Aero modeller

MAY 1982 60p

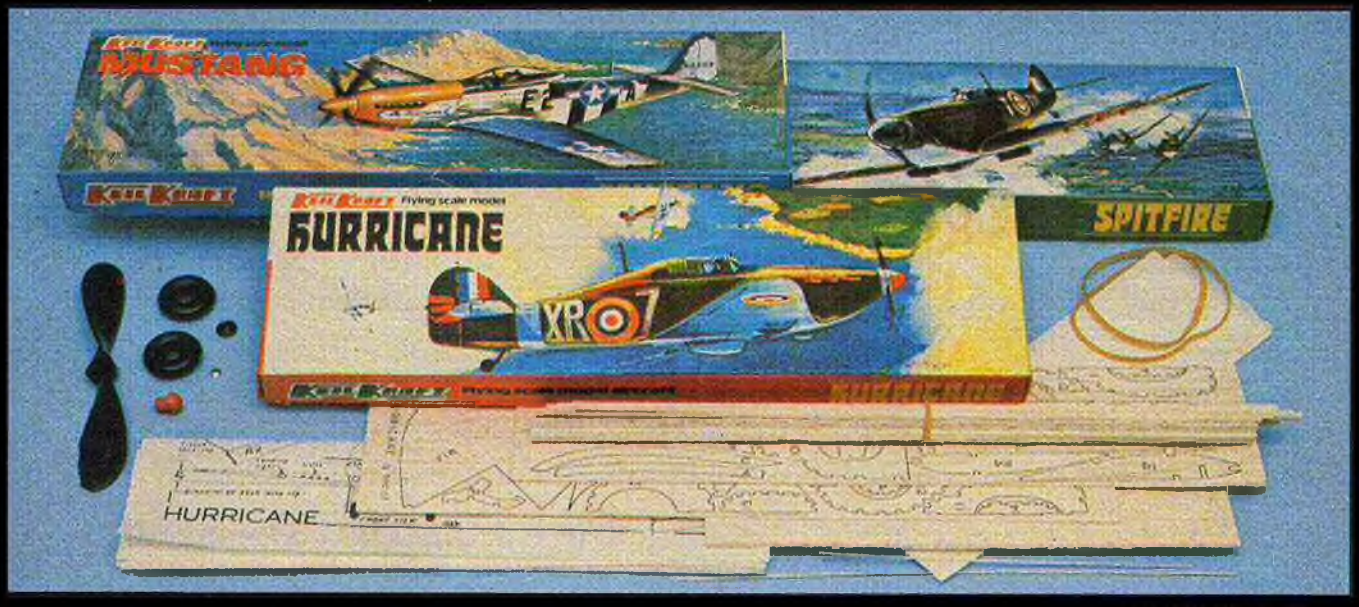
MAP MODEL MAGAZINE

Sports Rubber High Performer

PROFILE CONTROL LINE PLAN INSERT

Vintage Miniature 'RAMBLER' CO_2

KEILKRAFT 15½"-21" span rubber powered FLYING SCALE SERIES



MUSTANG 18½" span

NIEUPORT 15½" span

HURRICANE 19½" span

SE5 16" wingspan

SPITFIRE 18" wingspan

They're a SUPER range of kits. Proven designs which really fly well. Four aces from World War I. Favourites from World War II. Plus 13 more, chosen to give you flyability with realistic appearance.

Each kit contains a full size plan . . . detailed building and flying instructions . . . plastic propeller and noseplug . . . plastic wheels . . . all ribs, formers, etc. clearly printed on high grade balsa sheet ready for cutting out . . . ample top quality strip balsa . . . covering tissue . . . sheet celluloid . . . rubber motor and piano wire. Everything you need (except dope and adhesive).

Built-up balsa models that employ REALISTIC airframe construction and FLY BETTER because of their light weight. Ideal for small field flying. Most also easily convert to CO_2 power, or electric R.T.P. flying.

Other models not illustrated FOKKER D-8, WESTLAND LYSANDER, STUKA, FOCKEWULF 190, ME 109, FAIREY GANNET, FAIREY JUNIOR, CHIPMUNK, AUSTER ARROW, BEECHCRAFT BONANZA, GLOBE SWIFT & CESSNA 140.

ALL MODELS £2.70 EACH

ERCOUPE 20" span

STINSON 20" span

SOPWITH CAMEL 16" span

PIPER FAMILY CRUISER 21" span

PIPER SUPER CRUISER 18" span

PROVOST 19" span

21" span

LUSCOMBE SILVAIRE

KEILKRAFT *KITS – SEE THEM AT YOUR MODEL SHOP.*

SOLE UK DISTRIBUTORS:

VERON (MODEL AIRCRAFT BOURNEMOUTH LTD)

Ⓢ

Aeromodeller

MAY 1982

MAP MODEL DIVISION MAGAZINE

Editorial Director TONY DOWDESWELL
EDITOR COLIN RATTRAY
Graphics LORNA CULLEN

Advertisement Director M. GRAY
Managing Director RON MOULTON

Comment

THERE was a time when you would hear the buzz of a control line model, see gliders, and rubber powered models flying regularly in every available space. There was also a tremendous range of open events in the calendar. Older modellers will remember those fabulous meetings such as the: Woodford Rally, Yorkshire Evening News Sponsored Rally, West Essex Gala (Fairlop), Walsall Rally, South Midland Rally (Cranfield), Northern Heights Gala and many more.

All were welcome at these events to fly for fun or join in the competitions, which stretched right across the range of modelling activities.

Alas times have of course changed, but there is still a lot of us left! Isn't it time that one of the larger clubs or even a small group organised a similar event? All of the Rallies and Galas previously mentioned were run by individual clubs and also managed to make a good profit!

Maybe as the Vintage scene is coming up so strong, SAM might like to take up the challenge? Or one of the control line clubs?

Perhaps a better idea would be for two or three of the specialist groups to join together for an occasion. This would ensure a good balance and also help with the numbers of people that would be required to run such an event.

We of course realise that venues are very difficult to obtain, especially for an open meeting, but with careful negotiation, it is possible.

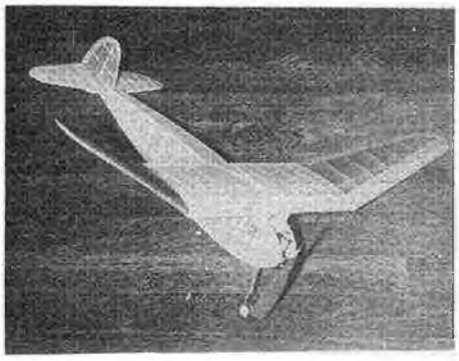
If anyone decides to have a go, let us know about it in good time. We will do all we can to give it good publicity and inform the trade to try and get their support. **Ed.**

Contents

 ISSN 0001- 9232

Volume 47 Issue No. 556

P220



ON THE COVER

Sue Hipperson holding 'Suzy's Too', the APS plan in this issue. This model, designed by Dave Hipperson, is a high performance rubber powered sport model incorporating folding prop and D/T system. Inset 'Wildcat', a multi-role Combat/Stunter/Trainer control line model, with foam or built up wing construction. The full size plan for this and the CO_2 'Rambler' are in this issue.

NEXT MONTH

Our main feature is an APS plan for a 1/16th scale P51D Mustang. This 660mm span rubber powered model has full stringered fuselage construction and will please all who like a challenging project. Vintage Corner has a report with photographs of Alwyn Greenhalgh's recent lecture on the 'History of Model Aviation' held at the Museum of London and our usual news and technical information from all areas of aeromodelling. On sale 21st May, price 60p

P233

Model & Allied Publications Ltd

P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE. TEL: 0442 41221

Also publishers of:
RADIO MODELLER — RADIO CONTROL MODEL & ELECTRONICS —
POPULAR CRAFTS — SCALE MODELS
MODEL ENGINEER — MODEL BOATS
MODEL RAILWAYS — WOODWORKER
MILITARY MODELLING — MODEL CARS
MOVIEMAKER — PHOTOGRAPHY
CLOCKS — PUZZLES DIGEST
PUZZLER'S WORLD
ART & ANTIQUES

ABC
MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

Aeromodeller Magazine (ISSN 0001-9232) is published monthly by Model & Allied Publications Ltd, P O Box 35, Bridge Street, Hemel Hempstead HP1 1EE, England Tel Hemel Hempstead (0442) 41221 Second class postage paid in the U S at New York, NY Distribution to North American hobby and craft stores, museums and bookshops by Bill Dean Books, Ltd, 168-41 Powells Cove Blvd, Post Office Box 69, Whitestone, NY 11357, USA Tel 1 212 767 6632 Distribution to news stand sales by Eastern News Distribution Inc 111 Eighth Avenue, New York, N Y, 1011 U S A Tel 1 212 255 5820

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. 0442 51740) Direct subscription rate £10 00 per annum, including index Overseas subscriptions £11 00 or $25 00
Change of address, US Postmaster: Send address changes to Model & Allied Publications Ltd, P O Box 35 Bridge Street, Hemel Hempstead Hertfordshire HP1 1EE, United Kingdom
CORRESPONDENCE anticipating a reply must be accompanied by a stamped and self addressed envelope or international reply coupon. While every care is taken, no responsibility can be accepted for unsolicited manuscripts, photographs or artwork, etc Photographs should be accompanied by negatives where possible and can only be accepted for use on an exclusive basis for British Copyright
AEROMODELLER incorporates the MODEL AEROPLANE CONSTRUCTOR and MODEL AIRCRAFT and is published on the third Friday of each month prior to date of publication

Aeromodeller is printed in Great Britain by Leicester Printers Ltd., The Church Gate Press, P O Box 20, 99 Church Gate, Leicester LE1 9FR Mono Origination by Multiform Photosetting Ltd, Cardiff, for the Proprietors and Publishers, Model & Allied Publications Limited (a member of the Argus Press Group). Trade Sales by Argus Press Sales and Distribution Limited, 12-18 Paul Street, London EC2A 4JS

MICHAEL'S MODELS

Leading Control Line Specialists

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

OPEN 5 DAYS A WEEK 9.00 a.m. to 6.00 p.m.
Closed all day Thursday from Sept. 1st.

LIMITED STOCK ITEMS

Nelson FA1 or 15% Nitro Glow Racing Engines £99.50

JETEX MOTORS

HT50 ..... £1.55
Hellcat 50 ..... 95p
Scorpion 600 ..... £3.95
Quick (a can) 90p
NO FUEL LEFT
Modelarske Motory £3.50
By Jiri Lalina (Czech Text)

STUNT ENGINES

O.S.10 FSR Stunt inc. silencer .. £15.75
O.S.15 inc. silencer £17.95
O.S.20 inc. silencer £20.25
Irvine 20 Stunt inc. silencer £29.95
Irvine 25 Stunt inc. silencer £32.95
O.S.35 Stunt inc. silencer £23.45
Merco 35 Stunt £18.95
Fox 35 Stunt £17.15
Fox Silencer £5.22
Irvine 40 Stunt inc. sil. £45.50
O.S.40 FSR Stunt inc. silencer .. £42.50
Two only — Super Tigre 46 Stunt £32.35

P.A.W. ENGINES — NEW RANGE

P.A.W. 80 ..... £12.08
149-D.S. £12.65
NEW! 149-D.S.-2 ..... £13.80
149 Contest Schnuerle Type Porting £14.95
NEW! 149 Contest '2' Schnuerle Type Porting £16.10
249 — D.S. £13.80
19 — D.S. £14.95
149 R/C Diesel fitted with silencer £20.70
249 R/C Diesel fitted with silencer £21.85
19 R/C Diesel fitted with silencer £23.00
NEW!
149 Glow £16.67
149 Glow R/C fitted with silencer £22.43
Muffler Set 1.49, 2.49, .90 eng. £1.38
Muffler Set for .80 eng. £1.04
Exhaust Manifold Set 2.49, .19 eng. £3.16
Silencer 1.49, 2.49, .19 eng. £4.02

MICHAEL'S MODELS SPECIALS

STUNT KITS

Gieseke Noble Kit 50" £39.95
JR Nobler Kit 40" £18.95
JR Flite Streak 31" £10.95
Flite Streak 42" £18.95
Roberts Three Line Handle £9.95
Bellcrank, upright or susp. .....each £5.25
1oz. Glass Cloth ..... sq.yd. £3.25
Pacifier Tank Apts. ..... each 50p
100ml Syringe £2.80
Griptight Pacifier Tanks ..... each 16p
Laystrate 100ft. L/W ..... a reel £1.03
Taylor 1½v Comp Plugs ..... each 84p
Super Tigre N.V.A. £1.32
Super Tigre Needles 42p
Rubber Fuel Tubing 40" 50p
Multi Function Tank Valve Metkemeyer Type £16.95
Tank Valves STD £6.55
Tank Valves Nelson £6.55
Finger Valves £4.20
½A Circular Bellcrank with Housing £4.20
Team Racing Wheel Bushed £2.56
Comp. Screws (Allen Heads) 85p
Nelson T/R Crutch Drilled £17.00
Glo-Bee Cox 049-051 Racing Head Inserts for High Nitro Fuels each £1.64

D.D.D. CONVERSIONS

Changes Cox Glows to Diesel
.020 Kit £6.95
.049/.051 Kit £6.95
.09 Kit £9.53
Spare Fluocarbon Discs available

Spark Accessories

3 volt Lightweight Coil £9.25
¼" x 32 T.P.I. KLG Plugs £2.40
¼" x ⅜" Plug Adaptors 99p
Condensers £1.54

FOX CONNECTORS
Small, Medium, Large ..... 4 per pack 42p
SMAE Safety Prop Nuts 5mm £1.44
Carbon Fibre for props — 10 Tows by 1 metre ..... a pack £1.35
U-Reeley handles with .15 lines £12.95

.6oz. Fibre-glass cloth £3.25

SPECIAL POST FREE PRICE
5 Packs ..... £13.75 10 Packs .. £23.50

Send 40p in stamps for new comprehensive lists. Refundable with first order.

MAIL ORDER A PLEASURE
EXPORT ORDERS WELCOMED

All inquiries must be accompanied by SAE

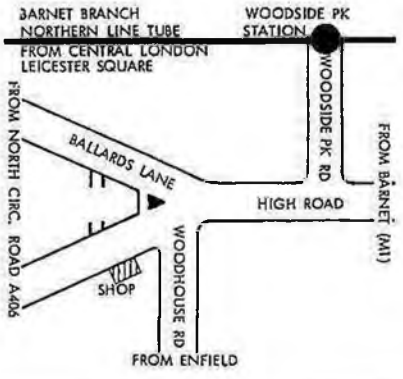
Phone Barclaycard, Access No. for same day service

Access · Eurocard · BARCLAYCARD VISA · master charge

NEW! COLLECTORS BOOK
'MODEL ENGINE TESTS OF YESTERYEAR'

A SELECTION OF AERO MODELLER ENGINE TESTS, FROM 1948 TO THE LATE 1950s. DIESELS — GLOWS & JETEX.

£4.95 + Postage



Although the prices on this list were current at the time of printing (1-2-82) we reserve the right to supply at the price current when the goods are despatched.

We buy all types of engines for cash. Send for best quotation by return. Phone for new and secondhand stock position. Payment by Barclaycard, Bank America Card, Access Mastercharge, Eurocard & Vista Credit Cards, plus Negotiable Currencies.

NEW ADDRESS

DUNN'S MODELS

3 WEST NILE STREET
GLASGOW G1 2PR

Tel: 041-221-0484

NEW - *BUT ALREADY CONTEST PROVEN SUPER TIGRE X15 FI SL TST*

Based on the 18 years continuous experience of building G20 15s the leading motor for FAI Combat, the new X15 FI SL TST is the replacement for the G20 which has now finally ceased to be available. This new gem of a motor rated at .55 BHP at 25,500 rpm has the vast wealth of experience built in accumulated by the worlds leading quality production factory. Twin ball-races steel lined motor with Super Tigre's special blend of transfer parts combining the best of Schnuerle, Perry and their own patented design. Orders are now being accepted for this motor and the introductory price is £29.50 for the first 100. So don't delay in getting in your order to either your dealer or to Tigre Engines. Delivery is scheduled for April.

TIGRE ENGINES 97 TUDOR AVENUE, WATFORD, HERTS. Phone: Watford 42859

Visitors by appointment only please. Trade enquiries invited. SAE with enquiries please

The Nitty, Gritty... Detail & Scale

Detail & Scale is a new series that should prove invaluable to the modelling enthusiast. Each volume provides detailed, technical and accurate coverage of some of the world's great aircraft.

Emphasis is placed on the details of aircraft and how they affect its operational capabilities. The illustrative material reflects this emphasis, with over 100 photographs, both colour and black and white, plus line drawings, of cockpits, radar, landing-gear, avionics bays, control surfaces and pylons. In addition, there is a brief, historical summary of each aircraft, kit and decal reviews, technical data and, when possible, scale 5-view drawings.

F-4 Phantom II
by Bert Kinzey

This, the first volume in the Detail & Scale Series, presents the most accurate and detailed coverage of the F-4C, F-4D and RF-4C available anywhere. Among the unique features in this volume are close-up photographs and line drawings of cockpit interiors, radar and avionics installations, armament, landing gear, wheel wells and ejection seats—all taken direct from either official flight manuals or McDonnell Douglas, so accuracy is assured. Special consideration is given to the detail differences between the variants and sub-variants of the aircraft.

