoor is less affected by weather and the models can be built relatively quickly, I would think there is little to be lost and much to be gained (as regards interest) by holding Trials 'within sight' of the ultimate goal. I would go further and extend this contention to the outdoor categories as well. It is more important to be 'on form' than to have months to get ready!

If I may, once again, draw comparisons with the U.S.A., I am permanently amazed at the amount of discussion that appears in print regarding various alternative schemes for selecting *their* World Championship representatives. We don't have some of their geographical problems – but this alone does not explain the complete absence of any similar discussion over here. I would sum up our attitude in one word – 'apathy'.

Results

EAST ANGLIAN WINTER RALLY – Watton, 7th January 1973
Combined F.A.I. (5x3) (11 entries): 1. S. Bowles (Norwich) 13:52; 2. M. Woodhouse (Norwich) 13:37; 3. B. Halford (Norwich) 12:37. **Combined Open (3x3)** (13 entries): 1. J. Hopper (Stansted) 9:00; 2. B. Halford (Norwich) 8:12; 3. D. Parker (Ipswich) 7:55.

NORTHERN AREA WINTER RALLY – Topcliffe, 21st January 1973
Open Rubber: 1. R. Peers (Falcons) 6:55; 2. J. Carter (Falcons) 6:01; 3. K. Proctor (York) 5:50. **Open Glider:** 1. T. Dilkes (Falcons) 5:48; 2. N. Walton (York) 3:23; 3. J. O'Donnell (Whitefield) 2:35. **Open Power:** 1. R. Peers (Falcons) 5:07; 2. B. Martin (Tynemouth) 4:40. **Coupe d'Hiver:** 1. J. O'Donnell (Whitefield) 0:34. **A/1 Glider:** 1. J. Turner (Darlington) 2:10. **Chuck Glider:** 1. E. B. Jones (Sunderland) 3:23; 2. R. Hoff (Sheffield) 1:02.

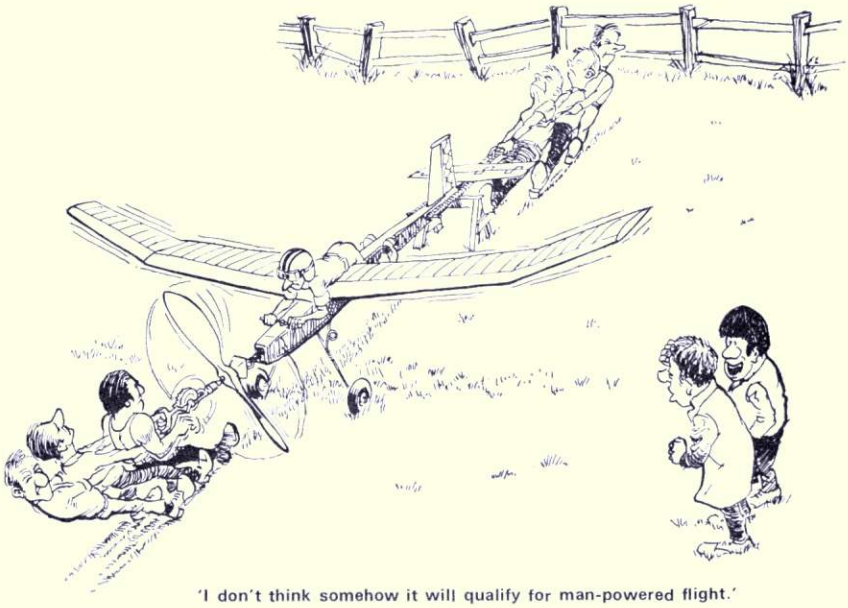
SECOND LIVERPOOL INDOOR MEETING – Y.M.C.A., Southport, 28th January 1973
'Easy B' Tissue Duration (Best 2 from 5): 1. D. Barnes (Liverpool) 9:09; 2. J. O'Donnell (Whitefield) 9:06; 3. P. Owen (Liverpool) 8:34. **'Open' Tissue/Microfilm Duration** – Cancelled. **Chuck Glider** (Best 4 from 9): 1. B. Kershaw (Wigan) 1:24.6; 2. M. Duce (Liverpool) 1:24.4; 3. R. Roberts (Wigan) 1:10; 1st Junior, D. Roberts (Wigan) 1:03; 2nd Junior, D. Williams (Whitefield) 0:56. **Peanut Scale:** 1. M. Reeves (Whitefield) S.E.5A; 2. M. Duce (Liverpool) Poulin J.P.3; 3. A. Evans (Liverpool) Auster Arrow.

THIRD LIVERPOOL INDOOR MEETING – Worsley College of Further Education, 4th March 1973
'Easy B' Tissue Duration (Best 3): 1. J. O'Donnell (Whitefield) 15:57; 2. P. Branigan (Liverpool) 14:31; 3. P. Owen (Liverpool) 12:32. **'Open' Tissue/Microfilm** (Best 3): 1. J. O'Donnell (Whitefield) 12:02. **Chuck Glider** (Best 4 from 10): 1. M. Duce (Liverpool) 1:26.4; 2. R. Roberts (Wigan) 1:25; 3. B. Picken (West Lancs) 1:23+0:20.2; 4. B. Kershaw (Wigan) 1:23+0:14.1. 1st Junior, N. Branigan (Liverpool) 1:18.6; 2nd Junior, D. Roberts (Wigan) 1:09. **Scale:** 1. D. Barnes (Liverpool) Volkesplane; 2. M. Reeves (Whitefield) S.E.5A; 3. A. Evans (Liverpool) Auster Arrow.

topical twists

by 'Pylonius'

illustrated by 'Sherry'



'I don't think somehow it will qualify for man-powered flight.'

Empty Threats

The problem posed by our waste-not-want-not society is what to do with the empties. The manufacturers now consider it a virtue to make their containers non-returnable or, as they put it, disposable. Trouble is, it is not always so easy to dispose of the disposables, mainly because of the way the dustmen take issue with the theory of disposability; the disposable container becoming so only as far as your front garden.

The last disposable items are those made out of poly-what-have-you. These will not break, crush, burn, or even just rot away. The countryside is full of them, as are the beaches and seaways. You can, of course, give them to the kids to take to school, but they usually come back to you at the end of term hideously disguised as forts, space crafts and Battersea Power Station.

Recently, a national experiment was carried out to see if certain disposable resistant plastic containers could be used in the making of model aircraft as one means of combating the waste problem. The fact that they were highly inapplicable for this purpose was evident to even the rawest beginner, but absolute proof was expensively obtained in a national competition, wherein, due to some inexcusable ignorance on the part of the judges of the finer nuances of our model-awarding traditions, O. Winnall did not receive first prize even though his model demonstrated the unsuitability of containerisation to model aircraft structures in highly competent style.

Supermod

I must say, I sympathise with the correspondent to this journal who feels that the lowly hobbyist is demoralised by the fantastically-finished models now being produced. Back in his day, as in mine, people showed a decent bit of restraint both in the building and flying of their family-type models. A model was something to be knocked out on the kitchen table in a couple of weeks using little more than a razor blade and a pair of pliers. And as for the flying, anyone doing more than 30 seconds or so was considered a bit of a bighead. Model flying was a hobby anyone could enjoy without fear or favour.

But what a difference now! Models are not the flimsy things they were, but are huge, glossy and overpowering. Little wonder, then, the junior feels out of things with his 50p kit, when all about him are doing incredible aerobatics with their magnificent flying machines. Off he goes to sulk and take consolation in listening to his 'Too Young' pop record.

It is not only the junior who feels out of things. I often wish the modern breed of model flyer was less expert, so that my own kitchen table products did not show up quite so badly.

Weighty Problems

If, like Caesar, you like plump people around you, then model flying is your hobby. Somehow or other model flyers seem to have expanded in sympathy with the general increase in model size. The model journals are now full of pictures of well-nourished gentlemen holding huge models of almost equal cross section.

Generally, the tendency is a Radio one, as a few lean and hungry types are still to be seen jog trotting after free-flight models. Perhaps it is psychological. The monster radio model of today is a bit overwhelming for the small man, however Napolean-hearted he may be. And he could well be frightened by the thought of becoming the subject of a 'Spot the Model Flyer' competition. Even so, considering the cost of Radio flying you would think there would be a few lean types putting multi before mutton on their budgets; but not so apparently, the people who produce the monster models consume other more solid fuel while burning the midnight oil

Flycycle Made for Two

When next you search despairingly in the model shop racks for a reasonable bit of balsa you might console yourself with the knowledge that it is all being used in a good cause: the building of pedal-type flying machines.

It is not generally known, but by the year 2000 or thereabouts, the people who have the dubious privilege of inhabiting what is left of dear old Planet Earth will be without that prime polluting commodity, oil; dear old Planet Earth having been milked dry of the famous fossil liquid. Farsighted then, the people who are anticipating this by reverting to good old muscle power to get them about – if by the year 2000 there is anywhere worth going to which, from the extrapolation of existing trends, seems highly unlikely.

Aerial cycling, as we have mentioned, is already putting something of a strain on the world's scarce balsa resources; so, unless a suitable substitute is found, the sport is not likely to be extended to the masses. This would be unfortunate since there will be miles and miles of unused motorway to serve as take-off strips, with the spaghetti junctions providing ideal aerobatic courses.

Model flying in the year 2000 will, for obvious reasons, be Radio Glider only (the protein value of rubber is not likely to be overlooked by the hungry masses, even stringy Filati).

The 26th AUSTRALIAN NATIONALS

29th Dec. '72 to 4th Jan. '73

reported by

MIKE MILDREN

F.A.I. Power entrant at left may be unidentified, but at least his motor is easily recognised as the universally appreciated Rossi 15. At right is Andrew Kimonides who came close to the Australian F.A.I. speed record of 143 mph. His best was just 1½ mph short, using a Rossi extensively reworked by friend Graham Rice.