11in × 8½in (28cm × 21.6cm); 72 pages, including 8 in colour; 149 illustrations, comprising 93 black and white photographs, 26 colour photographs, and 30 line drawings, including 5 constant-scale full view drawings; £3.95 net; paperback;

B-17 Flying Fortress
by Alwyn T. Lloyd and Terry D. Moore

The second volume in the series presents probably the most detailed coverage of this famous bomber ever published. The authors have dug deep into the manufacturer's files to find a mass of photographs that have never before been published. They snow not only views of prototypes and production models, but also close-ups of cockpits, instrument panels, crew compartments, bomb bay interior, power plants, bomb-sights, landing gear, armament.... The colour pages feature photographs and also a series of highly-detailed cut-aways of the aircraft's compartments, and there are 27 line drawings, most at a constant 1/144th scale.

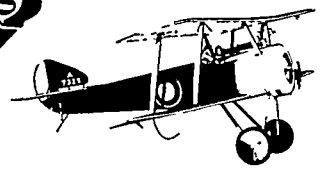
11in × 8½in (28cm × 21.6cm); 72 pages, including 8 in colour; 164 illustrations, comprising 121 black and white photographs, 11 colour photographs, 5 colour cut-aways and 27 line drawings;
£3.95 net; paperback.

Arms and Armour Press 2-6 Hampstead High Street London NW3 1QQ. Tel: 01-794 7868 (24 hrs.).

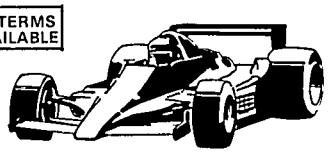
Available from bookshops and model shops; if ordering by post, please add 75p for postage and packing.

EAST LONDON MODELS

MAIL ORDER SPECIALISTS



HP TERMS AVAILABLE



SPECIALISTS: In all Radio Controlled Cars, Boats, Aeroplanes, Bikes, etc. Wide range of accessories.

OPEN 9am to 6pm Mon, Tues, Wed, Fri, Sat. CLOSED ALL DAY THURSDAY

AIRCRAFT KITS

Aeronca Champ	£52.80
Veron Tiger Moth	£43.50
Veron Avro 504	£46.95
Flair Pulsar	£55.50
Flair Pupperteer	£38.80
Pilot Zlin Akrobat	£34.95
KK New Super 60	£52.50
Rojair Zlin	£46.50
Pilot Tiger Moth	£46.75
Rojar Spitfire	£36.45
Akro Master 20	£29.95
Akro Master 40	£49.95
Pitts S2A	£44.95
Mustang Rojar	£36.50
Pilot Cessna	£39.95
Pilot Piper Cub	£31.65
Pilot F16A	£53.75
Pilot Tommerhawk	£39.95
Flair Meter	£34.80
Flair Tornado	£43.50
Gangster 52	£23.95
Gangster 63	£31.95
Racketeer	£31.75
Algebra 100	£26.50
Mick Reeves Spitfire	£45.50
80 Hurricane	£72.00
Fournier RF ¼ scale	£65.80
W-E Superfly	£30.00
M-M Miniphase Hite Finder	£34.75
Ripmax Trainer	£26.95
Ripmax Trainer with Ailerons	£28.95
Veron Vertex	£46.95
Veron Minute Man	£39.95
Hy-Box 3	£23.95
Hy-Box 4	£24.95
Fun-Fighter's	£23.95

BOAT KITS

GRAUPNER KITS (inc. fittings)

Wiesel	£44.50	£52.00
Collie	£24.00	£28.00
Weser Fireboat		£59.00
Commorde		£29.00

FAST ELECTRIC KITS

Graupner Mini Speed	£16.25
Graupner Maxi Speed	£20.50

ROBBE KITS (inc. fittings)

Marauder	£52.50
Neptune Tug	£47.00

VERON KITS

Vosper Fast Patrol Boat	£49.50
Titan Tug	£13.00
Police Launch	£12.00
Tarpon	£33.00
Police Launch	£35.00

HELICOPTERS

Bell 47G	£152.00
Zenith (cyclic pitch)	£83.00
Zenith Collective Head	£105.95

CAR KITS ⅛ SCALE

Texas Wild Baja	£114.95
Porsche Turbo 930	£114.95
Associated	£68.00
PB Bullit	£59.00
PB9	*ONLY* £79.99
PB Alfa	£149.50
Mardave Stock MkII	£31.50
Marauder	£47.95
Graupner Expert Speed Car	£98.50
Yu-Can Bugatti	£24.50
Sigma BMW Off-Road	£137.95
Garbo Off-Road std	£65.95
Garbo Off-Road Deluxe	£86.95

CAR KITS 1/10 SCALE

Wagon Bada	£34.00
Fairlady 240Z	£46.50
Electric Peanut Racer	£34.00
Rally Sports	£46.50
Minitz 06	£49.00
Mini 06	£49.00
Electric Rider	£26.95

1/12 SCALE ELECTRIC

Lightning 2000 Box Kit	£29.95
Lightning 2000 made with diff	£54.50
Gemini SL	£51.95
Gemini std	£48.95
Associated	£59.50
Mardave Stock	£32.95
Mardave Lola	£40.95
Mardave Williams	£40.95
Bo Link	£39.95
AYK 1200	£28.00
Nodis	£24.90

★ ★ ★ ★ ★ ★ ★ ★ ★

★BARGAIN★

- FUTABA 33M £10.20
- 1/10th Electric RALLY SPORTS (off road) . . only £44.95
- Futaba 2-ch 2 ser. only £36.95
- SILVER STAR 40 R/C ARCO Engine . .. only £34.95
- Pen Light (Ni-Cad) Batteries only 85p each
- Futaba 5-ch L series, Rates, 4 servos . *ONLY* £112.99

NEW RIPMAX RADIOS

- FP/7FG 7-ch. R/C radio, 4 ser. & Nicads comp £238.50
- FP/6FG 7-ch. R/C radio, 4 ser & Nicads comp. £198.00
- FP/5FG 7-ch R/C radio, 4 ser. & Nicads comp. £187.50

★ ★ ★ ★ ★ ★ ★ ★ ★

★★BOX★★

TAMIYA CARS

Ralt MkII	£25.95
Racing Side Car	£26.95
Sand	£69.95
Rough Rider	£69.95
New Range	£69.95
New Sand Rover	£46.95
Holiday Buggy	£42.95
Can-Am Lola	£73.95
XR 311	£46.50
Toyota Celica	£46.50
Ferrari	£37.95
Tyrell	£35.99

R/C EQUIPMENT

35MHz EQUIPMENT

JR 8 channel Modular inc Ball-Race servos	£310.00
JR 6 channel Modular inc. Ball-Race servos	£249.00

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

'L' SERIES FM FUBATA 35MHz

'L' 2 channel (inc servos)	£45.00
'L' channel 4 servos	£99.00
'L' 5 drycell	£119.00
'L' Rates Ni-cads	£132.95

FUTABA SERVOS

17M	*each* £16.95
30M	*each* £18.95
33M	*each* £10.25

FUTABA 'J' SERIES

5 channel complete	£245.50
6 channel complete	£309.95
8 channel complete	£346.90

FUTABA 'L' FM 35MHz COMBOS

2 channel	£39.95
3 channel	£47.00
4 channel	£66.95
5 channel rates, ni-cads	£109.00
Futaba Convertion Pack	£24.95

SANWA R/C 35MHz

6 channel FM Custom std servos	£189.50
6 channel FM Custom BB servos	£210.00
6 channel FM Black Custom std servos	£252.00
6 channel FM Black Custom BBG	£269.00

SANWA R/C 27mec. AM

2 channel complete	£41.95
3 channel with 2 servos	£49.95
4 channel with 3 servos	£82.95
6 channel with 3 servos	£86.95
2 channel combo *only*	£19.95
3 channel combo	£24.95
4 channel combo	£47.95

MOTORS

Webra Speed 20 Aero R/C C/W Cars	£38.95
Webra Speed 20 Car R/C C/W Cars	£45.95
Webra Speed 40 C/W Dynamit Cars	£40.95
Webra Speed 61 C/W Dynamit Cars	£40.95
Webra Speed 61 Rear Exhaust Cars	£57.50
Webra Speed 91 Rear Exhaust Cars	£68.95
Webra Speed 91 4-Stroke	£105.95
O/S Gemini Twin	£349.00
H/P 40 R/C Gold Cup	£39.99
H/P 61 R/C Gold Cup	£49.70
H/P 40 Pylon	£37.75
H/P 20 R/C Car Gold Cup	£44.00
Enya 15 R/C	£15.95
Enya 19 R/C	£18.40
Enya 19 B/B	£23.70
Enya 19 XF	£234.70
Enya 29 R/C	£19.99
Enya 29 B/B R/C	£26.95
Enya 35 R/C	£22.85
Enya 35 B/B R/C	£28.75
Enya 40 x F B/B C/W Silencer	£47.95
Enya 40 R/C	£34.95
Enya 45 B/B	£39.95
Enya 60 R/C	£46.75
Enya 4-stroke	£79.95
Enya 40 4-stroke R/C	£75.00
Enya 60 R/C	£46.75
Enya 60 XF CMIOS	£76.95
Enya 60 XF with Perry Pump	£98.75
OS 10 FSR	£17.50
OS 15 R/C	£21.95
OS 20 R/C	£21.99
OS 25 R/C	£22.75
OS 25 FSR R/C	£33.95
OS 30 R/C	£22.99
OS 35 R/C	£24.95
OS 40 R/C	£38.95
OS 40 FSR R/C	£49.99
OS 61 FSR R/C	£78.50
OS 61 FSR R/C ABC	£80.95
OS 61 VF R/C	£82.50
OS FS60 4-stroke	£109.99
Merco 29 R/C	£17.50
Merco 35 R/C	£19.50
Merco 49 R/C	£35.50
Merco 61 R/C	£39.95
Merco 35 Marine	£29.95
Merco 61 Marine	£47.80
HGK 15 R/C	£19.45
HGK 21 Car	£27.25
HGK 40 R/C	£37.45
HGK 45 Helicopter	£45.45
HGK 45 R/C	£45.45
Veco 21 Ringed	£42.50
Veco 19	£39.95

MAIL ORDER INSTRUCTIONS

£1.25 p&p on ENGINES £2.00 - £7.00 p&p on KITS DEPENDING ON SIZE. £7.00 p&p on KITS marked ★

145 PLAISTOW ROAD, STRATFORD E15 Tel: 01-555 7772

NR. PLAISTOW UNDERGROUND STATION DISTRICT LINE

THE MOST EXCITING NEW HOBBY EVENT THE MIDLANDS HAS YET SEEN

Whatever your hobby interest, bring all your family to the MODEL CRAFT & COUNTRY SHOW at the NATIONAL AGRICULTURAL CENTRE at Stoneleigh Nr. Kenilworth, Warwickshire, on the weekend of May 22nd and 23rd.

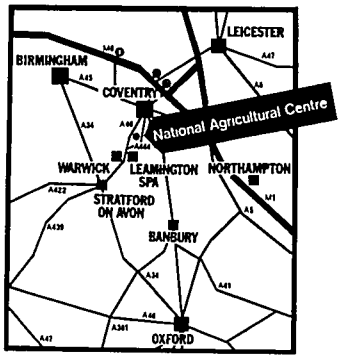
This big and stimulating event will be action-packed for modelling, woodworking and craft enthusiasts and for those who want to learn new skills, hobbies and pastimes.

Just study this list of the Show's content:

- ★ 7 specialist exhibition halls filled with exhibits, trade stands, demonstrations, and hobbies in action.
- ★ 5 big working model railway layouts.
- ★ 3 live steam tracks.
- ★ 7¼" gauge Echills Wood Railway in steam.
- ★ The models from the TV series "Flambards" and "Wings" flying.
- ★ Non-stop model flying demonstrations by top clubs and teams, R/C, control-line, helicopters, gliders and ducted fan jet fighter models. Model display commentary by D.B. Sound.
- ★ Model boat races.
- ★ Famous model boats on the lake.
- ★ Top woodworkers demonstrating and explaining a wide range of skills.
- ★ Model horse-drawn vehicles.
- ★ Model & Craft clubs helping and advising.
- ★ Model engineering and woodworking machinery and tool suppliers.
- ★ Lectures and films across a wide range of hobbies.
- ★ 3 craft halls demonstrating and selling a huge range of rewarding craft skills for the home, including home economy ideas.
- ★ Learn how to make your craft pay at the Small Business Forum.
- ★ Spaceship models, wargames, military models.
- ★ R/C Model Car Races

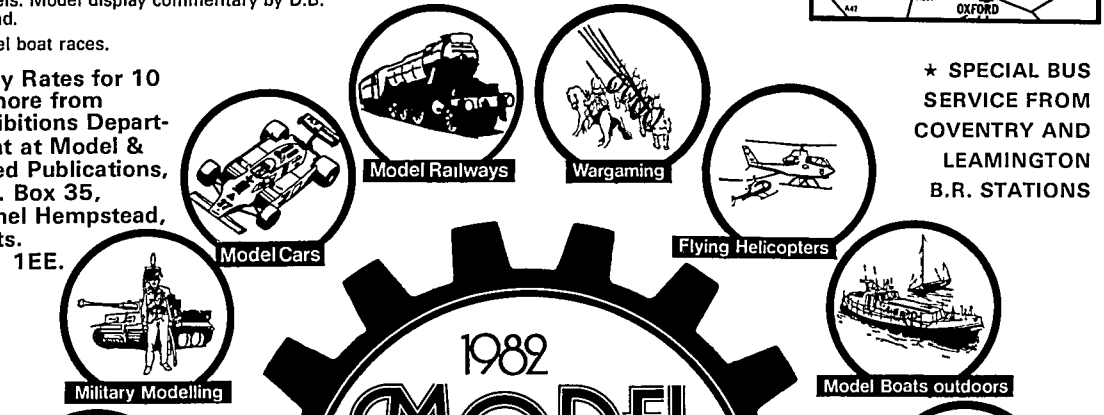
Whether you are an expert or a beginner, the MODEL, CRAFT & COUNTRY SHOW is the hobby get-together you, your wife, your family and friends must visit.

The Midlands has never seen anything like it before . . .
. . . don't miss it!



★ **Party Rates for 10 or more from Exhibitions Department at Model & Allied Publications, P.O. Box 35, Hemel Hempstead, Herts. HP1 1EE.**

★ SPECIAL BUS SERVICE FROM COVENTRY AND LEAMINGTON B.R. STATIONS



SAT·SUN MAY 22/23

Adults £2.00
Children and OAP's £1

STONELEIGH, KENILWORTH

10 a.m. - 6 p.m. each day
Car Parking Free.

JOINT ORGANISERS

ROYAL AGRICULTURAL SOCIETY OF ENGLAND
NAC Stoneleigh, Nr. Kenilworth, Warwickshire CV8 2LZ Tel: Royal Show (0203) 565100

Model & Allied Publications
P.O. Box 35 Hemel Hempstead, Herts HP1 1EE Tel: Hemel Hempstead (0442) 41221

Hangar Doors

WARPLANE SPECIAL

This year's first Special from sister-title SCALE MODELS marks a significant departure from the magazine's previous Specials in that it contains no extensive modelling features as such. Regular SM readers with an interest in aviation (by far the majority) regularly besiege MAP offices with requests for more *scale drawings, colour plates, cutaways* and *photo reference* to aid their hobby. Because of all the other diverse subjects covered each month it is not always possible to do full justice to individual types, hence this new lavish 96-page which goes on sale May 28, for £1.50.

Each aircraft type: the list includes the RAF BE2c/e, Sopwith Camel, Fokker Triplane, Handley Page Heyford, Grumman Hellcat, Convair Privateer, Victor K2, Me 109G, Fairey Fulmar, F-16 Fighting Falcon, and several others, is dealt with in depth with scale drawings, cutaways — where applicable, colour profiles and colour plates, photo data and details of all appropriate available plastic kits and flying model plans.

The staff of SCALE MODELS have prepared the WARPLANE SPECIAL with all aviation enthusiasts in mind. Whether modelling static plastic, wood and metal models or flying scale aircraft of all types, the reader will find this volume as equally useful as non-modellers. The cross-section of types included covers almost the whole period of aviation with a team of noted illustrators, artists and writers pooling their resources to provide an invaluable and unique contribution to aviation publishing.

Virtually all the material in this Special is *original* and has not appeared elsewhere which ensures that the Scale Models WARPLANE SPECIAL is destined to become a valuable collector's item.

1982 F/F National Championships

In this Diamond Jubilee Year of the Society of Model Aeronautical Engineers, the Free-Flight National Championships will take place at RAF Barkston Heath, Lincs., from May 29-31, as the first part of the biggest model flying event in Europe — the Nationals.

Both SMAE members and non-members may take part, but of course there are special benefits for Society members. These include reduced contest entry fees, reduced charges for access to the airfield and lower costs for camping.

As well as 17 contests for all types of free-flight, there will be three fund-raising events to support team travel costs. As well as the now-traditional sponsored Hand-Launched Glider Scramble, there will be a Wigan 70 contest and a sponsored Ready-To-Fly Rubber Scramble, all of which will give a vital boost to help the British team on its way to Zülpich and Wiener Neustadt.

Junior flyers will find contests specially for them, and will be sharing the airfield with Britain's top flyers, as well as overseas experts, too. A big contest like the Nationals is always an inspiration to model flyers, and a great introduction to the sport for any newcomers.

Daily entry to the May Nationals will be £1.00, or a maximum of £3.00 per car; parking will be free. Remember to bring your SMAE card for special members' benefits during the weekend. Camping permits for SMAE competitors cost £4.50 per adult when pre-booking; non-competing members pay £6.00, while non-members and on-the-day payers can camp for £7.00. Closing date for contest pre-entries is May 2nd, and for camping permits May 21st. Accompanied children under 16 will not be charged for camping.

The address for all Free-Flight Nationals permits and entries is:

F/F Nationals,
Kimberley House,
Vaughan Way,
Leicester LE1 4SE.