GEELONG lies in the state of Victoria, about 45 miles south-west of Melbourne and in addition to being the ninth-largest city in Australia, is lucky enough to have a Lord Mayor who likes model aircraft – and the boys who fly them! Consequently, Belmont Common, on the edge of town, includes a Model Flying Field along with a Golf Course, Pistol Range, Go-Kart Track, the Railway Historical Society, and assorted other sporting grounds. It is not big enough for Free-Flight, but superb for Radio. Several dead flat, smooth ovals were available for C/L nearby, but Free-Flight was run some 11 miles out of town.

Biggest and Best Nats. ever? Probably the biggest, with over 800 entries altogether and all 31 contests well supported, with the exception of C/L Scale. But hardly the best. It earned the nickname 'The Secret Nats.' because of confusion over the times and venues of several of the miscellaneous events, but in fact most of the important events were run on time and in a very competent manner. The F/F, R/C and C/L events were run simultaneously and independently and it was impossible to cover all events as a spectator (a luxury which many Australian modellers expect), so it also encouraged specialisation, which is frowned on by many. As a step towards a cure for this ill', the M.A.A.A. Committee has specified a limited Programme of 21 events for next year.

Free-Flight

The field was at a farm called 'Stonehaven' – very aptly. Big stones, thousands of them, many as big as footballs, were heaped up to four feet high in places where the odd area had been cleared, providing a high mortality rate for models on landing. F.A.I. events were flown to five rounds, much to the dismay of the keen types.

Control-line scale was poorly supported, with only two models putting in qualifying flights. Winner was Roy Summersby's four-year-old 'Spirit of St. Louis', powered by an E.D. Hunter

A/2 and Chuck Glider were held in near perfect conditions it being hot and calm, with thermals there for those who knew how to find them. A/2 (47 entries, 30 flew) was anybody's contest with seven flyers within 50 sec. of one another at the start of the final round and the winner, Fred Parkes, a comparative newcomer to the game, beating Peter Nash by one point, when he recorded a total of 769 seconds.

Wakefield suffered a fair drop-out rate with only nine of the 23 entrants flying, although conditions were excellent for the first three rounds. Then the wind came up, steadily getting stronger so that by the 5th round the best launch technique was to wait behind a parked car for a lull, then to spring out and launch–hoping the wings would stay on for those first dangerous seconds! Tom Prossor put up a creditable 782 with Sean O'Connor 719 and Allan Edwards and Peter Nitshke equal third with 670.

F.A.I. Power had an identical turnout and was a bad luck contest for most. John Voak managed a 40-sec. motor overrun on an early test flight and still hadn't found his model by round four. Several models did bad or non-recoveries from the climb, thus were demolished on the numerous rocks. Fortune smiled on winner Tom Prossor who scored 862 in a series of good, uneventful flights. Tony Lever and Ron Greeves followed with 847 and 731 respectively. Motors used were nearly all Rossis and Super Tigres.

A/1 Glider (49 entries, 20 flew), *Open Rubber* (31 – 17) and *Scramble* (55 – 22) were run in a 10 to 20 mph wind and no further comment is necessary. On the other hand, Old Timers, Open Power and Scale enjoyed a beautiful morning with a light breeze which *stayed* light. Indoor events attracted a total of 22 entries – held in a wharfside shed about 100 ft. x 60 ft. x 30 ft. high, the largest indoor

Junior entrant Mike O'Reilly of New South Wales won the radio-controlled thermal soaring event with a Graupner 'Amigo' controlled by Space Commander R/C. Thermal soaring is rapidly becoming popular in Australia, drawing enthusiasts from both the free-flight and R/C field.

venue we've seen since the events were revived in 1970. Tom Prossor won both Tissue and Chuckie classes, while an old hand, Boyd Felstead, won Microfilm from a series of approx. 6-min. flights with Sean O'Connor not too far behind.

Radio Control

The R/C organisation looked impressive right from the start, with the use of a Hewlett-Packard Spectrum Analyser to check the frequencies of all transmitters on Processing Day, while walkie-talkies (72 MHz!) gave communications to the officials at the Judging/Timekeeping area and the far end of the Pylon Course.

Thermal Soaring was the star event of the entire Nats. with 63 entries 52 of whom flew. Three rounds were flown to 6-minute maxes from 150-metre tow lines in ideal weather conditions – warm, light breeze, high, scattered cloud as a background for seeing the models. About six contestants maxed each round, but nobody maxed more than once and most had difficulty trying to get those 50 points for landing precision. Seventeen-year-old Mike O'Reilly was the winner with 1,006 pts., using a Graupner *Amigo*. Steve Ralph of Tasmania flew a *Cumulus* into 2nd place (974) and Tom Prossor scored 913 with his own design *Arunta*.

In *Multi-Aerobatics* it was understandable that overseas visitor, Phil Kraft should beat Tom Prossor, who doesn't always win – only usually. Third was Brian Green – the separation between them was about 10 per cent.

F.A.I. Pylon Racing had 15 competitors and was held on a scorcher of a day, officially 107°, but somebody measured over 130° in the pit area where Keith Follett's plastic pilot had melted in the cockpit! Some motors had more sense than the flyers, and quit. About half the contestants used retract U/Cs. Times were the best yet – 1:57.8 by winner (again!) Tom Prossor and 1:58.4 by runner-up Brian Green.

Quarter Midget Pylon Race was run as an unofficial event and attracted 23 entries. A group of sneaky S.A. boys who had bought most of the early production models of Gordon Burford's new 2.5 cc. racing motor (which appears to be a real winner and Gordon is not quite sure why!) nearly cornered the event, but were pipped by Bob Hyde of Vic., who was lucky enough not to meet any of them during the heats and won on the points system, with times about 20 sec. slower. Best time was 3:17 for the 4-km course.

Scale, of course, was the crowd-pleaser, flown in ideal conditions on Sunday morning. All ten models weighed about the same – 9 lb. and all were powered by 10 cc. engines. For the first time ever we saw a Helicopter, the Schuco Hegi *Bell Huey* entered by Mike Calluand flown very gingerly and with intense concentration by Barry Wilkinson – 59 secs. . . . qualified . . . now gently . . . steady . . . whew! made it!

In the R/C Scale demonstrations, Geoff Whatley impressed the crowd with his O.S. Wankel-powered *Caribou*. Damage to the trailing aerial just before the official flight caused loss of control, a spin, cloud of dust and a heap of bits.

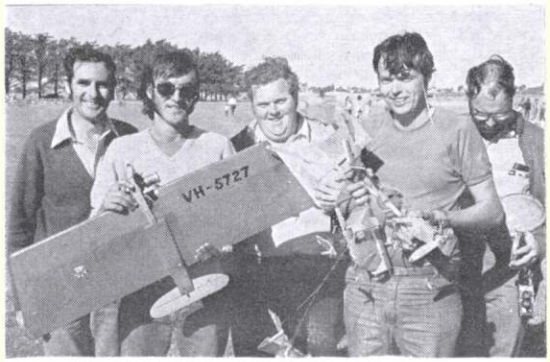
Winner was Tom Prossor with his *Pawnee* (yet again), although a determined effort by Ray Sherburn of W.A. nearly beat him – foiled by a stall and a crash on the touch and go; exit one superb *Victa Airtourer* model.

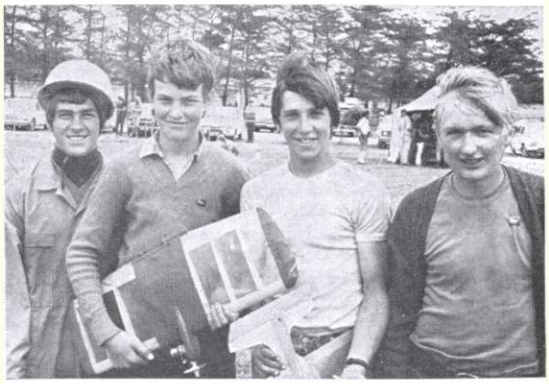
Other models seen were an *Avro Vulcan*, an *Air Cobra*, a *Typhoon*, a *Bristol Bullet*, a *Fokker D7*, a *Junkers J9 D1* and a beautiful *Jodel D9* which placed second.

Control Line

Near-drought conditions in Victoria over the previous few months had made water restrictions necessary, so that only one of the ovals used for C/L contest was really green and it had to be given a rest every other day. It was used for Speed, Stunt, and Team Racing which need a good r.o.g. surface, while Rat Racing and Combat were run on the virtually dead grass of the adjacent oval. (This illustrates another luxury which Australian modellers insist on – good turf to fly their C/L models over. They don't like bending their motors on tarmac.) Officials were right on the ball and contests started bang on time for the first three days, but things were a bit more relaxed later, when the less important contests were held. There were troubles in

Continued on page 275





Right top is John Tidey with his six-year-old 'Super Master' – placed second in C/L stunt. Model is powered by Merco 35, weighs 52 oz. Below are the Open Combat finalists – Gary Bourne and father (left) who used Super Tigre 40 power, and Jim Stivey (with 'Big Fred' Adler plus John Collins) who used Fox 36X. Not much of a model left! Below them are the Junior Combat finalists (left to right) Colin Jeffrey and Graham Wilson with Geoff Neville and Russell Frevin. Looks like an A.P.S. 'Dominator'. Bottom picture shows Sean O'Connor launching his Wakefield on its final flight into the howling gale.

GOLDEN WINGS AEROMODELLER MODEL CLUB

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

JUNIOR EVENTS AT THE NATIONALS!

There will be contests for both free-flight and control line enthusiasts at this year's Nationals, to be held at R.A.F. Lindholme, near Doncaster.

The detailed rules follow, but a few important points should be noted first:–

a) You must be under 17 years old on the day of the contest.
b) You must have valid third-party insurance cover for model aircraft flying (M.A.P. Insurance is fine) and you must show proof of it on the day.
c) Entry to each event is FREE.

JUNIOR KIT CONTEST
Sunday, 27th May

Each contest to have separate Rubber and Glider sections. An entrant may use more than one model for his flights, but only one entry per person per section is allowed.

The Models

1. *The only models allowed will be* **Mercury Swan** *(glider) and* **KeilKraft Senator** *(Rubber).*
2. Models must be built by the entrant from a kit.
3. Models must be built as standard and the only modifications allowable are:
   a) Covering materials may be to entrant's own choice.
   b) Auto-rudders (on glider) and de-thermalisers (on glider and rubber) may be fitted if desired. Snuffer tubes must be used if fuse types of D/Ts are used.
   c) Amount and type of Rubber motor may be to entrant's own choice.

(Note: the propeller and propeller assembly must be as per kit instructions.)

Flying

4. Rubber:
   a) The Contest shall be held in two stages: the Qualifying Rounds and the Finals.
   b) For the Qualifying Rounds the Contest Director shall specify a 4-hour period within which each entrant can make up to three contest flights. The sum of the duration of these three flights shall be the Qualifying Round score for each entrant. A three-minute maximum shall apply to each flight. Flights under 20 seconds may be counted as 'attempts' and re-taken without penalty.
   c) Entrants must wind their own models (with a helper holding the model if required) and must launch them within 50 yards of the control point, downwind of the control point. Timing of a flight must be carried out by someone other than the entrant.
   d) The entrants with the top five scores of the Qualifying Rounds will go forward to the Finals. (Or all entrants achieving 3 x 3 minutes if there are more than five.)
   e) The Finals will consist of two contest flights within a specified $1\frac{1}{2}$-hour period and the highest sum of these two flights will determine the winner. (In the case of a tie the entrants concerned will simply continue to make further single flights – still with three-minute maximums – until a clear winner emerges.)
   f) All Finals flights will be timed with stop-watches and all models will be examined before being eligible for the Finals. This examination is to ensure that the model conforms to Para. 2 of these rules. Should an entrant(s) be unable to enter the Finals because his model(s) do not conform with Part 1 of these rules, then the next highest Qualifying entrant(s) will be selected to make up the five Finalists. (The model(s) of this/these entrant(s) will also be examined as above.)

5. Glider:

As for Rubber-Power except:-

   c) Entrants must launch their own models. If a tow-line is used, then a helper must hold the model and the entrant handle the tow-line. Maximum tow-line length allowed is 50 metres (164 feet). Timing starts when the model leaves the tow-line. Launching must commence such that the helper releases the model at least 50 yards downwind of the control point by no farther than 75 yards across wind from the control point.
   f) As for Rubber-powered but tow-line lengths will be checked also.

Prizes

6. Prizes will be awarded at each contest for the top five competitors in each section, if there are sufficient entries. Prizes have been donated by KeilKraft and Model & Allied Publications Ltd.

Other points

7. The Contest Director may change the *flying* rules on the day according to the weather conditions and the numbers of entrants.
8. The Contest will start at 11.00 a.m. but entries will be taken up to 1.00 p.m.

JUNIOR STUNT
Monday, 28th May

A control line stunt competition will be organised once more, with a handicap system (as detailed) to even out the scores thus overcoming the advantage of more experience with age. In this way, a young pilot can compete on even terms with an elder competitor. The rules which are provisional, will not be changed to any large degree. Entries will be accepted up until 2 p.m. on the day of the contest.

1 No model or engine size restriction. Model must withstand a 10G pull test (i.e. ten times weight of the model), and may be flown on lines up to 60 ft. (max.) long.
2 Event will be held over grass, so any launching method may be used – wheels are not necessary.
3 Each competitor will be allowed two flights, the best single flight score counting. Two attempts of 2 minutes duration per flight will be permitted to get airborne.
4 Manoeuvres. (a) Four laps level flight, K=2. (b) Wingover, K=4. (c) Three consecutive loops, K=1, 2 & 3. (d) Four laps inverted flight K=4. (e) Three outside loops, K=1, 2 & 3. (f) Horizontal eight, K=4. (g) Vertical eight, K=5. (h) Overhead eight, K=5. Each manoeuvre is marked out of 10, then is multiplied by the K or 'difficulty' factor.
5 No appearance, take-off or landing points will be awarded. Five minutes is allowed for the schedule, including time for two full laps between each manoeuvre.
6 A handicap system will be used based on the age of the competitor. A competitor aged 10 or under would receive 100%, 5% would be deducted for each year over the age of 10 (i.e. a 16-year-old would receive 70% of his score.

Prizes

Frank Warburton, Snr. has once more generously offered to donate a trophy to the winner, while other prizes will be provided by Model and Allied Publications.

Dear John Bridge,

I am between 10 & 16 years of age and would like to become a member of the 'Golden Wings Club'. With this application I enclose postal order (International Money Order) for 25p to cover cost of the enamel club badge, two coloured transfers and membership card.

NAME IN FULL.....

ADDRESS .....

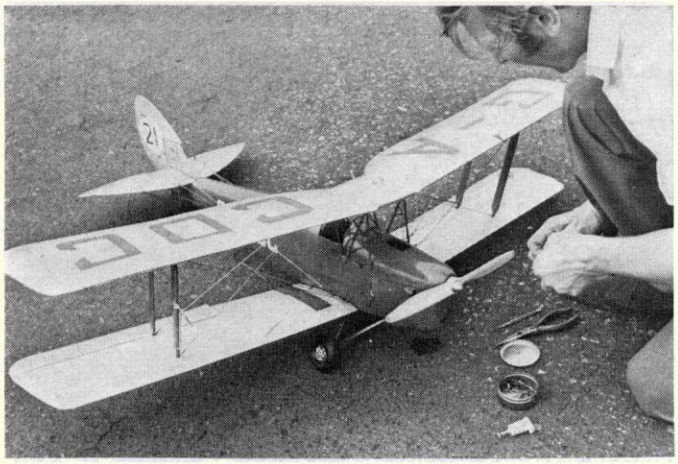
.....

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

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

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

5/73 15p in the £1 Rebate for plan purchase coupon Golden Wing Members G.W. No. .....



Derek Goddard equips his fine control-line version of that perennial favourite, the D.H. Tiger Moth, with its 'flying propeller'. Wise precaution – even if a model will fly with its scale prop, an awful lot of work can be destroyed in seconds if the model tips up on take-off, as can so easily happen if there is a bit of a breeze.

News, views and advice from arch scale enthusiast ERIC COATES

FLYING SCALE COLUMN

AS I WRITE these words, the 1972-73 winter building season is rapidly coming to a close. By now I can usually see my major winter project nearing completion, but alas this is not the case this year. Like all of us, round about September time my head was full of many wonderful projects which I might manage to build in the long evenings to come. I thought I would dash off a quick, small, indoor scale job, build a vintage power model to replace my *Slicker* lost at the Northern Area Rally and then get down to a new R/C scale machine for my major project. Unfortunately, the programme got off to a disastrous start, due to major repairs having to be carried out to both my sport radio hacks (for flying on windy days). Added to this rather a hectic time at the office and the hours spent writing this column and what have I to show at the end of the building season? A few preliminary drawings of various R/C scale models – all with something 'not quite right' about them, which has diminished the original enthusiasm. A *Slicker* 50 is still in its kit box, and what turned out to be my major winter project? – an 18½-in. span, rubber-powered *Puss Moth!* At least I shan't have to shamefully enter my dreadful *Hurricane* at Brize Norton on 25th March. I will give further details of this mammoth project when I hope to review this indoor meeting in next month's issue.

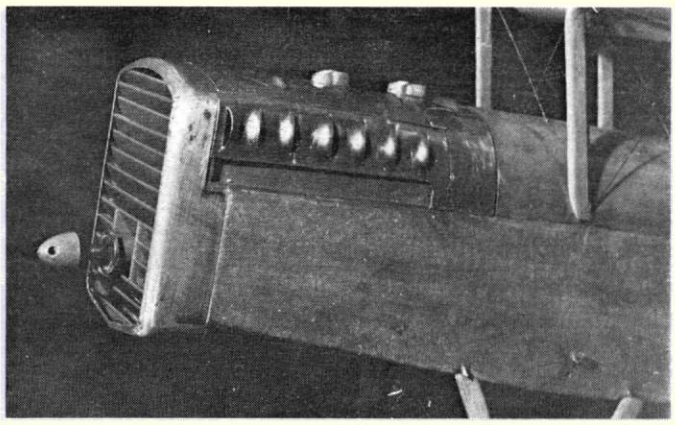
I don't know if other scale modeller's production has been as abysmal as mine this winter, but I have had very little news of new models to date.

Of course, the production lines have been very busy in the East Riding and the works of T. Manley Esq., which must closely rival the output of Castle Bromwich in the war, had nearly completed the *Handley Page* 0/400 when I visited them in late February. Virtually complete, apart from painting and details, the model only weighs 32 oz. and despite the large wing span of nearly 70 in. the twin Mills 75s should pull it along nicely. Either way it should make quite a spectacle at this year's Nationals!

The only other new model I have had details of is the neat *Fairchild Argus,* pictured here in U.S.A.A.F. markings, built by Derek Knight of the Portsmouth Club. This is a power conversion of the 1/12th scale, rubber model design by the late Eddie Riding and published in A.P.S. just after the war. I remember building this model back in 1949 and doing a similar conversion for a Frog 100. I don't recollect my machine was an outstanding success – that was probably my inexperience then, because everything is going for the *Argus* as a scale subject. Incidentally, one of the last survivors of this

Doncaster Club member of many years' standing, Jim Biggs and his huge R/C Short Stirling, photographed at North Luffenham. For absolute realism these big multi-engined models take a lot of beating – they even sound, as well as look right!