Registration fee for the Nationals is £2.50 for Seniors, or £1.25 for Juniors, with Associate members paying £5.00; contest entry fees are £1.00 per event for Seniors, 40p for Juniors and £2.00 for Associates. Remember, May 2nd is the final pre-entry date; registration and entry fees will be double on the day. Enclose a stamped addressed envelope when writing or your documents may not return to you in time for the Nationals.

Saturday, May 29, starting at 10 a.m., finishing at 7.0 p.m., with fly-offs at 7.15 p.m. ½A Power, Coupe d'Hiver, A/1 Glider, Hand Launched Glider, CO_2, Sponsored Ready-To-Fly Rubber Scramble.

Sunday, May 30th, starting at 10.0 a.m., finishing at 6.30 p.m., with fly-offs at 6.45 p.m. Open Rubber, Open Glider, Open Power, Vintage, Tail-less, Women's Cup, Frog Junior, CO_2 Scramble, Junior Kit Contest, Sponsored Hand-Launched Glider Scramble.

Monday, May 31st, starting at 9.00 a.m., finishing at 4.30 p.m., with fly-offs at 4.45 p.m. F1A Glider, F1B Wakefield, F1C Power, Wigan 70.

In addition to all this, there will be trade stands, special events for children, a Junior Workshop and planned demonstrations of R/C helicopter flying and indoor microfilm flying. The 1982 Free-Flight National Championships looks like being a memorable one, befitting the Diamond Jubilee Year of the world's longest-established model flying organisation — the SMAE.

INVITATION FROM GERMANY

Claus Maikis, German ace control-line stunt flyer, extends an invitation to all combat and stunt flyers to attend at the 'Suebia Cup' combat and aerobatic contest.

This takes place on June 19 and 20 at Bietigheim, near Stuttgart.

Stunt flyers are also invited to compete in the German Stunt Championships which take place at the same venue on June 18.

For further information write to Claus Maikis, Pfuhl, Hauptstrasse 56 7910 Neu-Ulm, West Germany.

MODEL TRADE NOT ONLY INTERESTED IN R/C

It is often said that the British Model Trade, in general, is completely negative or, at best, slow in its response to any branch of modelling event other than the inevitably more lucrative R/C branch of the hobby-sport.

It is therefore a pleasure for the organisers of British Combat International 81 to inform readers that the trade response to BCI 81 was one of great interest and generosity that enabled us to give prizes even down to tenth place (including special prizes for juniors), which, if purchased in normal retail outlets, would have cost approximately £300. In addition, a specially commissioned 'one off' sculptured first prize trophy was funded by the trade.

We would therefore via 'Hanger Doors' like publicly to thank the following companies-individuals for their support which provided a good two-day international event for a host of modellers and spectators alike. **Ripmax Models, H. J. Nicholls and Son Ltd., Mick Wiltshire, Micromold, Tigre Engines, Rojair, Taylor Plugs, Irvine Engines, Avicraft, Solarfilm UK,** and of course, **Aeromodeller** magazine.

We are also very pleased to announce we have just confirmed the availability of last year's site for the running of the event

again this year. Full details in 'What's Happening' next month. The organisers would like again to stress that early pre-entry is essential, as an event with full accommodation and meals requires a lot of advance booking.

Hoping to see you all in July.

Contest Committee BCI 81.

MAP PLANS FROM YOUR MODEL SHOP

Every issue of *Aeromodeller* includes a new model plan construction feature, with plans available through *Aeromodeller Plans Service*. Over many years, our plans features have satisfied a range of modelling interests which the economics of kit production cannot hope to match.

Demand clearly shows how our readers appreciate the designs we offer, and they also clearly like the way in which modelling from plans eliminates the considerable initial outlay when buying a kit — almost like buying in instalments really!

Traditionally, Plans Service sales have been a direct mail order service, but our plans have always been available through your hobby shop. Now, increasing numbers of model shops are signing up as agents for MAP Plans Service. Nearly 100 agents already operate the service which includes a speedy direct telephone order service to MAP Plans Service Sales Office. So next time you want one of our plans in a hurry, remember, your MAP Plans Service Agent is ready and able to assist. See our register of Plans Service Agents in this issue. Page 252.

European Magnet Flying Champs

This F1E competition is to be held on the 16th July at Wasserkuppe, Germany. Modellers who wish to enter for the team trials should write to Trevor Faulkner at 4 Birchitt Close, Bradway, Sheffield S17 4QS, for details. As will be appreciated, the location is very dependant on the weather conditions, so a final venue can only be determined very close to the date.

INTERNATIONAL COMBAT (GENK)

This is the third Combat competition to be held at Genk, Belgium, and will take place on the 29th and 30th May, at the same venue as previous years, Genk Airfield.

Entry fee is 400 B.Fr. and camping can be arranged on the flying site, or accommodation in local hotels.

Peter Tribe has won the competition for the past two years, so let's see if we can't make a British hat-trick this year. For further details contact: Limburgse Vleugels, Paalsesteenweg 10, B 3950 Beringen, Belgium.

FREE FLIGHT NATIONALS JUNIOR KIT EVENT

ENTRY

Free on the day, to members and non-members who were aged 16 or under on January 1st 1982.

MODELS

Any glider or rubber powered model built from a kit by the entrant, with a wingspan less than 50 inches. Towlines 50 metres maximum.

MODIFICATIONS

Fitting of dethermalisers is recommended. Fitting of autorudders on gliders is permitted. Other changes to the kit will be limited to minor local strengthening and repairs. It would be wise to bring the plan, in case the authenticity of the model is challenged.

FLIGHTS

Three flights, each with a maximum score of 2 minutes, the total time of all three flights to count. The maximum may be reduced on the day, if necessary to keep models on the airfield. In the event of more than one entrant achieving 3 maximum scores, an unlimited fly-off will decide the winner.

PRIZES

There are separate awards for rubber and glider classes, and we hope to have the usual generous choice of useful goodies as well.

This event is intended mainly for juniors who will be at the 'Nats' but not entered for the more serious events; it is especially suitable for a first try at contest flying.

What's Happening?

April 18
SMAE SOUTHERN AREA R/C FLY-IN (FIREBIRDS). Contact: Pete Willis, 72 Witt Road, Fair Oak, Eastleigh, Hants. Tel: Eastleigh 695111.

April 25th
TYNEMOUTH TEAM RACE RALLY *FAI, GOODYEAR, POSSIBLY ½A.* Venue: Albermarle Barracks (ex. RAF Ouston) — Entry to Airfield by special pass only. Contact: R. Wilson, 77 Oakfield Road, Whickham Grange Estate, Newcastle-on-Tyne NE16 5QP. Tel: 0632 881127.

May 1/2
MUNSTER R/C CHAMPS. Venue: Waterfall, Co. Cork. Contact: K. Townsend, Beechwood, Church Lane, Greystones, Co. Wicklow.

May 2
1ST ELLIOTT RALLY *FAI TEAMRACE, ½A TEAMRACE, GOODYEAR TEAMRACE, CARRIER, AEROBATICS, SPEED.* Venue: Marconi Avionics, Rochester, Kent. Contact: Peter O'Neill. Tel: Sevenoaks 57899.

May 2/3
SPRING MODEL AIRCRAFT RALLY AND FLY-IN — Best All-round Model, Best Scale Model, Best Sports Model, Best Bi-plane, Best Helicopter, Best Multi-Engined Model, 'Tree Tops' award. Venue: Holker Hall and Park, Cark-in-Cartmel, Grange-over-Sands, Cumbria. Contact: Tel: (044 853) 328.

May 6
SMAE SOUTHERN AREA *R/C CLASS 2 SCALE.* Venue: Beaulieu. Contact: Dick Hall, 21 Peak Road, Clanfield, Hants. Tel: Horndean 593046.

May 9
SMAE SOUTHERN AREA *R/C FLY FOR FUN AT BULLS BUSHES* (Basingstoke). Contact: Bill Edwards, 35 Browning Close, Basingstoke, Hants. Tel: Basingstoke 25492.

May 15/16
7th SANDOWN PARK SYMPOSIUM — Sandown Park.

May 16
PETERBOROUGH MFC COMPETITION *2nd ROUND CLASS A BRITISH DIESEL COMBAT CHAMPS.* Venue: Peterborough Embarkment. Contact: Brian Waterland, Market Deeping 343722.

May 16
PONTEFRACT MFC VINTAGE MEETING in conjunction with SAM 35. Venue: Pontefract Park at 10.00am. Facilities for parking cars & caravans. Pre-paid entry £1 per model to Stephen Greenwood, 47 Valley Road, Littletown, Liversedge, W. Yorks. Entry on day £1.50. Contact: J. B. Tate, 8 Valley Drive, Great Preston, Nr. Leeds.

May 16
NORTH LONDON MFC *R/C BIPLANE DAY* "Fly for Fun Day" with prizes for 1st, 2nd and 3rd in friendly competition. No entry charge. Venue. Baldock. Contact: Richard Barley Tel: 04427 4337.

May 16
1982 WOLVES FLY-IN. *JUNIOR, NOVICE, SENIOR STUNT, 0.35 cu.in 'SLOW' RAT RACE, DIESEL COMBAT, OLD CLASS A (PETERBORO' RULES), STAND-OFF SCALE.* Venue: Lucas Aerospace Sports Field, Ford-houses, Wolverhampton. Contact: Chris Shelley Tel: Wolverhampton 330387.

May 22/23
IRISH THERMAL SOARING NATS. Venue: Mallusk, Co. Antrim. Contact: K. Townsend, Beechwood, Church Lane, Greystones, Co. Wicklow.

May 22/23
3 SISTERS INTERNATIONAL *F2A, F2B, F2C, F2D.* Contact: Gordon Isles. Tel: 0625 21437.

May 23
SMAE SOUTHERN AREA *OPEN FORMULA MOUSE AT HMS DABDALUS (LEE BEES).* SMAE members only. C/L Team Racing to rules published in August 1981 Model Flyer, but with £15 engine limit. Pre-entry required. Contact: Mick Harvey, 10 The Croft, Stubbington, Hants. Tel: Stubb 5232.

May 23
SMAE SPRING SCALE MEETING. *CONTROL LINE SCALE (STANDOFF).* Venue: RNAS Merryfield, Nr. Ilminster, Somerset. Contact: Vic Willson. Tel: (0734) 471964.

May 31
THREE KINGS AEROMODELLER *C/L SCALE & PROFILE FLY-IN.* Silencers required. Venue: Old Croydon Aerodrome. Contact: Wal Cordwell. Tel: (01 764) 1661.

F/F CALENDAR

April 18
BRITISH NATIONAL INDOOR SCALE MODEL FLYING CHAMPIONSHIPS AND INDOOR SCALE FLY-IN. SMAE NATIONAL COMPETITORS FOR PEANUT SCALE, OPEN RUBBER SCALE & CO_2/ELECTRIC SCALE. Venue: Middleton Hall Shopping Precinct, Milton Keynes 10.00am-6.00pm. Pre-entry. SAE to Barrie Hotham, 46 South Park Avenue, Mansfield, Notts NG18 4PL. Tel: Mansfield 34127 Fee £1 per event, non-competition flyers £1 each. Closing date for entries 1st April 1982

April 18
MIDLAND AREA F/F GALA. *A1, CD'H, ½A, CO_2, HLG, P30, WIGAN 70, VINTAGE DURATION.* Venue: RAF Hemswell. Contacts: G. Ferer. Tel. 0533 886519, or M. Coomes Tel: 0949 42034.

April 24
SMAE SOUTHERN AREA — INDOOR FLYING AT COLLEGE OF FURTHER EDUCATION, Southampton. Gym shoes must be worn. Contact: Howard Metcalf, Brook Cottage, Winters Hill, Durley, Hants. Tel: Durley 447

April 25
2ND CENTRALISED SMAE *F1C/FA1 POWER FOR HALFAX TROPHY + PLUGGE POINTS, O/R FOR GAMAGE CUP + O/G* Area venues.

April 25
ODIHAM SPRING GALA *(Usual F/F events) + SAM 35 VINTAGE AND 350 WAKEFIELD.* Contact: N. Couling Tel: 0323 53116.

May 2/3
RAFMAA/SMAE FREE FLIGHT COMPETITION. *Sunday: F1A, F1B, F1C,* 5 rounds. Start 10am. Champagne fly-off at 7pm plus still air, progressive max. event for F1C. Weather permitting. *Monday: Sunrise event for F1A, F1B plus OPEN RUBBER/GLIDER/POWER/A/1, VINTAGE/HLG* 10am-5.30pm. All events open to SMAE members. No pre-entry. For timetable SAE to: F. S. Baines, MSF, RAF Leuchars, Fife, Scotland. Tel. 033-483-471 Ex. 420

May 9
3RD AREA CENTRALISED *F1B WESTON CUP + PLUGGE POINTS O/P FOR WHITE TROPHY – O/G.* AREA VENUES.

May 16
TYNEMOUTH MAC F/F RALLY *F1A (5 ROUNDS), O/R, O/P, COMBINED MINI, HLG.* Venue: Albermarle Barracks (ex. RAF Ouston), 15 miles west of Newcastle on B6318. 10am start. Contact: Tony Brown, 32 Clayworth Road, Brunton Park, Newcastle upon Tyne, NE3 5AB. Tel: 0632 362155.

May 16th
OXFORD F/F SPRING RALLY. *A1/CD'H in rounds from 10am., HLG.* No Power models to be flown. Venue: Port Meadow, Wolvercote. Contact: Andy Crisp Tel. Oxford 53800.

FOR INDOOR MEETINGS SEE FREE FLIGHT SCENE

EVENTS

May 22/23
MODEL CRAFT & COUNTRY SHOW — Venue: RAS Stoneleigh.

Suzy's Too

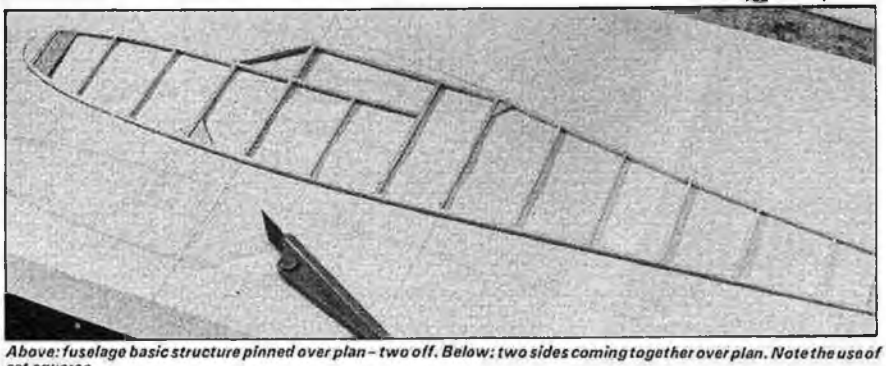
33in. span high performance rubber power model, capable of over 3min. in still air. Designed by Dave Hipperson.

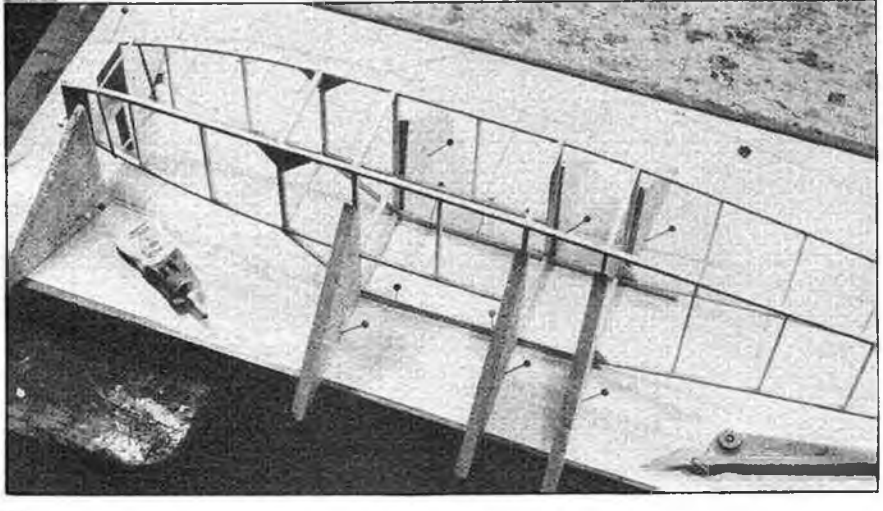
THIS DESIGN HAS BEEN based around the premise that the Coupe d'Hiver class was rather discouraging for the beginner because of its unforgivingly low power to weight ratio. The motor has been doubled to 20gm and airframe reduced and simplified to present the whole thing as a step up from the basic rubber cabin model kit. In reality it would be quite suitable as a first model and has turned out to have considerably more performance than expected.

It has a folding prop — you could substitute a 10in. plastic one but with a penalty in weight, climb and glide performance not to mention appearance. Try to stick with the original idea. The blades are very tiny and together with the nose block represent just about the most effective and neat way of dealing with the front end.

Fuselage

This is constructed from 3/32in. sq. and 1/16in. × 3/32in. strip. Cover the plan with polythene or wax the glue points and fabricate the basic structure twice — once for each side. These can then be joined up by pinning vertically over the top plan. Only a small section in the centre will actually contact the plan so when the spacers and sheeting pieces are stuck in it is not a bad idea to use balsa set-squares to keep the whole thing in line. (See illustrations). Notice that there is a deep spacer under the wing down the back of the side window. When the basic fuselage is complete bend under-carriage as per plan and bind and glue to ply former after you have checked that the former is a perfect fit in the fuselage. Alter the former rather than the fuselage! As the wire used is only 20swg it guarantees that very little load is ever transmitted to the fuselage so the reinforcing triangles need only be thin soft wood. The wheels are fabricated from ply and balsa sandwiches and carved and sanded to the fine edge streamline section when dry. These are very light. Remember the ply reinforcing around the rear anchorage hole and at the nose. After careful sanding this unit is ready for covering.