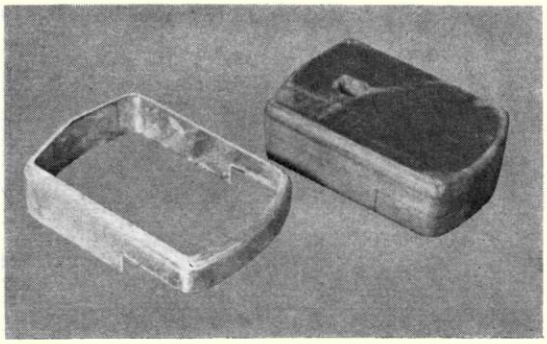
Metal cowl parts, made as detailed in text, attached to the nose of Eric's D.H.9a, and seen prior to painting. Radiator shutters are from 1/16 in. balsa sheet epoxied to the inside edges of the front cowl. Sketch of the form necessary for making the louvres are shown below right. Practice this job on scrap material before 'attacking' your freshly-made cowling! Note how engine is completely hidden, yet adequately cooled in this type of installation.



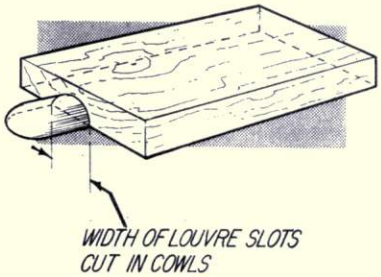
breed was operating from Portsmouth Aerodrome in the latter part of last year. Derek Knight also informed me that he is building a F/F twin too. The disease must be catching! Derek's model is of the powered *Hamilcar* glider. This was a prototype of the late war years in which a pair of *Hercules* were fitted to the famous wooden troop-and-heavy-vehicle-carrying glider. Derek hopes to control the model by means of servos operating from crankcase compression. I hope to be able to publish details of this very interesting system and the model in a future 'Column'.

* * *

In part IX of my epistle *Flying Scale Models*, published in the November 1971 edition of *Aeromodeller*, I briefly covered the making of aluminium cowls. When trying to cover the entire construction of scale models in a limited series of articles one must necessarily gloss over such a subject and generalise only on the most typical. Then I went into fairly great details on the Rotary/Radial type. This month I would like to balance things up somewhat and pass on some practical advice on the construction of metal cowlings for the next most common cowling of the 1914-30 period – the upright, flat-fronted, 'car radiator type' as used commonly on machines powered by inline water-cooled engines. The *Liberty*-engined cowl on the D.H.9a is just such an example and it is this machine's cowl we shall now look at in detail. Examination of machines powered by Rolls-Royce and Hisso's will show that similar techniques can be used. Cowls of this type are ideal for scale models as they allow long-stroke engines to be completely hidden whilst mounted in the most practical upright position. If the motor is of the rear induction type, then all controls can be also hidden. Access to these and the fuel tank can easily be attained by a detachable cowl top secured by a large press stud.



Examination of the accompanying photographs will show that the metal cowl of the 9a is made in six parts: the front radiator portion, lower apron, two fixed upper side pieces, fixed upper rear arched-shaped portion and the detachable top. All the upper portions have louvres pressed into them. These are essential to allow cooling air (which enters at the front via the radiator shutters) to escape. There is very little double curvature in a cowl of this nature and only one form block was necessary; for the front portion.



First of all, though, a word about the raw material. Aluminium plate of 22 or 24 swg is required. Make sure that this is aluminium and not duraluminium, the latter is an alloy of aluminium and far less ductile and while ideal for engine plates, it is almost useless for forming cowlings. The aluminium I use is to specification L.59. Before attempting to work it, the aluminium should be softened by normalising. I explained how to do this before but, for the benefit of new readers, this is done by rubbing the plate with soap and heating on a gas ring, or blow lamp, until the soap turns dark brown. Then quench in cold water. Do not overheat or you will easily melt the aluminium; the soap turning brown is merely a temperature indicator.

The form block should be carved 22 swg (about 1/32 in.) undersize from a suitable piece of close-grained, medium-hard wood. My 9a block was carved from a redundant satin walnut lavatory seat. At least it was well seasoned!

The chord width of the cowling is calculated, allowing for the bend radius of the lip and a strip, about ¼ in. longer than the periphery of the radiator, cut from the aluminium plate. Strong scissors are quite suitable for

The front part of the D.H.9's cowl shown with its hardwood former. Making such an item is not nearly as difficult as it seems. Just take your time, be careful, and remember that the finished product cannot be more accurate than its former – which must be carved undersize to allow for the thickness of the material.

this purpose in the absence of tinsnips. The strip is bent round the block and trimmed exactly to length, the butt joint being made at the centre bottom. Now grip the aluminium in a vice, along the sides, clamping the block between, in the process. Aluminium jaw pads should be used to prevent the vice marking the cowl. The edges of the cowl are then beaten over using a hammer rather than the usual hide mallett – this will flatten the small wrinkles which are bound to form at the sharp corners, while any undulations left at these corners can easily be filled with plastic metal. The cowl is now removed from the block and an aluminium strip epoxied across the butt joint on the inside.

The radiator shutters are made from 1/16th balsa sheet epoxied to the inside edges of the front cowl at an angle of 45 degrees.

Apart from the louvres the other parts of the cowl are quite straightforward. The pieces are simply cut to exact shape from the aluminium plate (with the scissors) and bent over the formers to the correct contour. When normalised the plate can be worked quite easily with the fingers.

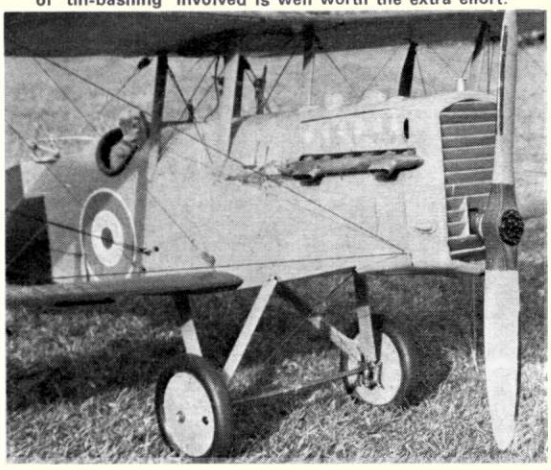
Now for the louvres. A former, as shown in the sketch, will first have to be made; again from hardwood. Slots are cut with a chisel into the appropriate parts of the cowlings at the leading edges of the louvres. The cowl parts are supported on a metal block whilst the slots are being cut. The cowls are now in turn rested on a rubber block, the flat edge of the former is lined up with the chiselled slot and the aluminium firmly pushed into the rubber block. A perfect louvre will result. Do not push too deep otherwise you may tear the metal at the edges of the slot.

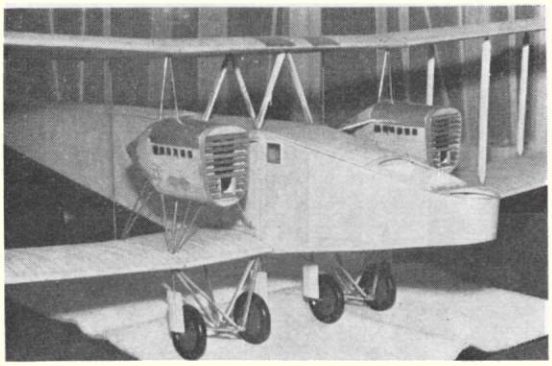
I would recommend that you try a few practice louvres on scrap aluminium before louvring the cowl itself and always start at the end of the line of louvres, working along; allowing each completed louvre to overlap the rubber block. This process is a miniaturised form of rubber die operation as used in the aircraft industry for forming compound shapes, only there a hydraulic press is necessary.

All the fixed parts of the cowl are epoxied to the aircraft structure. If the cowl is to be painted, prime the aluminium first with primer surfacer otherwise the dope will peel off. A little judicious scratching of the edges of some of the louvres and the cowl panels will enhance the 'in service' look.

I hope the foregoing will inspire a few more modellers

The finished product. Who can deny that the cowl looks 'dead right' on our author's D.H.9a If nothing else, this picture should convince you that the relatively small amount of 'tin-bashing' involved is well worth the extra effort.





Terry Manley's Handley Page 0-400 rapidly nears completion and should be ready for flight trials shortly. Spans 68 in. and is to be powered by a pair of Mills 75s. Not a project for the light-hearted, or heavy builder!

to have a go at metal work. There seems to be a marked reluctance to use metal in model aircraft construction, although there is nothing to be frightened of really. Aluminium is as easy to work as balsa – with only a few tools. A strong pair of scissors, a small chisel and a fine, small file are all that is needed. The finished job is much more realistic than wood or plastic ever can be.

* * *

Propellers are always a bit of a nuisance on powered scale models – wooden ones look reasonably realistic but are rather prone to breakage; particularly on F/F models. Nylon props are far more durable but up to now manufacturers seem to have insisted on moulding them in natural colour (a translucent white) or a brilliant yellow. Neither colour looks very scale like and positively ruins the scale effect of a flying shot photographed on colour material. Model shops recently have started to stock the new Graupner-made 'Super' glass reinforced nylon props distributed by RipMax. These are moulded in a nice shade of grey which approximates to the colour of the fabric-covered propellers used on many W.W.I machines. The blade shape approximates also to certain W.W.I propellers and the 'Super' emblem and size, printed on the blades, can readily be removed with cellulose thinners leaving a perfectly plain grey blade. They are a little heavier (never a bad thing at the front of a scale model) than wood or 'unstuffed' nylon and somewhat more rigid although they have enough 'give' to prevent breakage in all but the heaviest prang. The reinforcement does not appear to be of the stranded variety (I discovered this when I stuffed a radio job into the runway last Sunday, with the engine running flat out and broke the propeller, and the model, in several pieces.) Therefore I would not recommend them for running at above 14,000 r.p.m. on a 61, but for the average scale model engine, turning at more modest r.p.m., they should prove ideal. The price is reasonable too, being less than the average American nylon import.