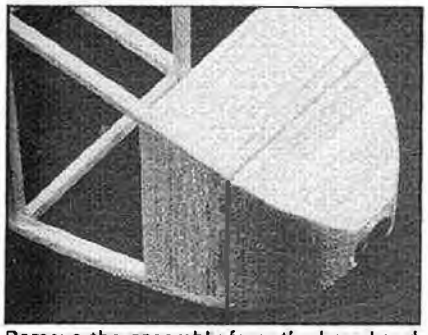


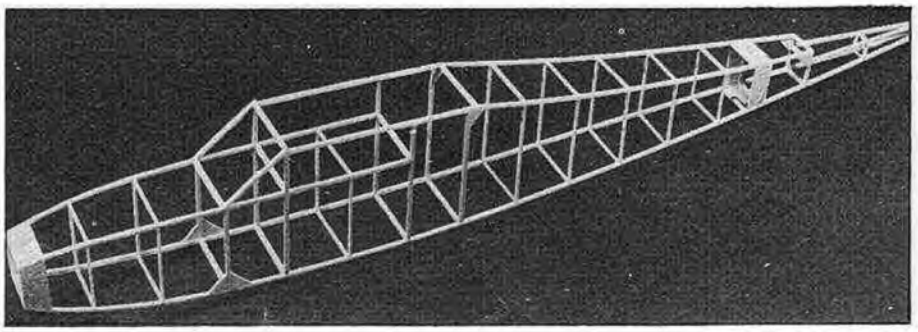


Above: fuselage basic structure pinned over plan – two off. Below: two sides coming together over plan. Note the use of set squares.

Tailplane

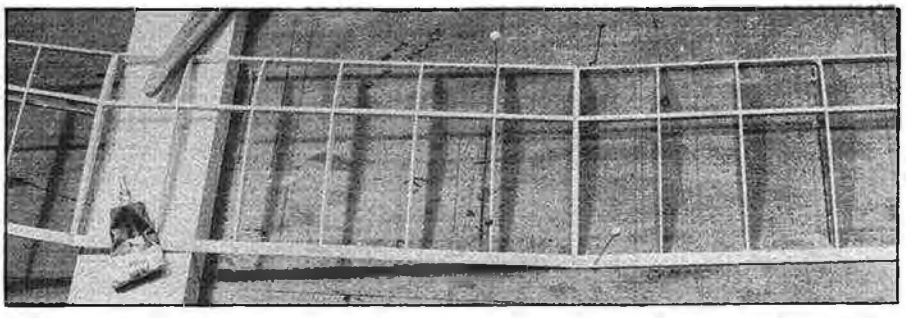
This is the ideal component to tackle next especially if the taper has been worrying you. Pin down LE and TE over the plan but with the strip square and untapered. The ribs are cut using the master centre rib template and simply ignoring the rear end of the template as the ribs become shorter towards the tip. Remember this way you are cutting full chord ribs — try to maintain plenty of depth at the rear of each rib as the TE does not taper and the ribs will need to be full 3/32in. deep at the point where they contact the TE. When cut to shape the ribs can be cut to their various lengths so that they fit between the LE and TE. Note that the 1/16in. tip ribs are stuck in at an angle — with the angle template — so the tip fins will stand vertical after the tail dihedral is added. The centre ribs are not stuck in yet. Before removing this stage from the board lay a straight edge along the top of the ribs and snick them where the spar is to go.





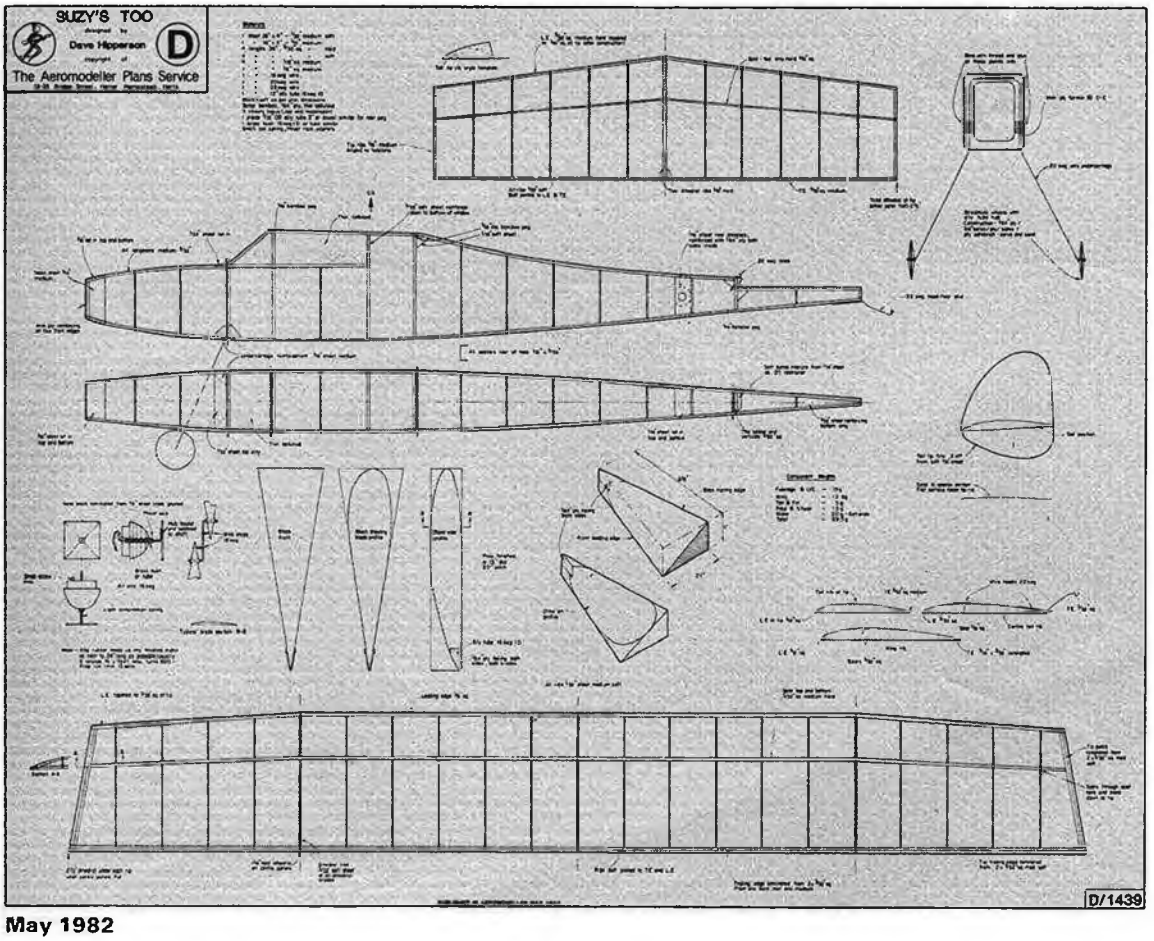
Remove the assembly from the board and cut the complete notches. The dihedral can now be arranged before the spar is stuck in. Pre-cement TE and LE joints and cement together. Install the two centre ribs arranging them in such a way that when the tailplane is horizontal they will be vertical. Now the spar can be cemented in and when dry the TE can be carved down to a blunt section and the LE tapered a little in plan form and carved to section. Sand smooth all over and check all joints are flush and won't snag the covering. The fins are cut from the softest 1/16 in. sheet you can find and carved and sanded to section as shown on plan — left and right handed. The tail and fins are now ready for covering.

Left: nose block tack glued into the finishing fuselage for final sanding. Above: basic fuselage finished part from undercarriage former. Below dihedral construction detail. Note bottom spar added after dihedral.

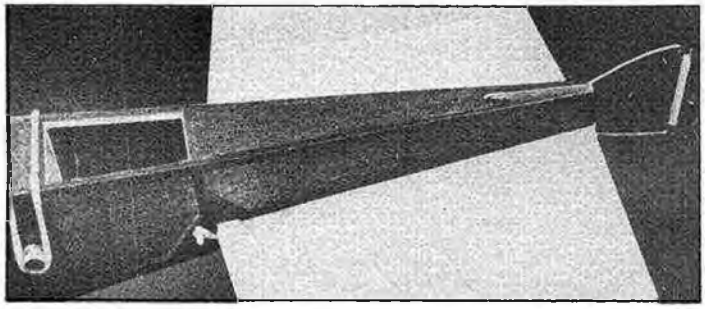


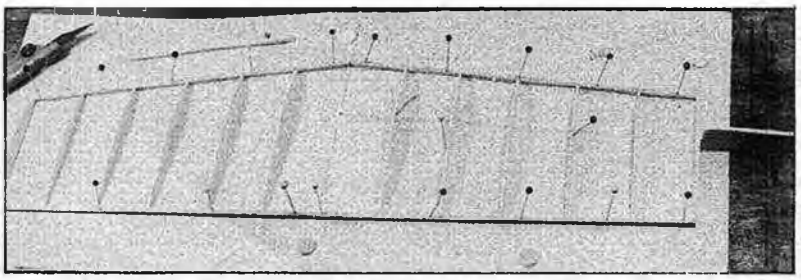
Wing

Laminate the TE and select the wood for the LE. Pin the TE to the board with the hardest edge facing forward to resist the ribs cutting into it when the covering shrinks. The ribs are dealt with in the same manner as the tail and after having messed up the tail a few times you will have this mastered now! Once again notch wing spar marks and cut when removed from the board. The dihedral ribs are not glued in yet. As a certain amount of carving is involved now it is advisable to stick in the top spar at this stage so the panels are 'handleable'.



Full size copies of the plan reproduced here to 1/9th scale are available as Plan No. D/1349, price £1.85, plus 40p postage and packing. Export orders obtainable from appointed agents or direct from Aeromodeller Plans Service., PO Box 35, Bridge Street, Hemel Hempstead, Herts., HP1 1EE.





Left: tail mounting. Note D/T band and access hole to motor rear anchorage. Above: tail construction showing tip ribs set at correct angle for fins by using a template.

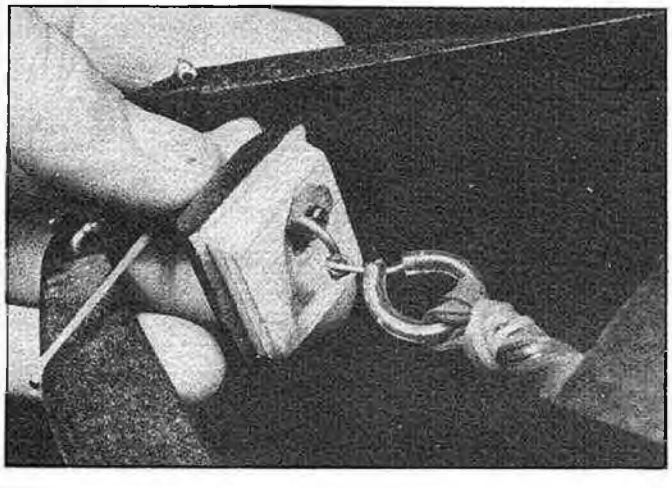
Remember to leave the spars long enough to be trimmed to fit the dihedral later. The TE and LE can now be carved to section. When the panels are finished the tips should be stuck to the inner panels at the correct angle. Shamfer ends of TE and LE to facilitate this and cement them well. The appropriate dihedral rib is also glued in at this moment and the spars trimmed to butt joint neatly and exactly at the rib. When dry remove from the board and repeat the proceedure for the centre break. The entire wing can be removed now and the bottom spar cemented in. Be careful to ensure the spar butt joints and spar to rib joints are as neat as possible. The entire structure should then be checked for dry joints and faults that might snag the covering. If everything is smooth then this component too is ready for covering.

Prop and nose block

The nose block is laminated from five scrap pieces of medium hard ⅛in. cross grained. When dry the hole for the bush (or tube) is drilled as perpendicularly as possible and the bush or tube which will support the shaft is pushed in tight and preferably fixed with either very thin epoxy or better still cyano run into the joint. Top and side profiles can be carved and then the rear plug attached. The complete block is now tack glued into the front of the fuselage so that final finishing can blend in perfectly with the nose shape. Bend the shaft rear hook and pass the shaft through the block and slip on a suitable thrust race. A gap of approximately ½in. is left from the front of the race and a right angle bend is made in any direction. A cup washer and tensioning spring can be slipped on and pushed around this bend. The shaft can be cut about ½in. after the bend and the hub bound and soldered on with fuse wire being careful to line it centrally and square in both directions.

The prop blades themselves are carved from complete triangles of the softest balsa you can find. If you can't buy the correct thickness then it can be laminated from block and sheet but remember to stick the laminations together with an adhesive that dries hard (balsa cement works OK) and leave plenty of time for this to dry. The 1/64in. ply reinforcements are stuck on next then the alloy tubes can be fitted. Make the holes in the blocks a little oversize and align the alloy tubes in the holes by means of a straight piece of 16swg wire, with the blocks pinned down flat and parallel to one another. Epoxy the tubes in and allow plenty of time to dry before tidying up the ends and commencing carving. The back of the blades are carved first and finished flat. The blade profile is then drawn on this surface and the corners outside the profile are cut off and the blade shape thus produced. A little undercamber can now be sanded into the bottom of the blade and when you are perfectly happy with that the top section can be finished. The plan gives a typical section. You can make up a template but feeling with the fingers is usually enough to avoid big mistakes.

The blades are slipped on the hub and the stops fitted so that they track the same path and don't flare forward. This assembly is now complete apart from the shaft stop. Assemble the nose block and blades onto the front of the fuselage and allow the blades to arrange themselves along the sides. Remove the assembly but don't allow the hub to revolve until you have marked a dot on the back of the block that coincides with or is a little in front of the loop of the rear hook. A small wood screw with its head removed can be screwed into the back of the block to engage with the looped end of the rear hook and restrain the blades to fold exactly along the sides of the fuselage. When wound the motor will compress the coil spring in front of the thrust race and allow the hook and hence the blades to revolve free until nearly all the turns are exhausted. How many turns are retained is decided upon by how far the back of the screw protrudes from the block. It's best done by trial and error remembering that you only need enough turns to hold in the noseblock. A little reinforcing piece is best stuck on around the screw — see illustrations. Be careful not to stick the screw in though as it is very useful to be able to adjust the moment of fold whilst trimming. It is possible to make small final adjustments to the exact position of the folded blades by twisting the shaft. A substantial pair of pliers at at least one end will be necessary and this dodge is recommended only for the final fine adjustments.



Prop assembly removed showing 'S' hook connecting motor to shaft. Note stop screw and ply reinforcing.

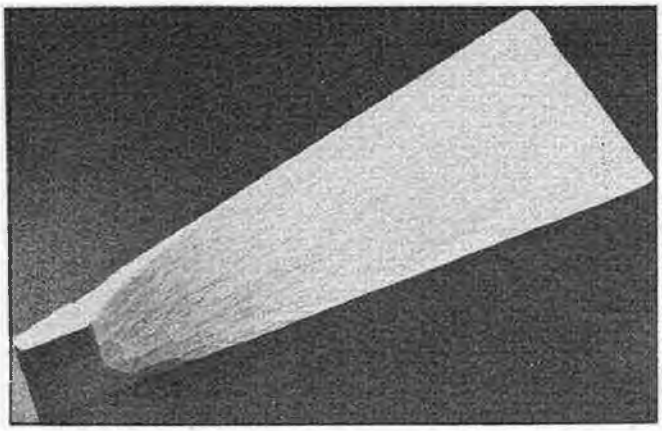
Covering

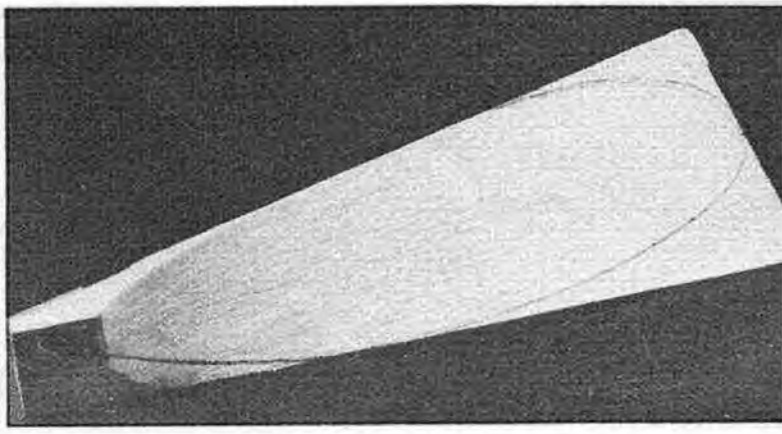
First check the structure again for surface protrusions — the eyes and the finger tips are the best way to find faults rather than sanding blindly. The colour is up to you but coloured tissue is used throughout *not* colour dope. Jap is favourite but you won't get black so use the darkest colour you can get for the fuselage and cover the noseblock and prop blades the same colour. The blades are best done with modelspan actually because it can be wetted and stretched around the compound curves — don't try this trick with Jap!

Neatest and most convenient way to stick the tissue to the structure is with 75%-25% dope thinners mixture but it soaks in and dries off fast so you won't be able to hang about once each section of the frame is doped. The wings and tail should be covered on the bottom first and then before the top surface is attempted the tissue to rib contact of the bottom covering should be carefully checked and a little extra dope run into the joints from above if in any doubt. If the tissue lifts off it can allow buckling of the ribs which is unsightly and weakening.

When covered the complete model is water shrunk pinning each wing/tail panel down individually until dry. It is at this stage that the ⅛in. wash-in (extra incidence) can be induced into the starboard inner panel by packing up the leading edge at the tip dihedral point. The wheels and fins are covered at about this time and the fins are glued on to the tail plane after it is water shrunk but before it is doped.

Doping is best carried out with at least





The two photographs above show the early stages of carving one of the propeller blades. After marking out and cutting out the shape of the blade, sand and finish as described in the text.

50/50 dope thinners if not thinner. A number of thin coats being far preferable to a few thick ones. Hooks, dowels and any extra tissue trim decorations can be added after the first coat of dope. Leave as much time between coats as you can and stop (two coats will probably be enough) as soon as you think the tissue will stay taught on a damp evening. After all unlike a contest model I doubt whether you will have to fly it in the rain!

Trimming

Careful checking at home doesn't require a calm day and will save you valuable time when one eventually comes along. See that the wing and tail are at the same angles to one another as shown on the plan. The best way to check this is to lay the fuselage on its side over the plan. The other critical factor is the centre of balance position. With this incidence set-up it should be between $\frac{3}{16}$ in. either way of the marked position. If anything slightly in front as when the motor is *fully* wound and then run down it distributes itself with slightly more bunches to the rear and therefore tends to ease the CG back usually just when you think you have the model trimmed!

The tail must be keyed to ensure that the fins line up straight and there is no tail tilt. The wing is not keyed but all surfaces should be flat except for the wash-in on the starboard panel. Install a motor and wind on a few turns, then watch the prop run from side and above. The blades must track in the same plane — you will see if you have one a little out and the hub can be bent accordingly. Incorrect tracking can also be caused by one blade being at a different pitch to the other. View each alternatively from the end and twist the hub accordingly. Blades should also be statically balanced but unless you have been very unlucky with the selection of wood such small blades as these will probably not give problems.

Whilst watching the blades revolve you will be able to deduce if you have built in any thrust line inaccuracies. Ideally you should have 3 degrees right thrust and 1 degree down thrust. The right thrust can be measured best by lining the opened blades up with the edge of a table across which the fuselage is laid perpendicular. The blade tip on the port side should be $\frac{3}{8}$ in. in front of the starboard blade tip. The 1° of downthrust is more difficult — suffice it to say there should be no upthrust. Finally cut a trim tab on the starboard fin $1\frac{1}{4}$ in. × $\frac{1}{2}$ in. and bend it right about $\frac{1}{4}$ in. It affects the glide more than the power and will give a glide turn to the right. If you can compete all the above as closely as possible you will probably have trimmed the model.

Check the glide from hand launches on a calm evening and increase tail incidence if the model stalls or decrease it if the model dives. You should aim for a slow floating glide with a slight right turn. You will begin to appreciate how the folding prop improves the glide now. If the glide stage seems to require any large trim alterations re-check for alignment and warps.

Winding

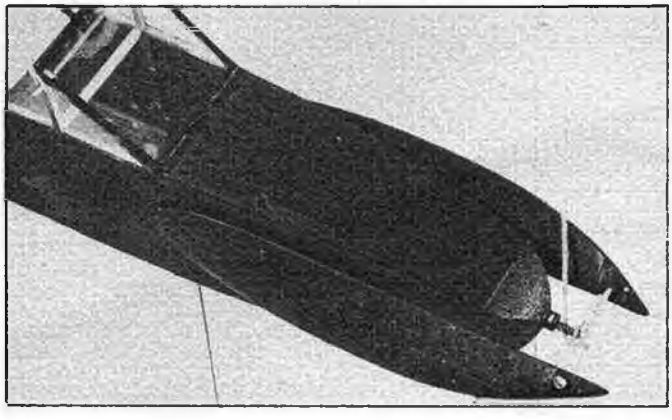
The motor is attached to the prop assembly via an 'S' hook of your own choice — see illustrations. This facilitates drill winding the motor with the prop off. It will also allow tube winding which is safer and less nerve wracking. The tube can be either a piece of 1 in. dia. plastic conduit or you can fabricate your own by winding glass fibre around a suitable diameter mandril. Whatever type you choose remember that it must fit through the nose and be substantial enough not to split or buckle when a fully wound motor is blown inside it. This way the fuselage can last indefinitely.

First flights

Wind about 200 turns on, the maximum being 800. Even some of these should be run off before releasing the model so that any thrust line inaccuracies are magnified as little as possible. Aim for a large right hand power turn with the nose a little up even at this stage. Double check that the glide is correct and then all further trimming can be accomplished with thrust line alterations. If it is too tight on the power add left thrust — if it is too open add right thrust. If it power stalls add down thrust, if it doesn't climb at all add upthrust. Remember these adjustments will interact with one another so don't let the power turn become too tight yet as it will tighten up as you increase the winds. Progress slowly increasing the turns until on full winds, the model should climb steeply for the first 30 seconds — two power circuits — then settle down to a climbing cruise for the next 45 seconds. From where it will glide for about 2 minutes on a calm evening or for ever if you have flown it in lift and forgotten the DT! This should really be lit on all power flights made during the day.

Occasionally the prop is going to foul on the undercarriage. All that happens is that the blades fold top and bottom rather than along the sides. It doesn't look so tidy but affects the glide trim little. If you are not interested in ROGs — which incidentally are fairly sudden anyway — the undercarriage can be removed with a corresponding further improvement in performance.

As the model was designed originally for my wife to fly whilst we are out on our interminable contest trimming sessions during the Summer it seemed appropriate to name it after her. I hope you look as pretty with it as she does! Good flying, too!



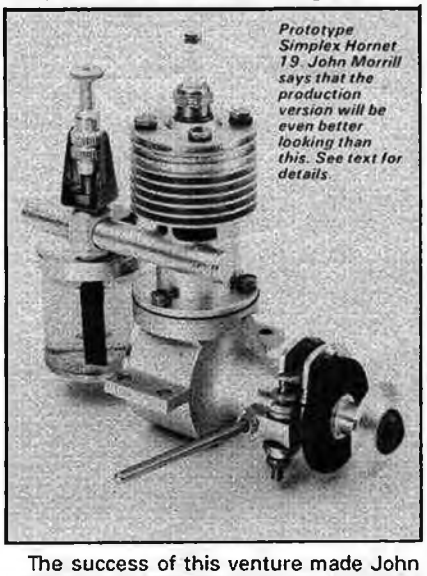
Prop assembly in position. Note: single strand or elastic band pinned into each blade leading edge and wound around hub. This helps to hold the blades against the fuselage side when folded, but will still allow them to open under power.

Vintage Corner

By Alex Imrie

Spark Ignition

Instead of bemoaning the shortage of engines of this ilk, an enterprising young man in California, John Morrill set about building vintage spark ignition engines on a semi-commercial basis. In 1978 he re-designed the Simplex 25 which was a motor for home construction by Louis Garami described in Model Airplane News during 1947. Apart from mechanical design changes for better fabrication, port timings were changed and the by-pass flow area increased. Great care was taken to retain the style of Garami's original design and the power output of the Simplex 25 Mk II was only improved to the point where it compared to vintage engines of similar capacity. The SAM engine committee eventually ruled that the engine qualified as a vintage engine and could be used as such in vintage competition. As fast as engines were made, they were sold, until now the complete run of 115 units has gone.



Prototype Simplex Hornet 19. John Morrill says that the production version will be even better looking than this. See text for details.

The success of this venture made John tackle another engine, and again it was a home construction job that got his attention. Readers who are familiar with the pre-war editions of Popular Aviation will remember that magazine's Model Editor and Designer, Paul Lindberg who produced a series of rubber flying scale model designs. During 1938 when the number of power designs described in that magazine increased in number, the engine shown on the plans was named the Lindberg Hornet. Apparently a few of these engines were made commercially, before the motor was completely described for home construction in 1940. It is this design that forms the basis for the second engine, produced by John's Simplex Miniature Engines at 143 Richmond Street, El Segundo, California 90245. Once again the original has been re-designed for better engineering, more power and easier manufacturing. Several prototypes have resulted in a good running, easy to start motor, that produces equal power to that of an 'as new' Ohlsson and Rice 19. Particular attention has been paid to final fits and finishes and the engine turns a 9 × 4 Zinger propeller at 10,500rpm. Due to the various changes that have been made to Lindberg's design, John makes no attempt to call his engine a Lindberg Hornet. Paul Lindberg inspired the design which is known as the Simplex Hornet 19. Orders are well up to the initial 200 units being produced. The price is US$127.00 plus shipping costs, spare parts are of course available. Interested readers are invited to contact John direct, no deposit is required. Deliveries expected to be in May 1982.

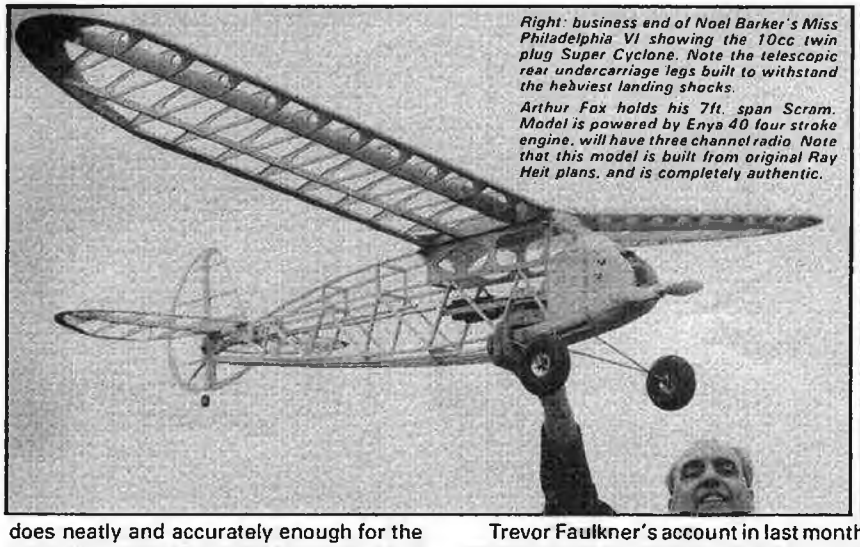
A third engine is already under consideration for possible production. Once again it will be a home construction motor, a British one this time, probably from the stable of the late Edgar Westbury. We look forward to hearing further from John, and vintage modellers will I am sure join with me in thanking him for perpetuating the spark ignition engine.

Edgar Westbury's Atom Minor MkIII plan is still available from MAP Plans Service. Order No. PE13, price £1.25 plus 25p postage. Castings for this engine are also available from Woking Precision Models, Harbour Lane, South Queensferry, Edinburgh EH30 9PT, price, £14.69 including postage. 10mm plugs are also available at £2.20. **Ed.**

Above: father and son. Derek Chester on the right with his PAW 80 powered Judy with son Vince holding his AM15 powered Scorpion, regular all weather fliers at Biggleswade and Old Warden.
Below: the younger element. The writer's son with a Jasco Thermic 50 that he successfully built and flew when aged ten. Despite this early start he has not really been bitten by the vintage bug, but flies and drives R/C sport models.

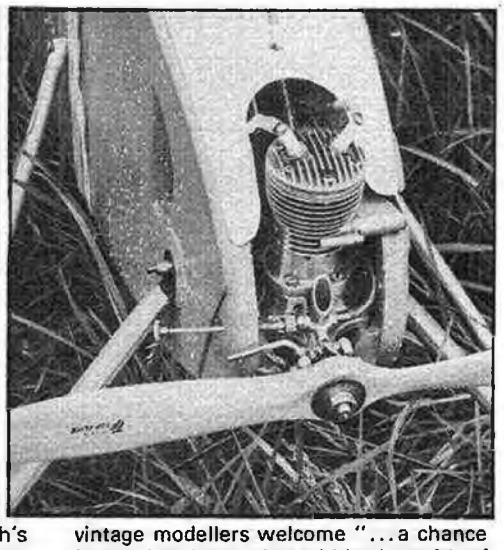
Young Vintage Modellers

Although only 10 years of age Matthew Hogan is already hooked on the old timers, their looks and style have won him over. He prefers free flight to radio, and has progressed from chuck gliders built at school through the *Humbrol* 'Wasp' to a Ron Warring designed *'Titch'* powered by a Dart and a *'Jasmin'* similarly powered. Some readers may have seen his *KeilKraft 'Gypsy'* flying at the Nationals last year. He is now busy on a 48in. span *'Good News'* which is planned to be powered by the grand old Mills 1.3 diesel, we look forward to seeing it in the air. Chris Knight is now 17 years of age but he too started about age 10 to get into the act obviously inspired by his father. He made an A1 glider first but it is said that the sight of a number of modellers towing their A1 gliders into the same thermal and the tangle of the subsequent crossed lines, made him yearn for an engined one like Dad! Although he enjoys vintage radio flying (2 channel) his real love is vintage free flight. Currently his stable includes a 1937 *'Porlock Puffin'*, a 1938 Abzug *'S4'* and that real oldie a 1935 *'Miss San Diego'* by Elbert J. Weathers. Chris delights in scouting through old magazines for plans to draw up to full size, a job that he



Right: business end of Noel Barker's Miss Philadelphia VI showing the 10cc twin plug Super Cyclone. Note the telescopic rear undercarriage legs built to withstand the heaviest landing shocks.

Arthur Fox holds his 7ft. span Scram. Model is powered by Enya 40 four stroke engine, will have three channel radio. Note that this model is built from original Ray Heit plans, and is completely authentic.



does neatly and accurately enough for the results of his labours to be included in the plans bank held by SAM 35. We would like to hear more from our juniors, preferably with black and white photos of their models that we can use for publication.

Sorry!

The vintage get-together planned for 14 February had to be cancelled at short notice due to structural faults in the roof at Downs Farm Youth Centre brought about by snow damage. It proved just impossible to arrange another meeting-place in time, and I would like to tender my sincere apologies to the faithful stalwarts who turned up, only to be confronted by locked doors. Hopefully this experience will not prevent you all attending future meetings.

Jackdaw II

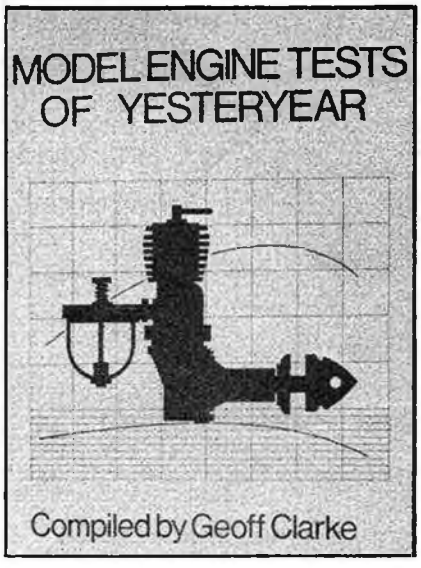
It is felt that some clarification should be given concerning this design. When it emerged *'Jackdaw II'*, like so many more fine semi-scale models of the period was really an aeroplane in miniature. It was engineered like a full-size machine, and in Jackdaw's case this approach was deliberate in order to familiarise and test the knowledge of Air Cadets in woodwork, metalwork and aircraft structures.

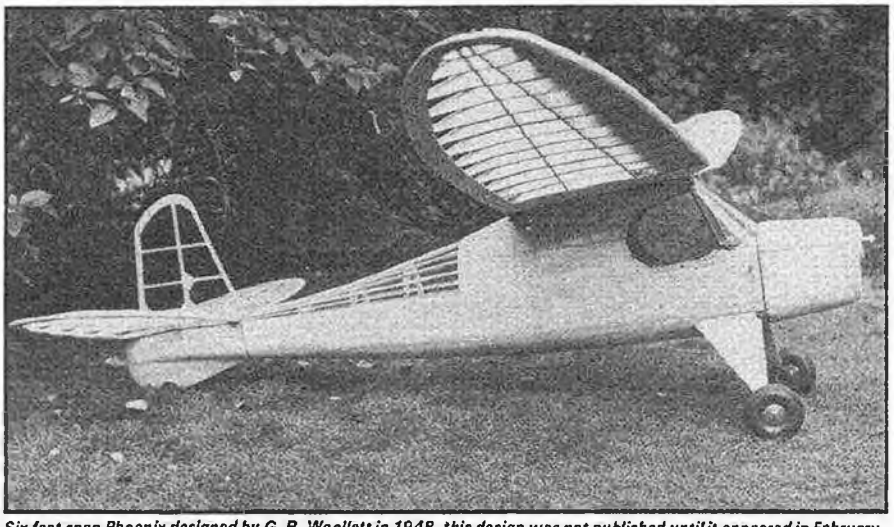
Trevor Faulkner's account in last month's column indicated that he and Peter Michel did not like the free-wheel system, wing fixing, wing ribs, rear motor anchorage, and tail unit fixing. Trevor went on to say: "Like other models from the past it has constructional clichés which have been superseded..." While appreciating that most vintage modellers welcome "...a chance for modest innovation within the spirit of the thing." I personally always try and abide by the original design and method of construction, otherwise is there any point in following the vintage line? Having said that I know that many readers will hurl abuse at my head, and I suppose that some tolerance must be acceptable, but let's keep the modification state to the bare minimum, occasioned possibly only by the lack of original materials. Trevor appears to have overcome the gears problem by using slot-car spur gears, however, it will interest the readership to know that the manufacturer of the original brass gear wheels used for model aircraft is still around and is willing to re-manufacture this long lost item should the demand warrant it. If these gears become available, there is a whole bevy of model designs that will immediately become more attractive, apart from the pre-war geared duration machines, there are many models from the drawing boards of the late Eddie Riding, John Greenland and Rupert Moore, replicas of which would greatly enhance the vintage scene. In order that an accurate estimate can be made would any modeller interested in obtaining brass gears please write to me indicating the number wanted? The manufacturer can then be contacted in order that prices can be fixed and delivery dates estimated.