* * *

Small, rubber-powered scale models seem to be rapidly increasing in popularity both with the 'fun' type modeller and the contest enthusiast – the latter, no doubt, encouraged by the availability of more suitable indoor venues, as indeed reported by John O'Donnell in his *Free Flight Comments* column. The same applies overseas, too, and in the near future we shall publish some pictures from Czechoslovakia, where their rules, which are quite different from our own, produce food fo thought. Could it be that scale enthusiasts find it possible to make these diminutive models during their lunch break at work . . .!

Junior member of the Glevum club, Tim Hunt, launches Frank's 'Pirana 4' design. Frank produces a great number, and variety, of models each featuring many practical points, with great emphasis given to detail and rapid construction.

Practical hints and tips to build better combat models, and build them quicker too

By Frank Smart

Make good use of 'Five Minute' epoxy

Rapid setting epoxy resins, of which there are many currently available on the British market, have been one of the greatest advances since the balsa knife for the aeromodeller of today! Apart from their great time-saving properties when constructing models, these fast-curing adhesives can be used for several other tasks apart from the more conventional ones. For instance, mounting the elevator horn on to its ply plates can be rather a 'fiddly' and untidy job, but this can be greatly simplified. First, roughen up the underside of the nylon R/C-type horn with coarse glass paper then, with a fine smear of epoxy, put it in position and allow to set. Now drill undersized holes through the horn and ply, then screw 8 BA bolts in place from the top, with the nylon back plate held in position. Snip off the surplus length of the bolts, filing down to leave just a couple of threads proud of the backing plate. Apply epoxy over the lot – smoothing down with a moistened finger. This results in a very smooth attachment, which does away with nuts and washers and leaves no protruding, untidy ends to poke holes in other models – particularly useful if you tend to carry polythene bags full of combat wings. See *figure 1*.

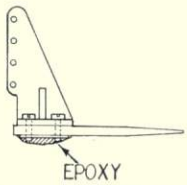


Figure 1 – Elevator horn

Flexible leadouts too can benefit from the 'epoxy treatment', as illustrated in *figure 2*. In this instance, leadouts should be doubled back into the model after threading on the respective colour coding. Allow sufficient Laystrate to enable full movement of the bellcrank to be obtained, then bind the fine plastic sleeving tightly with fuse wire. Now apply epoxy to the loop, leaving just a small, round hole for the fishing swivel. As soon as the epoxy is set, bring the two lengths of Laystrate together within the wing structure and solder – making sure that the soldered section will not foul the leadout tubes in the tip. A neat, snag-free arrangement.

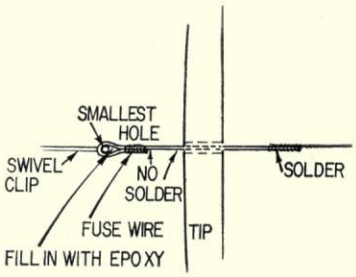


Figure 2 – Flexible leadouts

Many 'new' combat models rapidly attain the appearance of old wrecks due to fuel soakage, despite numerous coats of dope and fuel proofer. Such fuel soakage, of course, weakens the models and increases the weight. The cure? Simple – the problem probably occurs because fuel is creeping under the covering from the areas where the tank vent/feed pipes emerge. Safeguard against this happening by applying epoxy fillets as shown in *figure 3*.

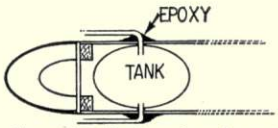


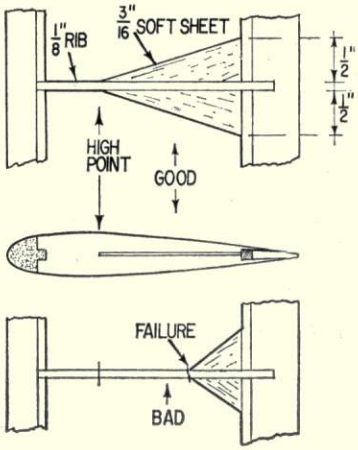
Figure 3 – Fuelproof tank vents

Wing rib gussets

If you are a 'gusset enthusiast', you may have found that your ribs tend to break or crack where the gusset ends. This is usually caused either by *a*) the nylon tightening up and pulling the trailing edge to meet the leading edge, causing the ribs to 'climb' over the trailing edge or, *b*) when the model hits the ground on its first, hard impact. The main mistakes that people make is either in making these gussets too small, using the wrong grain direction, or using too thin balsa wood, such as 1/8 in.

In our club (Glevum) we have found that if the gusset is extended forward to the high point (maximum depth) of the rib, then such failures are greatly reduced – see *figure 4*. It is best to use 3/16 in. or ¼-in. balsa for gussets. Too heavy you say? Not if you use really light wood.

Figue 4 – Gussets



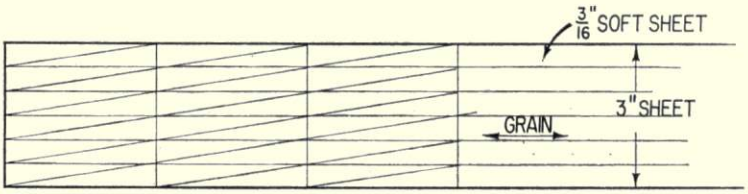
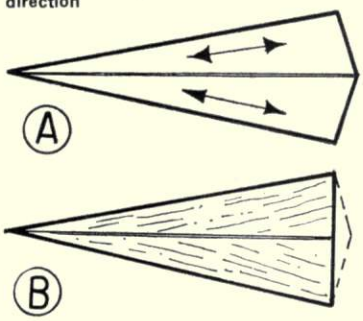
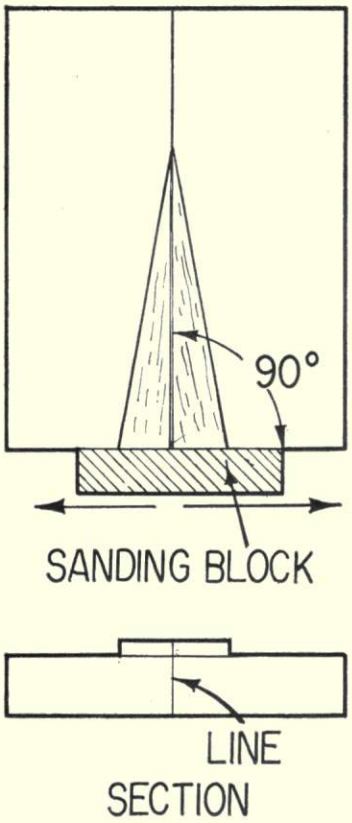


Figure 5 – Mass producing gussets. Note grain direction

Many people are put off using gussets as it is rather a slow, tedious operation adding them to each rib. However, *figure 5* shows a quick, easy solution to the problem, allowing gussets with the correct grain direction to be produced *en masse*. Just cut out the triangles as shown, then pair them up with the grain in the correct direction. The ends are best squared off using a sanding block, again as illustrated. If the ribs have been assembled reasonably square to the trailing edge, then these gussets will just drop in – a perfect fit.





Quickies

For those who use polyurethane fuel proofers. Apart from transferring it to a smaller tin as it is used, it helps to prevent skin forming on top of the polyurethane left in the tin by turning the tin upside down to seal the tin, but a useful hint here is to mark the lid with the seam of the tin so that the lid fits back in the exact place, providing a better fit.

Most of the top flyers are now using the R/C-type horn keepers. These are much neater and more secure than the normal arrangement, giving a smooth linkage. The push rod can be cut off nearer to the horn as well. (Why should the radio boys have it all!) Well worth it at a price of around 16p for four. Don't forget to file the spoke smooth and round, your pit man will appreciate your efforts!

AUSTRALIAN NATIONALS

Continued from page 269

some contests, but generally the standard and the support was good and the flying enjoyed. *Scale* was the poorest event of the Nats. Roy Summersby won it with his four-year-old *Spirit of St. Louis* which he brought along more or less as an afterthought and Ken Whenham converted his *Mustang* into matchwood (at least) when the up line broke. No one else flew.

Stunt had 21 competitors and was flown over three days in conditions ranging from fair to excellent. This was the first Nats. at which silencers were compulsory and they were used by all without comment. Most motors were cowled, too. There were no surprises in the placings – winner Paul Turner and runner-up John Tidey have been battling it out for 1st and 2nd at various N.S.W. contests over the past few years.

F.A.I. Speed and *Combined Aust. Speed* were the best supported speed contests for years and things ran smoothly all day, with no frantic rush at the end. Piped Rossis were most popular in F.A.I., Super Tigres in the larger class. F.A.I. winner was Andrew Kimonides of N.S.W. with 141½ mph – 1 per cent short of our record and Len Buck of S.A. put up 163½ mph to win Class III. *Team Racing* went on reasonably smoothly with its inevitable handful of protests, arguments and warnings. ½*A* (eight entries) saw mainly Oliver Cubs and 1970 Taipans used. The standard was poor, with winner Fred Adler surviving the all-in prang in the final and taking 14 minutes to finish. *Class II*, by contrast, had all finalists within 1½ minutes of the Australian record time (6:07) all used Super Tigre 29 RVs. After several protests and warnings through the heats of the *F.A.I. Team Race* the pilots finally took the hint and flew cleanly in the final, where again all times were within 1½ minutes of the record (9.22). Half the motors used were Super Tigres, the rest Etas and Taipans and a sole Kosmic.

F.A.I. Combat (49 entries, 35 fliers) and *Open* (18 – 12) ran very

A rare sight in Australia, as well as the U.K., is the set speed model. Ron Hoogenkamp ('the Hoog') brought along a pulse-jet for demonstration flights.

smoothly, with contestants responding well to the contest director's calls and signals, while the actual combat was both clean and fast. In the very hot weather the glow motors gave trouble – F.A.I. Finalists were all using Taipan Diesels – and Open Combateers had difficulty getting together in the air with their O.S. and Super Tigre 40s. 2½ *cc. Rat Race* is another consistently well-supported contest (27 fliers) which seems to appeal to both beginners and experts. Super Tigres and Taipans were the popular choice and given a fast model, the entrants with the best piloting technique were the winners. *Open Rat* is less popular, but more frightening to watch, although the races were limited to four at a time, which kept them a little tamer.

XXIXth Coupe d'Hiver

International challenge attracts 189 entries from France, Germany, Italy, U.S.A., Canada and Great Britain

Once more . . . a small Italian group shows how with victory!

SOME OF the most satisfying experiences arise out of adversity, and this year's annual Anglo-French Challenge on February 25th was typical. When the event is programmed to fit within a normal weekend, the time scale for travelling becomes tight to say the least, in spite of the simple fact that Paris is not as far from London as is Manchester! One is heavily dependent on the return flight being sufficiently late after the contest to enable the team to get back home overnight for work on Monday. Only this year there was NO return flight – and if the Aeromodeller party had travelled (as is usual) by B.E.A. or Air France they would not even have reached Paris!

This was the effect of the Air Traffic Controller strike in France, and it is thanks to the ingenuity of **Orion Travel** agents that our 26-strong group arrived with only 90 minutes delay at Beauvais by Dan-Air B.A.C. 1-11 (instead of Avro 648).

Customs chose Ian Dowsetts screwed-down box to examine and after entertaining the onlookers as they searched for contraband, the party moved on by coach to the hotel in Paris.

Half the group were M.A.P. staff, the rest being the stalwart regular competitors and it would be no understatement to say that they left a deep impression on the hotel management. While at no time would we dare to compare the situation directly with best Whitehall Theatre farce, there were moments when the clutter of model boxes and the nocturnal ramblings of the 'explorers' made the Hotel Migny a perfect setting for any 'Carry On' film.

So despite the A.T.C. strike and the closure of Orly and Le Bourget the Coupe d'Hiver party got through to their target! Ironically, they should have been joined by one Captain Dick Toomey of B.E.A. – who remained strikebound at home! But it wasn't only the labour dispute that depleted our strength. Three Service reps from R.A.F.M.A.A. were unable to get through the snow in Germany. Major Lindsey Smith had departed earlier and was first at the restaurant rendezvous, keeping 'mine host' happy at the sight of 26 empty seats as he explained by guesswork that 'They will come – soon!' And so we did.

Saturday sightseeing ranged from the traditional tower to plumbing the depths of the Left Bank. It's amazing how the

Top: Maurice Bayet, editor of Le Modele Reduit d'Avion, **congratulates Giulio Gastaldo of Turin for winning the Challenge trophy. Below, left to right, Dave Tipper waits for lift but was unlucky and down to 101st place. Roger Garrigou, past winner, releases latest Garricoupe. Dave Goodwin and Linstrum proxy model had a great time, though down the results.**

party covered so much ground in one day. Our particular 'moment' came in meeting the Italian trio at Maurice Bayet's editorial offices. In an atmosphere unchanged over almost 40 years (the back numbers in the Loo have original 1938/9 wrapping) it seemed like only yesterday – certainly not a whole year since we last met.

Return to the Hotel on Saturday evening revealed that not even Dan Air would be able to fly in and out of France on Sunday. The Courier said we might get back on the Monday but later this was changed to Sunday travel by coach and ferry. As this was the only means of getting back for Monday's commitments, Pete Freebrey, Colin Morris and Bob Hymers had regretfully to return with boxes unopened along with the 'tourists'. Meanwhile the 'team' opted out of the tour and elected to find their own way home. After all, Paris isn't such a bad place to be stranded in!

Promptly at 0800 hr., the coach left for the contest at Le Plessis Belleville under a crystal clear sky, with little trace of wind. One could feel sorry for those who missed this final stage of the trip and hopeful that it might bring compensatory luck for the remainder. Passing quickly through the outskirts to the autoroute, under the vast runways of Europe's biggest airport at Roissy we came to the large grass airfield to find a line of cars, tents and innumerable modellers already in occupation by 9 a.m.

The air traffic control strike was not having any effect upon local flying. When we sought to use the telephone in the clubhouse to deal with return arrangements a snatch of conversation among the weekend flyers alerted our attention 'Snow?' – today? *Mais ouis* for sure. It seemed incredible under that cloudless sky but the forecast was correct – and flurries of snow did later sweep across the field as if to justify the 'Winter' part of the Cup.

A new system of timekeeping control isolated the 'foreigners' and speeded up the operation. Though 189 entries were registered, it must be remembered that each entrant is permitted two models. There was a time when the entries per person were unlimited but that tactical gambit was ruled out after protests. Instead, a new, far more acceptable approach has developed. Those who want to fly a lot get their wives and children to participate. A blind eye is turned towards the very young, hardly able to turn the winder and not old enough to light the d/t fuse: but what a good course of indoctrination!

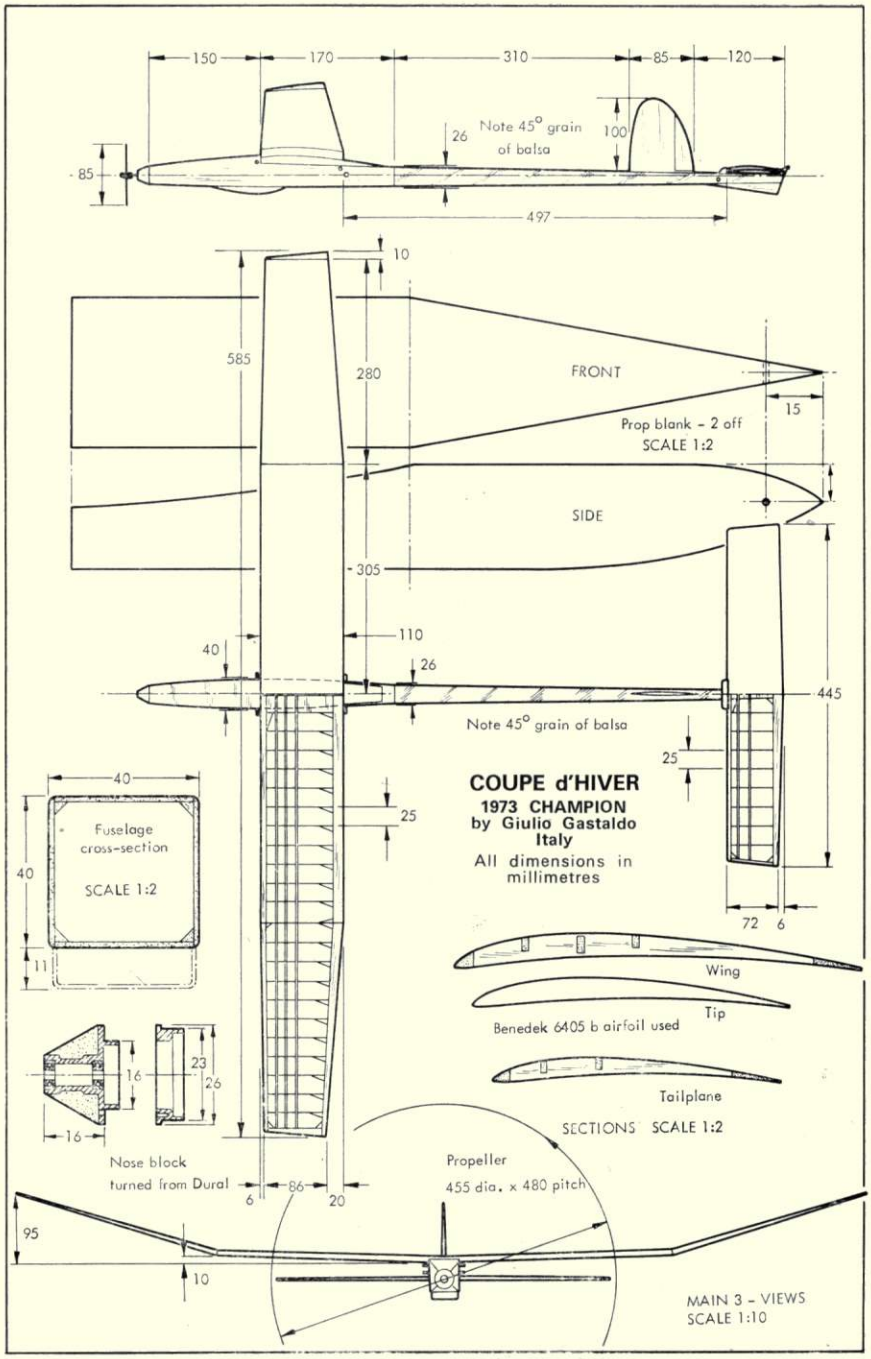
Three rounds were flown, each flight had a two-minute maximum limit, and all flights were technically 'rise off ground'. Various interpretations are applied to this rule ranging from the naïve tip of prop and wing tip release with the tail firmly in the grass to the rise off hurl where the entrant rests flat on the ground and puts the full force of a javelin launch behind his fuselage. It is one of the better features of this meeting that no one really minds these tactics, and if one modeller feels he is being outsmarted, he usually has something in reserve. John O'Donnell has his delayed prop release device waiting for such an occasion. Another delight of Coupe d'Hiver is its attraction for the experimental, few of which achieve success: but all of them provide education and pleasure. We have seen folding wings, twin motors (5 grams each!), pusher props and monster models, but it is always the well-flown, conventional type which places top in the end.