Above: Reg Cole from Harwood near Bolton built Otto Michalick's pre-war German twin-boom power model by scaling up the plans given in the Zaic 1938 Yearbook. Reg used balsa and modified the structure accordingly, the original being of hardwood and plywood construction, weighed over 35oz.

Below left: the late John Haggart built this fine California Champ designed by Bill Atwood in 1935. Flown mostly with a 2cc ED diesel, the model is now owned by Chris Goodley who is thinking of re-engining the model with a Baby Cyclone.

Below right: Bob Hagdkins with his PAW diesel powered Zipper. Finished like the original correct down to Carl Goldberg's old NAA number, pity it is not powered with a 1939 spark engine, Bob!





Six foot span Phoenix designed by G. R. Woollett in 1948, this design was not published until it appeared in February 1951 Aeromodeller. Keith Harris, who built this example powered by a Frog 500 asks whether or not it qualifies as a genuine vintage model?

Book Review

Model Engine Tests of Yesteryear compiled by Geoff Clarke, published by Double M Publishing, 648 High Road, London N12. Available from Geoff Clarke, 75 Ritherdon Road, Upper Tooting, London SW17 and from Michael's Models. Price £5.00 (exclusive of postage).

This is a professionally printed facsimile text reproduction of 52 selected *Aeromodeller Engine Analyses* from the period 1948 to 1957. The engines are mainly British diesels and include such oldies as Amco .87 Mark I, E.P.C. Moth, Kalper .3, Frog '100', Elfin 1.8, E D Competition Special, Allbon 2.8, Eta 5, Wildcat Mk III and Yulon 49.

The tests are featured in chronological order within sections according to displacement and include a section on Jetex motors. Special care and attention has been paid to the elimination of fading and other flaws that existed in the original magazines. Irrelevant material has been removed and this has created some blank spaces that in the reviewer's opinion could possibly have been filled with engine advertisements of the day. Apart from this one criticism, I found the book excellent and it should appeal to both engine collectors and vintage flyers. Geoff is already at work on a second volume and when this appears it is felt that these books will become 'musts' amongst the enthusiasts especially with the growing shortage (and increasing price) of the original old copies of *Aeromodeller*. The smart appearance of the cover warrants mention, this having a silhouette of the Allbon2.8 superimposed against performance curves. Full marks to Geoff Clarke for his enterprise in actually doing what most people only speak about!

Help!

Reader Richard Warden of 48 Boltonmere Road, Stourport, Worcs. writes that he has obtained a part-built kit of the Mercury Aeronca Sedan which he would like to power with an ED 2.46 diesel using radio assist. Unfortunately he is lacking details of the model, and would like to know more about its flying characteristics as well as the cross section of the nose profile. Any reader who can help might care to get in touch with Richard direct.

Vintage Plans

There is no doubt that the most comprehensive coverage of all types including rubber models back to the twenties is that offered by John Pond in his *Old Time Plan Service at Box 3215, San José, Ca. 95156 USA.* His lists show the source of information, magazine description and designer's name as applicable and are well worth having for this data alone.

Apart from designs from the *Aeromodeller Plans Service* which readers should be aware of and the *SAM 35 Plans Bank* for members of that organisation there are two other main sources for vintage plans that are worth trying. The *Ben Buckle Old Time Plan Service, at 9 Islay Crescent, Highworth, Wiltshire,* offers a good selection of vintage rubber, glider and power designs and the *SAM 35 Competition Secretary Keith J. Harris at 21 Burns Lane, Market Warsop, Mansfield, Notts.* is in a position to supply all British designs including the original Jackdaw II that has been mentioned in this column.

NEW! HAWK TRAINER

from Mick Reeves

for 2-, 3- or 4-channel radio

SPAN 53"
LENGTH 42"
WEIGHT 3-4 LBS.

FLY IT AS: 2-ch. (09 engines) rudder & elevator, 2-ch. (09-25) rudder & throttle, 3-ch. (15-25) rudder/elevator/throttle 4-ch. (19-25), rudder/elevator/throttle & ailerons.

takes .09-.25 engines

AVAILABLE NOW AT YOUR MODEL SHOP

EASILY assembled. EASILY controlled — very stable and ideally suited to the first-time radio flyer. For modellers with a limited budget, your 'BEST BUY'. With a small engine and 2-channel radio. TOTAL cost in flying order is WELL BELOW other Trainers! Equally, you can fit it out with a larger engine and 3- or 4-channel radio and enjoy the full flyability of the HAWK TRAINER. A special feature of the kit is detailed, easy-to-follow assembly instructions PLUS REALLY COMPREHENSIVE FLYING INSTRUCTIONS to tell you how to become a safe and competent pilot.

- ★ READY VENEERED FOAM WINGS
- ★ BALSA & PLY PARTS CUT & NUMBERED
- ★ PREFORMED UNDERCARRIAGE
- ★ 3 AIR WHEELS
- ★ ENGINE MOUNT
- ★ FUEL TANK
- ★ MOULDED SPINNER
- ★ FORMED COWLING
- ★ CONTROL LINKAGES
- ★ HINGES, SCREWS & HORNS
- ★ TRANSFERS & SELF ADHESIVE DECOR

This is the 'BUDGET BUY' OF THE YEAR'. The ONLY EXTRAS* needed are adhesives, an engine and covering material of your choice, and radio control, or you can take advantage of one of the RIPMAX SUPERDEALS shown below.

SUPER VALUE

ONLY £29.95

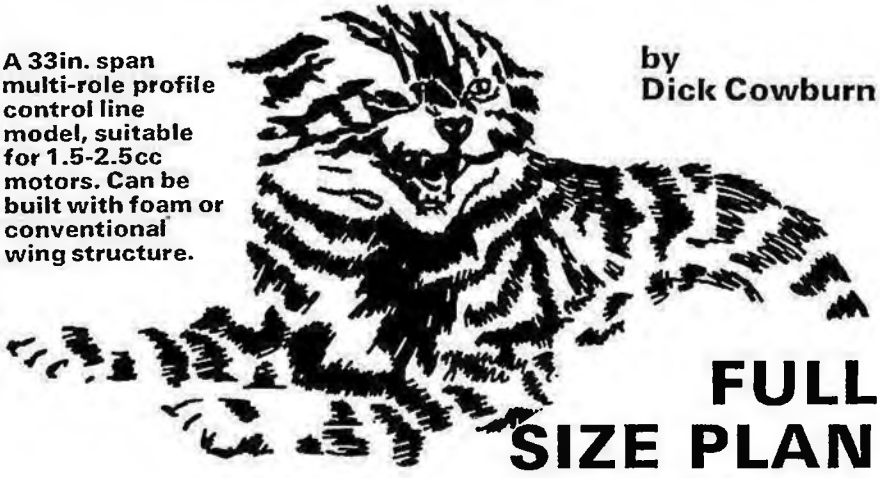
**If you want to fit the ailerons (included in the kit) you will also need to purchase a pair of aileron horns and a few kwik-links.*

***RIPMAX* SUPERDEALS**

HAWK + ENYA 09 R/C + SILENCER £44.95
HAWK + ENYA 19 R/C + SILENCER £49.95

WILDCAT

A 33in. span multi-role profile control line model, suitable for 1.5-2.5cc motors. Can be built with foam or conventional wing structure.



by
Dick Cowburn

FULL SIZE PLAN FEATURE

The designer with built up wing version.

WILDCAT WAS designed a couple of years ago as a general purpose sport model taking advantage of foam-wing construction for quick building and low cost, while having a reasonable appearance for display work. The design exceeded expectations being fully aerobatic, easy to fly, and tougher than expected. it has therefore become our M.R.C.A. (Multi-Role-Club-Aircraft) in Humberside M.F.C. being used for anything from training to slow-combat.

The ply-skinned fuselage was chosen to survive most normal flying accidents, the raked fin slides off in inverted landings while the forward cockpit protects the needle valve. The semi-disposable foam wings are easily replaced or repaired and have proved much more durable than expected. In a hard crash they tend to tear off at the root and this action protects the rest of the model from damage by absorbing the inertia. If the spars don't crack, the wings can be stuck back with epoxy, but if the damage is more serious the foam cores can often be salvaged by trimming a few millimetres from the root and replacing along with new spars. A balsa winged version is also shown on the plan. This is more durable, but is not quite so aerobatic as the the thick winged foam model and takes much longer to build! (I will be keeping mine as a balloon-bursting model in the next display season).

Construction

Start with the fuselage, cutting the core from soft 12mm (½in.) balsa (you can get four out of one 100mm (4in.) wide sheet) and fitting the 12mm sq. (½in. sq.) ramin* bearers spaced to suit the intended engine, any excess being planed off when cleaning up the assembled fuselage. The 0.8mm (1/32in.) ply sides are now laminated to the balsa core with PVA glue, the nose and cockpit areas being filled with scrap balsa and the whole assembly left overnight under weights to dry thoroughly.

While the fuselage is drying, the tail group can be cut from medium 3mm (⅛in.) balsa and the elevator hinged to the tailplane. (It is possible to cut two complete sets of tail parts from one 100mm (4in.) wide sheet). Note the 0.8mm (1/32in.) ply reinforcement for the elevator horn mounting.

Wing foam or built-up?

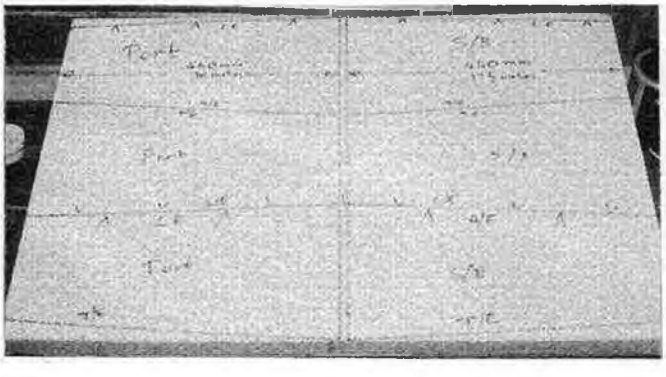
Now decide which version is required and make the appropriate airfoil templates from 'Formica' or similar (I have found this to be ideal for use with a hot wire cutter but it has to be sawn and filed very carefully with fine-tooth tools).

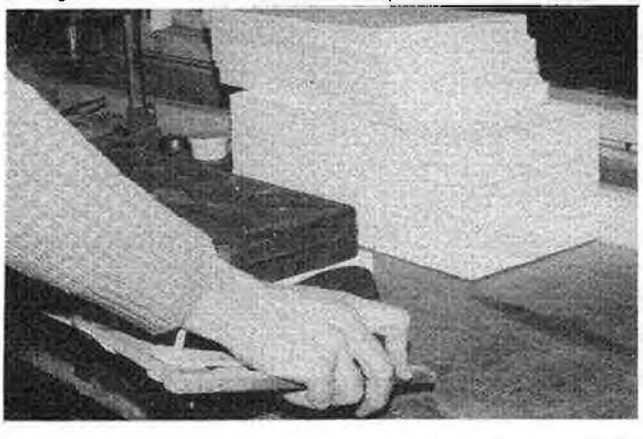
Foam wing

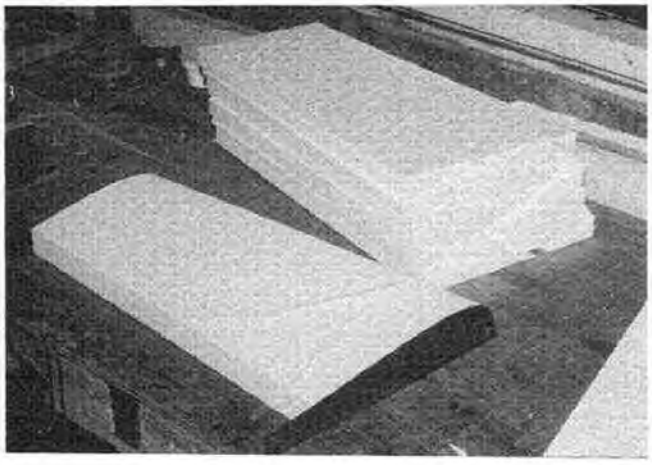
I use 900mm × 600mm × 50mm (3ft. × 2ft. × 2in.) foam polystyrene sheet from an insulation supplier which is marked out to give three pairs of blanks. Port are 450mm (18in.) long, starboard 435mm (17½in.) long. Identify L/E, T/E, port or starboard on each to avoid errors when cutting.

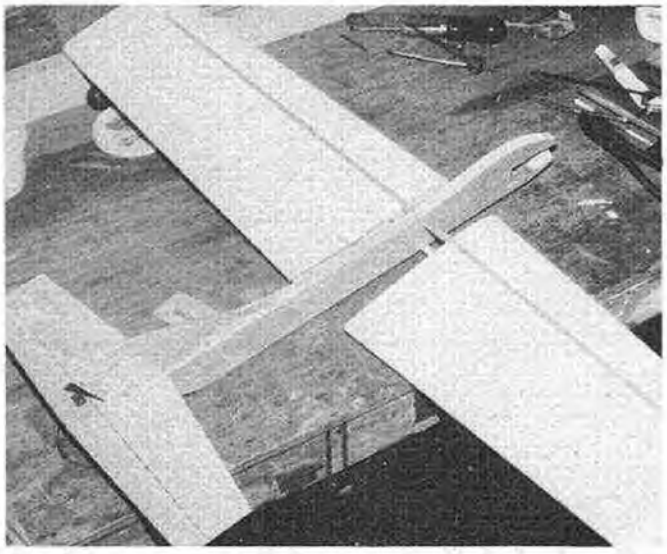
Pin profile templates to each end of a blank and weight down to the bench. Draw hot wire through from L/E to T/E. Turn over and repeat. Change templates and cut spar slots, using the top and bottom offcuts for support. Now cut out the lead-out space in the port panel only. This is the most difficult part of cutting the foam blanks and you must take care to make sure that the wire enters and leaves the foam simultaneously at both ends. Any extra clearance required

Right: method of drawing hot wire through foam from leading edge to trailing edge. Below: standard foam panel 3in. × 2in. × 2in. marked out for three pairs of wings. Use a fibre tipped pen.









Foreground above shows top surface of wing cut with template still in place. Right: a dry fit of the foam wings. Note: the spars are not glued to the wing, the covering holds them in place. This also allows broken wings to be replaced with minimum effort.

for the bellcrank and push-rod can be 'cut' with a hot soldering iron.

Balsa wing

Cut out the L/E parts and laminate together with PVA. While this is drying, cut out the T/E and all the wing ribs noting that the four centre section ribs are relieved for the 1.5mm (1/16in.) balsa sheeting. (Using light wood throughout.)

Assembly with built up wing

The fuselage is now required and should, by now, be dry and ready to finish. Remove from clamps and clean up. Mark out and cut through the L/E and T/E slots from both sides of the fuselage. Take some care over this as time spent ensuring a 'straight' model is well rewarded in the flying. Fit the bellcrank mount through the port side noting that this is mounted in a different position in the two versions to clear the internal wing structure.

Try a dry run of the wing assembly, fitting where necessary, and mark the lead-out positions. Dissemble and drill the lead-out holes (a round needle file is best for this). Elongate the holes nearest the bell-crank to allow for movement. Re-assemble wing/fuselage, packing up from the bench to ensure a true wing, and glue with PVA. Fit the 6mm (1/4in.) sheet tips, gussets, leadout guides (with 0.8mm ply support plate) and 25gm (1oz.) tip weight.

Bend 14swg push-rod to length and fit tail group, moving fore and aft to achieve a true neutral. Add leadouts and sheet in the centre section.

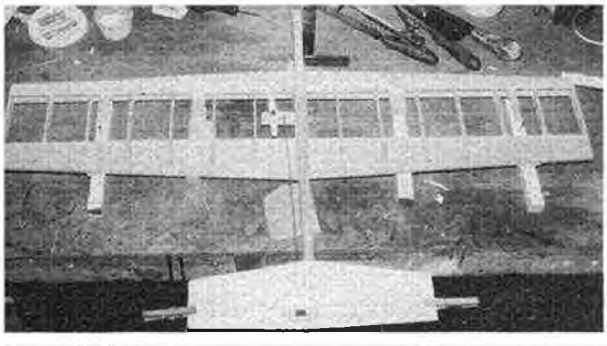
Assembly with foam wing

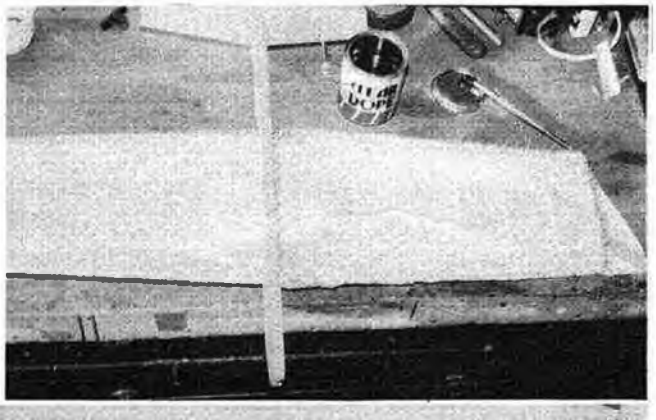
Clean up fuselage and drill 6mm dia. (1/4in.) holes at spar positions and open out with a square file. Fit bellcrank mount and bellcrank. Bend up 14swg push rod and fit tail group, adjusting for neutral. Fit leadouts and mark centre line on both sides of fuselage to aid wing alignment. Slide spars through, followed by the wing cores which are now glued to the fuselage sides with PVA or epoxy adhesive. It is not necessary to glue the spars into the wing slots as the covering holds them firmly enough (this aids replacement).

Add 0.8mm (1/32in.) ply cover plate to pushrod exit and reinforce the wing/fuselage junction with bandage and PVA. Fit 3mm (1/8in.) balsa tips with 25gm weight in starboard tip and leadout guides supported with 0.8mm ply plate, in port tip.

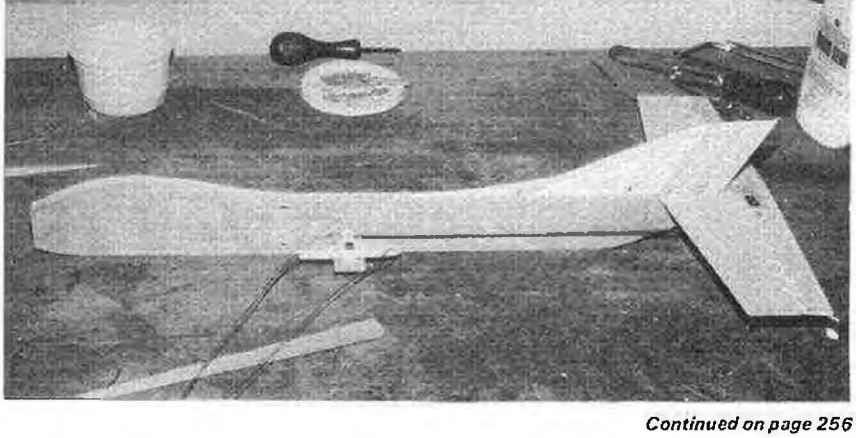
Covering

Either model is now ready for covering, the built-up wing is best covered in nylon in





Above: wing jigged up on packing pieces to ensure correct alignment. Right: nylon covering stretched and pinned down over wing, then doped to frame. Below: fitting fin, tailplane and control linkage.



Continued on page 256

5th INTERNATIONAL MODELLERS SHOW Pasadena - U.S.A.

REPORT AND PHOTOGRAPHS FROM *Martyn Cowley*

THE SPECTACLE of model flying demonstrations and the lure of a full array of modelling products for sale is a tempting combination that very few 'dyed in the wool' aeromodellers can resist. The convenience of having all this under one roof, literally, including *flying* 1/4th scale R/C lightweights, Free Flight indoor models, electric control line flying and R/C Blimps plus static model exhibits and trade stands, makes the I.M.S. a unique and exciting modelling event. Now in its fifth year, the hard-working staff of *Model Builder* magazine headed by Bill and Anita Northrop, staged another highy successful show at Pasadena in Los Angeles.

Bigger and better than previous shows, this year saw the introduction of a modellers' swap shop, where the locals turned up with boxfulls of goodies from garage and attic. Everything from *TeeDee 010*s to *Dynajets,* dusty old kits in unopened boxes to finished airframes or partly completed projects — a Pandora's box of nostalgia and bargains on sale for a song.

A static display of scores of beautiful models covered the full spectrum of subjects; scale, vintage and contest models both flying and static, even a full size ultralight aircraft from Mark Smith of *Marks Models*.

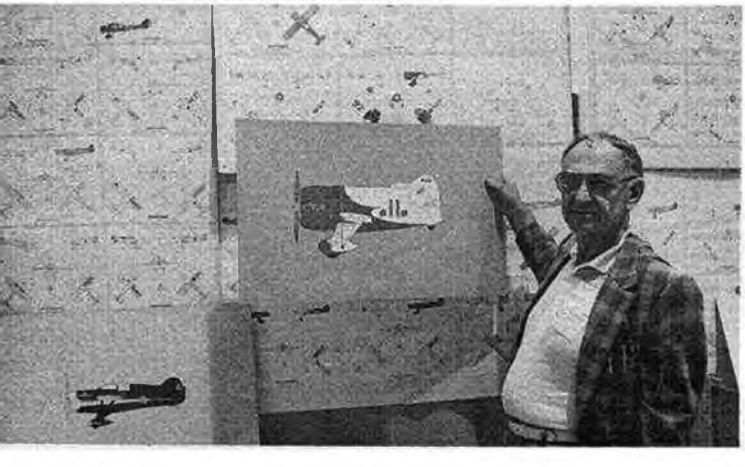
High point of the two day show however was undoubtedly the repeated flights of Addie Naccarato's 23oz. 1/4th scale *Farman Moustique.* The model powered by an *Astro Flight 020,* first flew at last year's show (model details *Radio Modeller p. 52* April 81) and was again masterfully flown by Tony Naccarato, who negotiated tight turns over the heads of the trade stands, yet keeping the model below the 19ft. ceiling!

Tony's other star performer was his Open Class Rubber model, which he also flew indoors — Radio Control naturally! Wound to give a long cruise, the model easily completed several laps of the huge exhibition hall, performing in absolute silence overhead, before floating down over the crowd for, as always with Tony, a perfect landing every time.

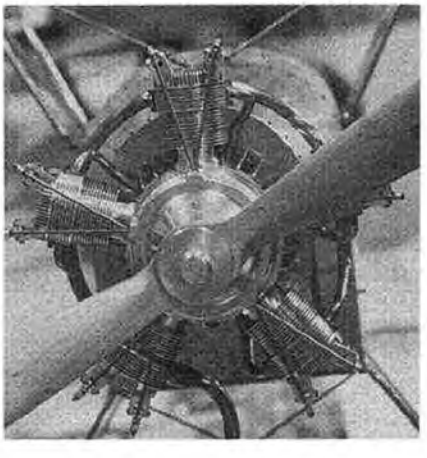
Other indoor R/C flyers were more conservative, choosing the sedate pace of various helium filled airships. Tony Avak again showed off the extreme manoeuvrability of his blimp, controlled by electric driven propeller thrusters front and rear. Bob Peck also flew his giant dirigible, which is now commercially available in kit form from *Peck Polymers* as the *Pony Blimp.* Only casualty of the weekend was the mysterious Bart Hibbs, member of Paul MacCready's Gossamer crew who worked on propeller and aerofoil design. Bart suffered the embarrassment of flat R/C batteries, causing loss of control, followed by a gentle ascent into the roof girders. The aerial fishing exercise, complete with rod, reel and small helium balloon 'bait' was at least as entertaining as any flight!

The award for originality this year, must rest with George Steiner for his excellent helium filled 'hot air' balloon. The 'hot air' effect was achieved using a 100gm rubber weather balloon filled with helium inside the fabric balloon envelope to provide lift. George first determined the all-up finished weight, including balloon skin, R/C gear, electric motors, batteries and all materials, to be about 20oz. including 2oz. ballast for trimming. He then calculated this would need 21cu. ft. of helium for lift, and inflated his balloon accordingly with air, while he made paper templates for the rip stop nylon 'hot air' envelope.

For directional control George used two tiny electric motors driven by a 500mA battery pack. He chose motors recycled from old *Kraft KPS14 servos* because they have long shafts which made mounting the 5in. diameter *Peck Polymer* plastic propellers very easy, simply using a push fit. The twin motors rotate through 90° and have reversible thrust allowing any combination of lift, sink, forward or reverse. The rubber weather balloon leaks about 1cu.ft. per day and the 2oz. sack of ballast allows fine tuning of buoyancy throughout



Above left: Jimmy Walker about to demonstrate one of the new indoor models for Sun-Star, Japan. One of the 15 new designs including four genuine microfilm kits which are produced to the highest standards. Left: Robert Hirsch with some of his extensive collection of Racing three-view scale plans. Coloured profile artwork originals used for place mat sets laminated with three-views on reverse.



Right: Foster Edwards' brilliant five cylinder handmade engine uses OS60 piston and sleeves – the rest is machined from barstock!

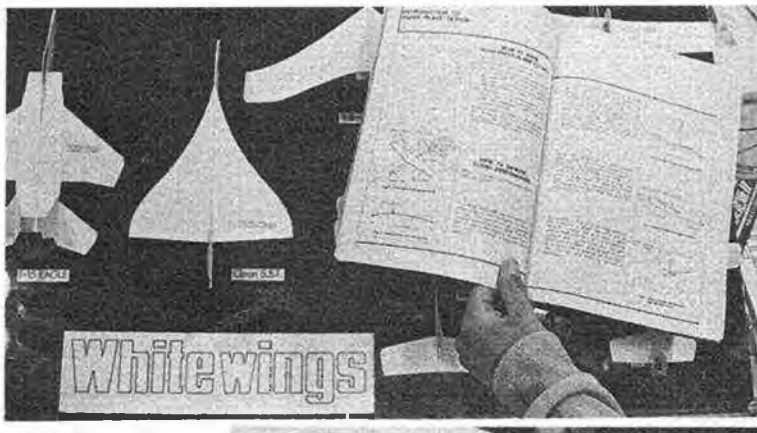
the day's flying. After the interest shown in his creation, George now hopes to kit the balloon, to be marketed by his own company: GSP Products.

More flying excitement was provided by the Black Sheep display team who made carrier deck landings with electric powered control line scale models, and even managed some aerobatics despite 16ft. lines. The models, each powered by an *Astro 020*, carried flight battery packs enough for 3-4 minute flights.

Indoor Free Flight models were of course a natural participant at such a venue. Amongst the peanut scale models and other lightweight craft flown in the hall, most interest was raised by a new line of genuine indoor models now being kitted by *Sun-Star* from Japan. Imagine a full colour glossy kit box that contains about 1gm of balsa wood and you start to get the picture! Fifteen designs range from EZB and Pennyplane types supplied with super thin *Mylar* film just a few microns thick, to the real thinny — 4 micro film model kits complete with liquid solution and real indoor quality rubber. Make no mistake, these kits are a sincere attempt to produce first class ultra lightweight indoor models, the balsa selection and quality is outstanding and the full colour brochures, packaging and instructions are the hallmark of kits designed to be sold by the tens of thousands — and at a very reasonable price for such unique models. A rubber driven flapping ornithopter for example, has a super lightweight plastic mechanism, worth the price of the kit alone (which is of course re-usable for future home design projects).

Another diminutive debut came in the form of a pack of paper planes, designed by Dr. Yasuaki Ninomiya, winner of the '1st International Paper Plane Contest' held in San Francisco in 1967. Not to be confused with paper darts, these models are fabricated from high quality draughting paper and made up into 15 different models, many capable of long thermal flights outdoors. Most amazing is the 60 page instruction book, which covers in great detail the theory of flight, design and construction of the models and flying details. A complete course in practical aeromodelling techniques in miniature. Available through Two World International.

A big turn out from all the model trade helped fill the hall to capacity, from the big world-famous U.S. manufacturers to the one-man businesses, so proving private enterprise to be in a healthy state.

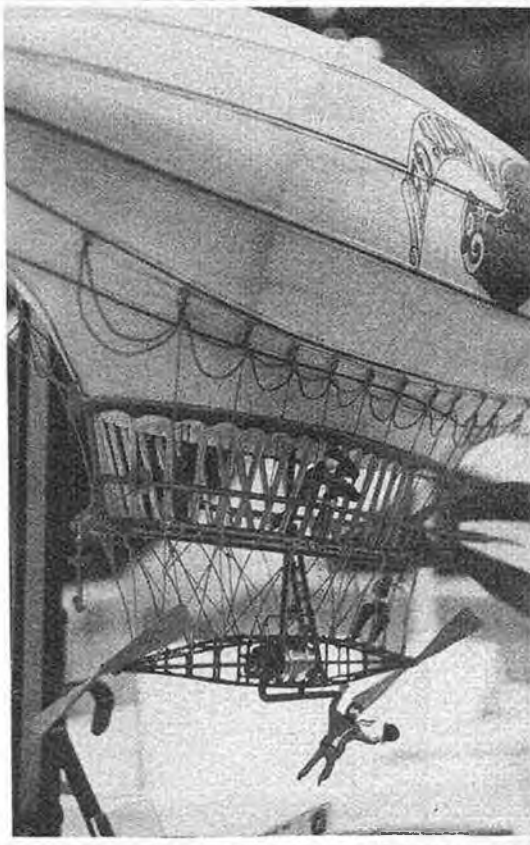


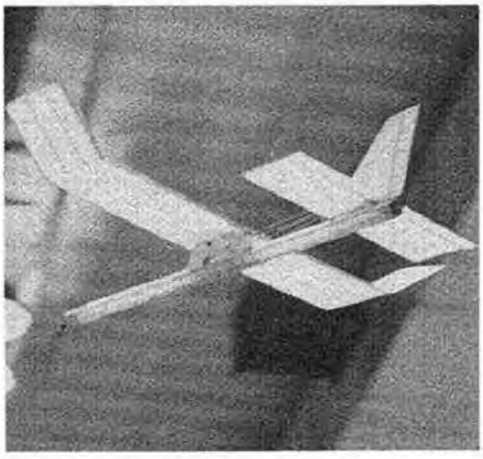
Right: designed by paper glider expert Dr. Yasuaki Ninomiya, this range of 15 White Wing paper gliders comes with extensively detailed 60 page book giving a complete course in model aerodynamic, design and flight trimming.

Below right: superb static display model illustrates early ballooning flight, fitted with electric motor, by Edward Sussman built to 5/16in. to 1/4 scale.

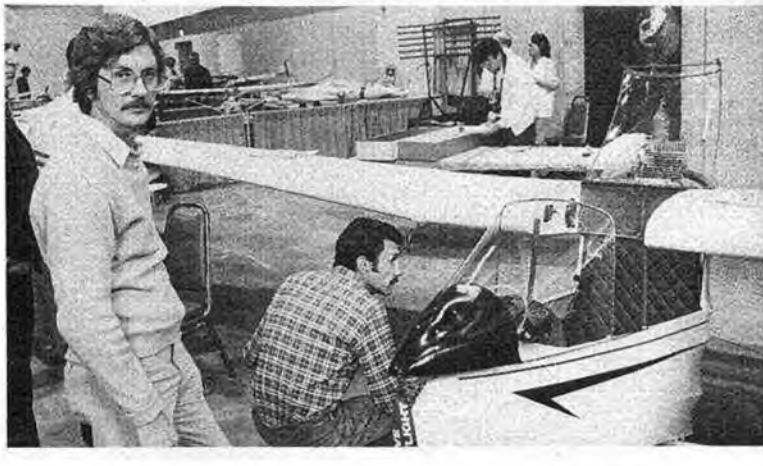
One of the most interesting new products on show, and one with wide appeal, was the *Ni-Starter* from *McDaniel R/C Service*. At last a manufacturer has come up with a very ingenius and compact solution to getting those glow plug motors fired up quickly and safely. Each unit consists of a sub C size rechargeable Ni-Cad battery, built into a patented 'Head-Lock' adapter. This sprung loaded plug connection fits over any standard hexagon glow plug, with a positive twist-lock action. The clip stays on the plug without the frustration of falling off, or the danger of ending up in the propeller! The 1200mA battery will give over 50 starts, and comes complete with charger. Various types are availabe: for standard use; long reach adapter for access to engine cowls or helicopter installations; remote socket for enclosed or inaccessible motors; and most innovative of all is one built into a plug spanner that allows the glow plug in high compression racing engines to be loosened, making starting much easier at a lower compressions, the plug simply being re-tightened once the motor is running — ideal for boat installations.

The units will not lock onto integral glow plugs such as *Cox* or *Rossi* but they will light the plug if held in place. Terry Taul at *McDaniels* says they are working on a ½A *Cox* version next. Priced between $19.95-$27.95 with charger, this unique range of handy glow plug drivers is sure to find an enthusiastic reception with all glow power flyers.

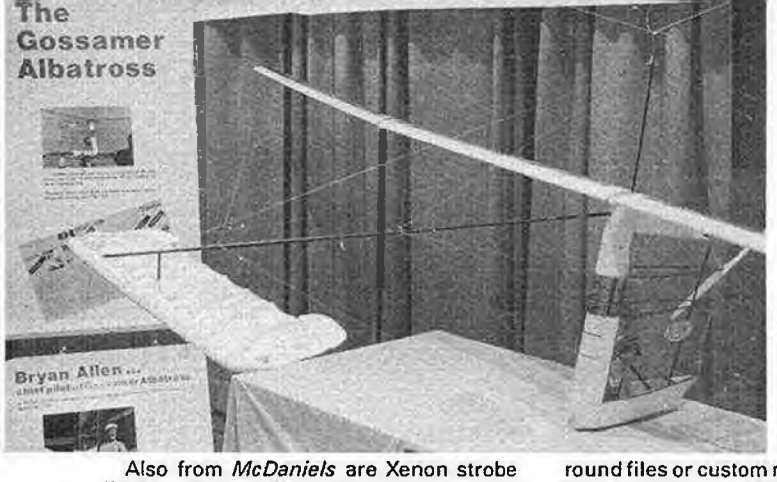




Left: up amongst the rafters, Tony Nacarrato's R/C Open Rubber model cruised silently over the trade stands below, controlled by R/C gear installed in wing pylon.



Right: biggest 'model' of the show was Mark (of Mark's Models) Smith's 34½ft. span Wanderer ultra light aircraft. Twin boom pusher design uses model type construction, hollow hot wire foam LE with foam ribs, for flying weight of 150lb.



1/16 scale model of famous channel crossing Gossamer Albatross complete with 'Action Man' Bryan Allen inside fuselage. This model does not fly but if you want a challenging scale project, perhaps electric powered...

Also from *McDaniels* are Xenon strobe lights, ideal for scale models. Two miniature strobe tubes, powered by two pencells, will flash for 2 hours and are synchronised and activated by a neat 1oz. package of electronics. Available direct mail order at $34.95, they are pre-assembled and tested with 90 day warranty.