Since any account of true progress in this large entry event would become a catalogue of durations and disappointments likely to bore all but those who took part, we'll make a change in reporting and examine the contest through the eyes of the winner.

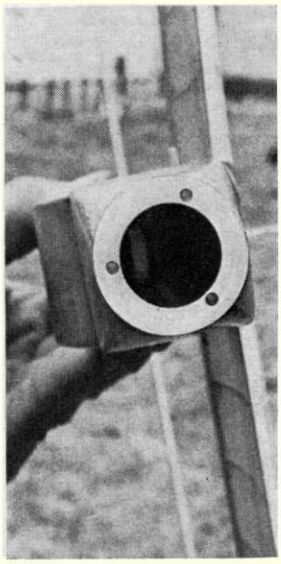
Giulio Gastaldo was only used to the calm air of Turin when he arrived at Le Plessis Belleville and gave little for his chances in the chill breeze which developed. Well provided, he selected his narrow bladed (42mm) 455 x 480p propeller to climb faster, and completely altered his trim from right climb, left glide to right climb, right glide, adding 8 grammes

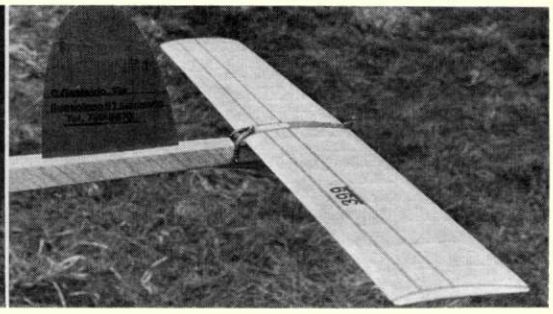
Above: top lady, Mrs. Mireille Landeau, an accomplished flier. Below: our liaison man in Paris, Brian Cox, holds for John O'Donnell as he prepares for the vital deciding flight to split the three-way tie for second place, which ended with him in fourth place.

Above: Andre Meritte, second place winner with a tremendous six minute fly-off flight, largish model uses a winding pylon and operates completely on his own. Below: Henry Tubbs recruits the timekeeper to help out with Tom Medley's model.

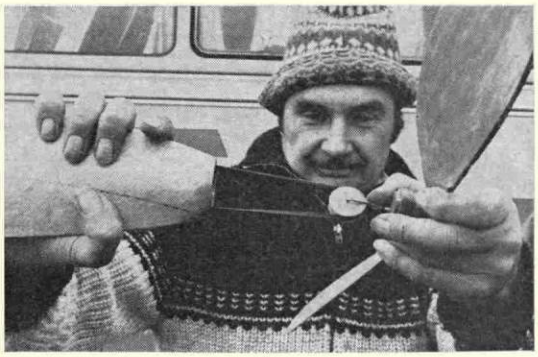


Giulio Gastaldo's winner has several sophisticated features including the ball-race prop shaft bearings, diagonal grain sheeted fuselage, thin airfoils and eight strands of stripped 1 x 5mm Pirelli rubber.





Second in the fly-off was B. Boutillier, one of many whole family entries with Mama and son also flying.



Coupe d'Hiver would not be the same without M. Rudolf. This time he had an even bigger fish-fuselaged model, with the motor split to two widely spaced rear hooks. On 10 grams of rubber the cruise is not high.

of ballast to the nose to take the glide angle off the stall. Wings are in two panels, connected with 2mm wire and this permits change of panel angle. The port wing was reduced by a third of a degree to 2° 30'. Two pre-contest test flights on 300 turns were enough to give Giulio confidence as the model climbed well in a wide turn.

The R.O.G. rule was strange to the Italian and he had to develop his technique on the field. He chose to hold the prop by the metal hub, keeping the folding blades extended, and stabilising the initial take off by holding the right wingtip as the model was released slightly crosswnd. A first round 'Max' of two minutes was most encouraging and although the second flight dropped three seconds, the third was a sure max again and so top score was gained.

For the British, the day was not by any means over even after they had enjoyed the marathon prize-giving. The coach bogged itself to the rear axles and an International rescue team had to be recruited before the 1973 Coupe d'Hiver could be said to have finished.

After the event, came the inquests, and a resourceful journey home by train, ferry and furniture van to the cars which had been left at Gatwick. If we have dwelt on matters other than the contest it is because the annual Coupe d'Hiver challenge is very much a total experience of which the three flights are normally the high point. For '73, the contest will be remembered especially as a flashback to the days when teams travelled together, had fun together, took each others photos on the boat deck and learned far more of the sport of modelling than we find evident in more serious championships.

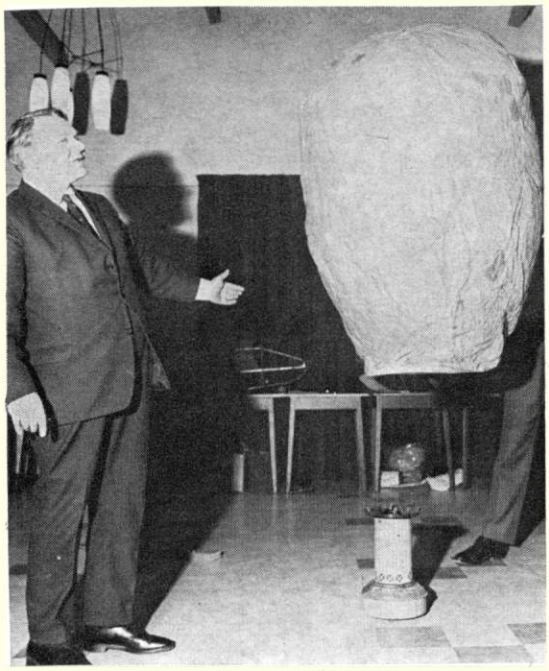
Vive la Coupe d'Hiver – or should we say on this occasion *Viva La Coppa Inverno!!*

RESULTS:

1 G.Gastaldo (I) 357
2 A. Meritte (F) 330+359
3 B. Boutillier (F) 330+267
4 J. O'Donnell (GB) 330+085
5 M. Mailfert 325, 5 G. Cognet 325, 7 R. Garrigou 319, 8 J. C. Souveton 312, 8 J. Griveau 312, 8 C. Megnet 312, 11 P. Chaussebourg 310, 12 C. Megnet 309, 13 J. Brovez 303, 14 J. Griveau 302, 15 T. Medley (U.S.A. – proxy H. Tubbs) 301, 15 J. Pouliquen 301, 15 A. Landeau 301, 15 G. Trouve 301, 19 F. Monts (U.S.A. – proxy J. O'Donnell) 298, 20 A. Meritte. **Other non-French placings:** 22 M. Fantham (U.K.) 293, 28 D. Taylor (U.K. – proxy M. Fantham) 287, 31 H. Tubbs (U.K.) 277, 42 Zeri (I) 253, 43 R. Coleman (U.K.) 252, 44 J. O'Donnell (U.K.) 247, 54 I. Dowsett 225, 58 P. Coleman 222, 59 D. Linstrom (U.S.A.) – proxy P. Chaussebourg (F) 221, 62 R. Firth (U.K.) 217, 65 F. Elton (U.K.) 215, 70 I. Dowsett (U.K.) 203, 72 P. Coleman (U.K.) 198, 78 F. Elton (U.K.) 191, 82 Zeri (I) 183, 91 R. Coleman (U.K.) 165, 95 L. Smith (R.A.F.M.A.A. – Germany) 154, 100 D. Goodwin (U.K.) 144, 101 D. Tipper (U.K.) 136.

Below: Major Lindsey Smith releases his Coleman design in first C.d'H. to represent Forces in Germany. Right: Emmanuel Fillan had a twin! Small motor (5g each) tubes attach to wing, contra rotating propers cancel torque but it needs a thermal to get anywhere.

CLUB NEWS



Lt. Commander Alwyn Greenhalgh is a frequent, and popular, guest speaker at club functions, where he can be relied upon to provide interesting and amusing anecdotes, particularly concerning his pet-interest, the history of model aircraft. He is seen here demonstrating his hot-air balloon to members of the Lee Bees M.A.C.

ALL SORTS of theories are given as to why young people do not take up model flying with the same gusto as of yore: it is too expensive; modern models are too complicated; not enough encouragement is given to the young and so on. Most of these arguments have some basis of truth in them, but the real truth may well lie in social change, for model flying is still relatively a cheap hobby, kits and plans of beginners' models are readily obtainable and it is not difficult to get help and guidance on what and how to build – just read the pages in this journal! Flying space may be restricted but there are still a surprising number of flying sites in this country, particularly for control line and the smaller free-flight models. All that is needed to get the youngsters into the hobby is, perhaps, the right sort of propaganda; telling them what great fun model flying can be.

At least one club which is not given over to middle-age indulgence is the **Wakefield M.F.C.** Mr. B. Lumb, the Hon. Secretary, writes to tell us that, of the membership of 40, 16 are juniors, ages ranging from 10 to 16. The Club, which bears a most august name, has only been in existence since last November and is still feeling its feet, as it were. At present, just one flying site is available, suitable only for control line, but the Club is in touch with local councils for some more permanent and better site. Interests range throughout the whole spectrum up to multi-radio and there is even electric round the pole to enliven the club evenings. Juniors have the benefit of advice and help from the more experienced members, who go out of their way to solve those problems that beset the beginner. Looking outward, several members have already entered the Nationals and other events and it is hoped to do even better in this direction during 1973.

Adding a very authoritative voice to the 'missing' junior controversy is the Model Aircraft Club at the **Magdalen College School,** Oxford. Leader and mentor of the club is well-known contest flyer, Andy Crisp, who dispenses encouragement and advice to the youthful membership. It is this sort of help which, the club thinks, brings forth the elusive junior model flyer whose non-existence has been so fiercely debated. Even so, the Secretary admits that the club has its share of hangers-on and engine collectors and, obviously, would like to see more people actually building and flying models. Mention is made of free-flight and C/L activity, with a spot of indoor flying in the school gym. As far as the latter is concerned there have been a number of contests held and it is hoped to put out a few challenges to other schools.

The contest programme published in the latest issue of the **Wolves M.A.C.** newsletter, does not cover Radio, due mainly to the lack of a suitable venue, but the C/L and F/F events listed seem to be aimed more at all-round participation than in a series of field days for the experts, with events such as Scrambles, Vintage and Sports Power, although more serious events have their due place. C/L venue is generally Marsh Lane and F/F Cannock Chase. Apart from the club programme it is hoped that the club presence will be felt at the Nationals (a large party) and the other meetings and rallies.

One of the consequences of the new S.M.A.E. policy comes to light in the newsletter of the **Watford Wayfarers M.A.C.** Only a few members will be taking up the new Society Membership; meaning, of course, that the club, as a body, is no longer affiliated. A great pity and, perhaps, rather a short-sighted policy. Club costs are mounting these days and the cost of hiring the clubroom was one of the issues raised at the February A.G.M. Fortunately, summer club nights can be spent on the moor (well, moor or less) and other meetings may well be cut down to every other month. One non-expense is the use of common land for club flying and the biggest threat to the continuance of this amenity is noise. This may be one good reason why it may be debatable to opt out of the National Society which could protect their interests.

Scale modellers these days go for the real, gutsy verisimilitude rather than the frilly frills. Take, for instance, the **Three Kings Aeromodellers.** Not one, but a number of Scale members are grappling with the problems of retracting undercarts. More than anything else the sight of the wheels tucking themselves smoothly away does wonders to the flight realism. Nothing easy about it, though; the difficulties are tremendous and the latest we hear is that clockwork motors are being used to operate the mechanisms. New scale models, which may or may not have this refinement, due to make their appearance, according to the club's excellent magazine *Court Circular,* are a *Lancaster,* a *Spitfire,* an *M.E.*210, a *Heston Pheonix* and a *Chipmunk*. And there are others on the stocks. One scale model very much complete, though, is the 'Model of the Month': Bernard Sexton's *Cherokee IV* stunter. It is mainly red, with black trimmings and white stars. Wing span is 45 in. and it has a Cox Medallion 15 up front. More about the *Lanc.* This is a Geoff Burkett project and is taking definite shape and

will be equipped with a retracting undercart.

Mr. J. A. Noble, who sends us a report on the **Urmston & D.M.A.C.**, would appear to be something of a 'Pooh Bah', as he combines the offices of Comp. Sec., P.R.O., and Chairman. Urmston, incidentally, is in the Manchester area, but although the club field is mentioned, we are not given the location. Main interest appears to be C/L, which is quite well supported, contest wise. Already this year a Rat Race produced eight entries and Combat and Speed events have also been held. Secretary, Ian Woods, won the Rat Race with a final time of 7:08 for 100 laps. Junior winner was Matthew Greenhalgh, who also took Junior honours in the Combat and Speed events. Senior winner of Combat, very clearly, was Alan Warburton and in Speed, Bill Newton did 75.5 m.p.h. with a new M.V.V.S. (just running it in), just pipping John Noble who clocked 75.0 m.p.h., with his Series 1 ETA 15. Best supported event so far: Scramble Chuck Glider won, perhaps, appropriately by speed man Bill Newton. On the social side of things a Buffet Dance was held. Mr. Noble says it is at such times you become surprisingly aware that club members actually wear suits.

There has been a lot of pi-jaw in the inner confines of the **Worcester Royal Grammar School M.A.C.** in an attempt to shape club policy and determine the pattern of things. May I advise the young people not to get too bogged down in clubroom politics, but direct their energies towards building and flying model planes. They are lucky in having the school playing fields to use, subject to the demands of other activities. A forthcoming attraction will be the display to be given at the School Fete. This will, of course, be a control line affair, but a number of F/F exponents are also showing an interest. So much so it is intended to club together to purchase a P.A.W. 1.49 diesel for communal use. It would be a special occasion amenity; to power models at exhibitions and for use at contests.

What was intended as just a get-together, with **Stockport & D.M.A.C.** as hosts and **Preston M.A.C.** as guests, turned out to be quite a mini rally, with other clubs involved as well. The event was Combat and a total of 13 entrants took the field. Dave Wood claimed the top honours, with Ray Ambler of Preston second. Stockport's John Daly just pipped Mick Tiernan into third place with his M.V.V.S. D7-powered model. Mick is now taking a healthy interest in MVs. More Combat news in this report from P.R.O., S. G. Hayes: it is hoped to re-introduce the *Stockport Combat Rally* (the 'Mainstream Trophy') this year, and a provisional date is 29th July. Combat and more to talk about at the weekly club meeting, held Thursday evenings at Woodbank Community Centre, Turnpike Lane. Prospective members welcome.

News of the **Northampton M.A.C.** comes from Mr. Howard Boys, whose name is known to several generations of model flyers. He tells us the club was honoured by the presence of the Mayor of Northampton, Alderman K. R. Pearson, at its prizegiving. The mayor is also C.O. of the local A.T.C. and a one-time modeller. Big prize hand-out was the hotly-contested *Plugge Trophy* to the very deserving team. Points are acquired throughout the year by performance value in the various S.M.A.E. events and is a measure of both ability and enthusiasm. Congratulations, Northampton. The event was held at the Kingsthorpe Community Centre, the club's meeting place, and included a showing of Robin Lehman's films. Next day the Plugge team were invited along to the mayor's parlour for a celebratory drink, in company with the local Press.

Sorry for any omissions – run right out of space.

Clubman

Contest Calendar

April 22-23rd	**S.M.A.E. TWO-DAY F.A.I. MEET.** F.A.I. Rubber, Glider, Power at Strubby, Lincs.
April 22nd	**ELLIOT SPEED MEET.** Classes 2-5 Open, F.A.I., 29, 40 & 60. Venue: Elliot Bros. Airport Works, Rochester, Kent.
April 29th	**S.M.A.E. INDOOR MEET.** Venue Cardington, Beds.
April 29th	**S.M.A.E. R/C AEROBATICS.** Little Rissington, Glos.
April 29th	**BLACKBURN & D.M.A.C. R/C SCALE MEET.** World War I R/C scale models only. Informal comps with trade-supported prizes. Venue: Witton Park, Blackburn, Lancs. Details and pre-entry (50p) from E. Herbert, 2 Elisabeth Drive, Helmshore, Haslingden, Lancs.
April 29th	**NORTH BERKS R/C THERMAL SOARING.** Multi tasked at Garford, nr. Wantage. Pre-entry (35p) to B. Payne, 49 Crofts End, Chiltern, nr. Didcot, Berks. 10 a.m. start.
May 6th	**NORTHERN AREA C/L RALLY.** F.A.I., Goodyear T/R, Combat S.M.A.E. members only. Venue R.A.F. Topcliffe, Yorks.
May 6th	**BUCKANEERS C/L STUNT FLY-IN.** Finmere Airfield, nr. Tingewick, Bucks. Entry on day. Details, J. Mannall, 3 Totnes Close, Bedford.
May 6th	**S.M.A.E. 2nd AREA CENTRALISED.** F.A.I. Power, Open Rubber – Area Venues.
May 6th	**1st WESTERN AREA C/L RALLY.** F.A.I., Goodyear, Combat at R.A.F. Fairford, Glos. S.M.A.E. members only – cards to be shown at the guard house.
May 12th	**CROOKHAM OPEN COMP.** Open R/G/P. A/1, ½A, C d'h., H.L.G. Venue R.A.F. Odiham, Hants.
May 13th	**SHEFFIELD S.A. F/F RALLY.** Open R/G/P, Mini Comp., Chuck, S.M.A.E. members only. Venue Elvington Aerodrome (7 miles from York on B1228). Cash prizes.
May 13th	**LONDON AREA C/L CHAMPS.** F.A.I., Goodyear T/R, Combat at Charville Lane, Hayes.
May 13th	**ST. ALBANS R/C THERMAL SOARING – CANCELLED.**
May 13th	**DEVON RALLY.** Open R/G/P. All in F.A.I. 15 flights (no rounds), plus H.L.G. Re-entry allowed. Venue Woodbury Common, nr. Exmouth.
May 13th	**EASTBOURNE M.F.C. R/C SOARING RALLY.** Multi only. Venue Long Man or Butts Lane (Butts Lane used if any East in wind).
May 13th	**OXFORD R/C THERMAL SOARING.** Details from P. Edwards, 33 Kennet Road, Headington, Oxford. Venue Port Meadow, Oxford.
May 20th	**S.M.A.E. INDOOR MEET.** Venue Cardington, Beds.
May 26-28th	**BRITISH NATIONAL CHAMPIONSHIPS.** Venue R.A.F. Lindholme, nr. Doncaster, Yorks.

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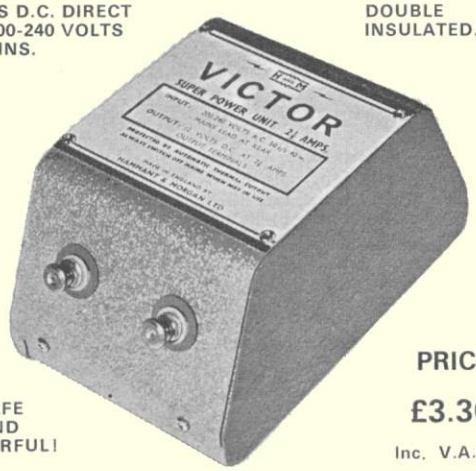

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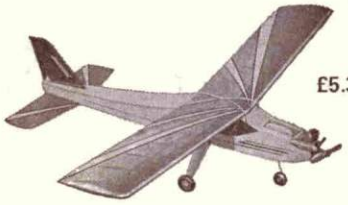

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