Another new gadget for model builders is a reciprocating sanding device from *Addis Elmore* called Wandit. Powering a flexible metal wand, covered with abrasive grit, the *Wandit* really scores in areas of varying density that always give problems. Junctions between soft materials, foam and balsa and harder ones, spruce, ply and even glue seams are now made easy to sand smooth as the wand spans over the varying densities, avoiding unwanted hollows, bumps or ridges. Replacement self-adhesive sanding strips keep the tool in top condition and it will accept flat or round files or custom made tools for special jobs. Piano wire, tubing or metal sections covered with abrasive grit paper can get into hard-to-reach areas, smooth out fillets, enlarge holes or deburr edges where the rotary action of other sanding tools may not be appropriate. The unit complete with flat and half round wands and spare grit paper retails for $109.95.

A life times work — is how Robert Hirsch describes his own personal goal, that of documenting the hundreds of full size racing planes with super scale drawings for scale fans. Robert has compiled a complete list of over 800 aircraft he intends to draw up and so far he has completed 300! All his drawings are available in ¼in. to 1ft., 1/48th scale, and so far he has concentrated on aircraft of the '30s, Schneiders, Formula Is and pre-WWI racers along with some other unique designs. Each sells for a remarkably low $1.00 and full colour side profiles are available as laminated place mat sets with three-view plans on the reverse side selling for $10.00 a set. He sells mail order, air mail only, so add some postage.

Amongst the trade show stands were many representatives from the specialist flying groups in America, each displaying their particular interest: *The Society of Antique Modellers*; various F/F and C/L Societies and the *Quarter Scale Association of America*. Of particular interest on the QSAA stand was a remarkable 5 cylinder, scratch built 4 stroke motor by forest Edwards. The motor uses OS60 piston and sleeves, but otherwise everything is constructed from bar stock, taking some 300 man hours to complete. With a displacement of 3.4cu. in. (55.7cc) the motor turns a 22 × 8 prop at 7300rpm, and idles at 900rpm, and weighs 5½lb. Mounted in a 1/4th scale *Fleet Model 2* the project is about two months from completion and should be flying later this year.

Certainly the *Model Builder* IMS show gets the season off to a good start.

Supply Sources

GSP Products, 2238 Rouge River Drive, Sacramento, CA. 95826, USA.

Two Worlds International, 500 Laurel Wood Road, Suite 9, Santa Clara, CA. 95050, USA.

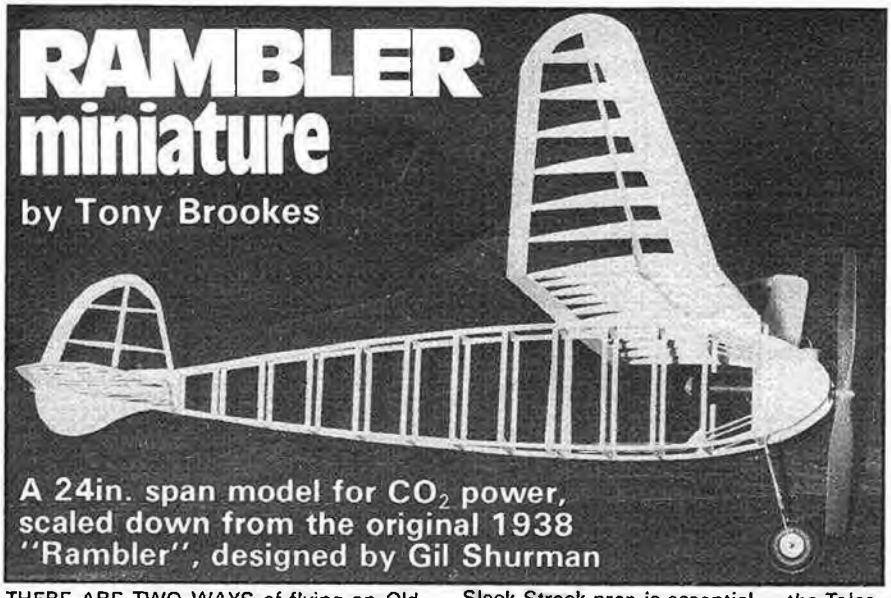
McDaniel R/C Service, 13506 Glendundee Drive, Herndon, VA. 22071, USA.

Addis Elmore, P.O. Box 266, Mesquite, TX. 75149, USA.

Robert Hirsch, 8439 Dale Ave., Buena Park, CA. 90620, USA.

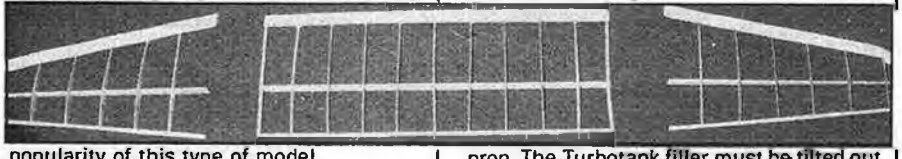
RAMBLER miniature

by Tony Brookes



A 24in. span model for CO_2 power, scaled down from the original 1938 "Rambler", designed by Gil Shurman

THERE ARE TWO WAYS of flying an Old Timer in a small field. One is to fit it with radio. The other, made possible by present-day CO_2 motors, is to scale it down. While neither approach is perfectly satisfactory, at least the CO_2 miniature is flown in the manner intended by the original designer, which is certainly not the case when radio is used. Moreover, reproducing the flight characteristics of a vintage model on a small scale is a very satsifying exercise in itself and fully explains the increasing popularity of this type of model.

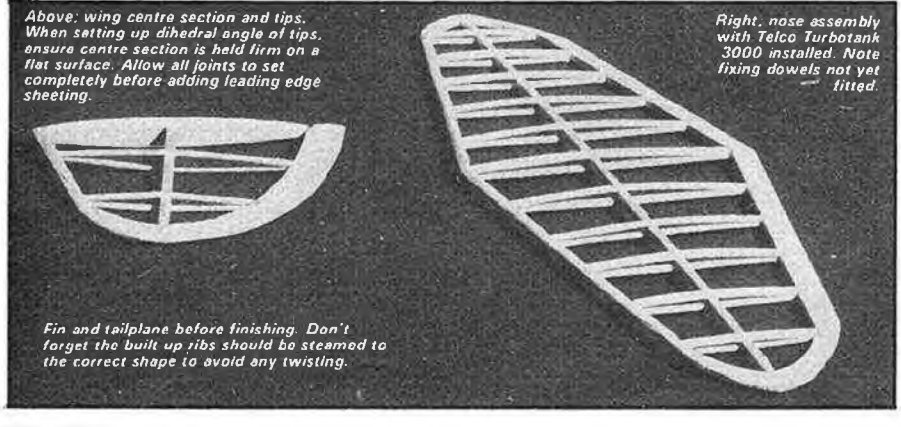


Gilbert Shurman's Rambler lends itself perfectly to this treatment. The original was a Brown Junior powered six-footer designed in 1938 for the then new limited engine run contests. It was an immediate success, winning on its first day out after some hasty initial trimming on the morning of the contest. At one-third scale it is ideal for a Telco Turbotank 3000.

When building CO_2 miniatures, light weight is all-important, since the wing *loading* must be scaled down somewhat if equivalent performance is to be achieved. This calls for great care in wood selection. A Sleek Streek prop is essential — the Telco prop is far too heavy.

Fuselage

Basic construction is conventional — just like building a rubber job. When it is done, cut the firewall from 1.5mm ($\frac{1}{16}$in.) ply. Make the holes for mounting the motor and undercarriage. If a motor other than the Turbotank is used, some sort of bracket must be made to bring the motor forward, so that the cowling sides do not obstruct the prop. The Turbotank filler must be tilted out of the vertical by about 10° to allow the charger to clear the u/c leg. This is easily done by slackening the large screw head at the rear of the tank. Mount the motor, using washers to give 1° down and 2° right thrust. Attach the u/c leg with nylon thread and epoxy. Pre-shape the cowling sides and epoxy them in place. Drill the holes for the attachment dowels and cement them in. Then build a rectangle of 2mm ($\frac{3}{32}$in.) square balsa inside the fuselage nose opening, using adhesive tape to attach the parts. Remove it when dry and attach it to the rear of the firewall.



Above: wing centre section and tips. When setting up dihedral angle of tips, ensure centre section is held firm on a flat surface. Allow all joints to set completely before adding leading edge sheeting.

Right, nose assembly with Telco Turbotank 3000 installed. Note fixing dowels not yet fitted.

Fin and tailplane before finishing. Don't forget the built up ribs should be steamed to the correct shape to avoid any twisting.

Wing, tailplane and fin

Build the three panels separately, join them at the correct dihedral angle and insert the ply dihedral keepers. Add the L/E sheeting and sand well. The tail surfaces use two part ribs, above and below the spar. Pin down the tailplane outline and cement in the lower halves of the ribs. Add the spar and the upper rib halves. The latter must be steamed to shape before fitting, otherwise the bending stresses will distort the final section. The T/E and tip of the fin can be pinned down, but apart from that building the fin is a hand-held operation. Cement the spar to the base rib, using a template to get the angle right. Add the T/E and tip as a unit, then the L/E and ribs. Sand everything to shape.

Covering

Cover the whole model with lightweight Jap tissue, blue for the wingtips and fin, white elsewhere. Use well thinned dope. Strap everything together with the traditional rubber bands and weigh the model. Two ounces is too much. Never mind — head for the field anyway.

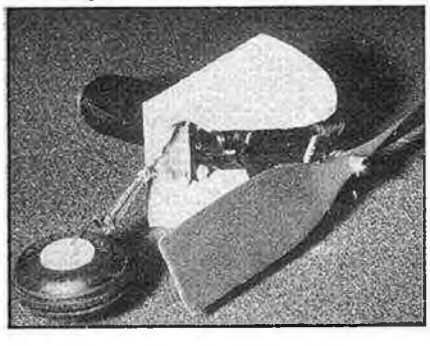
Flying

First tests on the prototype revealed the need for strengthening gussets in the first fuselage bay, which is why these are shown on the plan but not in the photographs. Don't be tempted to omit them. Assuming that your model will stand landing loads better than the original did, aim for a long floating glide with a right turn to suit the size of your field. When the glide is right, a gas charge can be used, with the motor turned well down to give a powered glide. Once that is satisfactory, gradually open up the motor until a suitable rate of climb is achieved. The turn pattern is right-right. To make thrust line adjustments, use packing behind the motor mount as though it were the noseblock on a rubber model.

Having trimmed out the climb, try a liquid charge. At this point, the need for a larger field might well become apparent. The writer uses liquid charges only at Barkston Heath: gas charges are quite enough for small field flying. In flight, the fidelity to the original is remarkably good. Even the Telco looks passably like a Brown Model D from a distance!

When it comes to supplies, the only part which might be a bit awkward to obtain is that tiny airwheel. Aeronautical Models of 39 Parkway, London NW1 is the place to try if your local model shop cannot help.

So there it is. For a small outlay (most of it for the motor) and a few evenings' work you too can return to the Golden Age. Happy Rambling!



ORIGINAL BY GIL SHURMAN – 1938
CO2 MINIATURE BY TONY BROOKES

Rambler

Wing mount – 2 off 2mm (3/32 in)

BALANCE POINT

Longerons and spacers 2mm (3/32 in) sq.

Fin base rib and spar 2mm (3/32 in)

TE & Tip 1.5mm (1/16in)

LE 2mm (3/32in) sq.

Fin & T/P ribs 1.5 x 0.8mm (1/16 x 1/32 in)

Soft block

Underfin 1.5mm (1/16 in)

Pin for tail band

All woods unless otherwise stated are balsa

All dowels 2mm birch

1D 1D – 2 off 1.5mm (1/16in)

1 – 9 off 0.8mm (1/32in)

2

3

4

5

2 – 7 2 off each 0.8mm (1/32 in)

Firewall 1.5mm (1/16 in) ply

Dihedral keeper 2 off .8mm ply

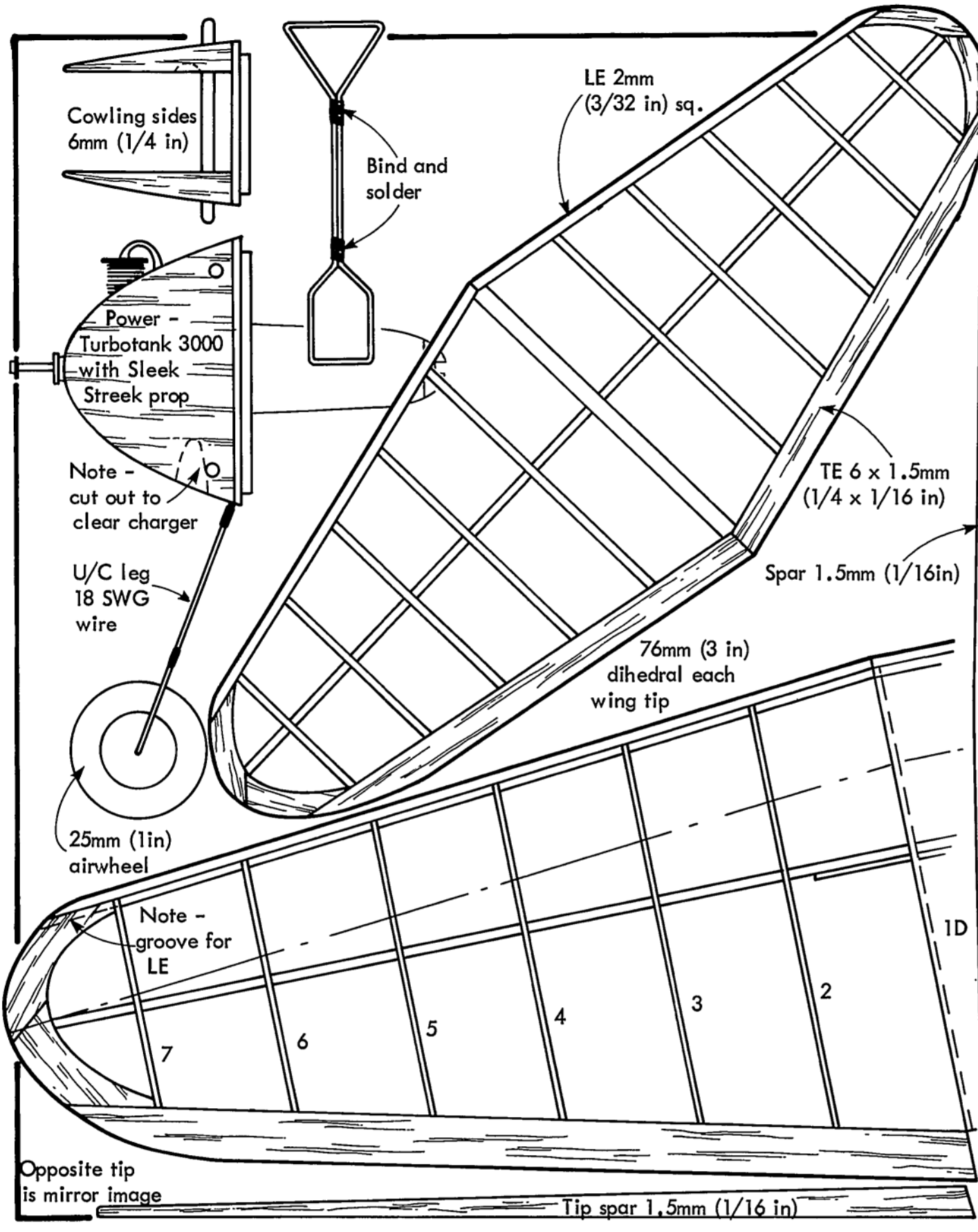
LE 2mm (3/32 in) sq.

0.8mm (1/32 in) sheet to this line

Spar 6 x 1.5mm (1/4 x 1/16 in)

1D 1 1 1 1 1 1 1 1 1 1 1D

TE 9 x 1.5mm (3/8 x 1/16 in)


Cowling sides
6mm (1/4 in)
Bind and
solder
LE 2mm
(3/32 in) sq.
Power -
Turbotank 3000
with Sleek
Streek prop
Note -
cut out to
clear charger
TE 6 x 1.5mm
(1/4 x 1/16 in)
U/C leg
18 SWG
wire
Spar 1.5mm (1/16in)
76mm (3 in)
dihedral each
wing tip
25mm (1in)
airwheel
Note -
groove for
LE
1D
7
6
5
4
3
2
Opposite tip
is mirror image
Tip spar 1.5mm (1/16 in)

Free Flight Scene

MARTIN DILLY reports

What is Free Flight?

As anyone who actually competes will quickly testify, free flight excellence and enthusiasm is no respecter of boundaries or of politics, but often we are too preoccupied with doing it to find the time to get some of the enjoyment across to other people. Writing in the South African newsletter Free-Flight, its editor Sean McCullagh catches many of the essentials that make our branch of the sport so worthwhile. Next time your club wants to interest the local press in free flight, you could do worse than to use some of Sean's ideas; I am sure he won't mind the plagiarism. We quote: "Having been fed the delights of radio control flying during a ten year absence from chasing through ploughed fields, why is it that I have returned to free flight?

The answer for me is that free flight is creative, competitive and clean. In a plastic, ready-to-fly technology it relies on simple ingenuity and determination to overcome problems. Free flight is creative in that each aircraft is unique, an extension of oneself. It is competitive in that each aircraft represents the tennis racquet, cricket ball or javelin. Tactical and psychological moves are also inherent in playing the free flight game.

It is interesting to note the variety of people playing the game. Among the top ten of the last Nationals we find a physicist, two engineers, an architect, a pharmacist, a medical doctor and an attorney. To me, however, the uniqueness of free flight is that everyone is brought to the same level at the contest line. Only their ability to fly free flight is taken into account, and this is exactly how it should be...

I was intrigued by a remark made by an elderly bystander at the recent Nationals. Observing the circle tow tactics of four models flying simultaneously and their whooshing up to a fantastic height in the resulting thermal, she was enthralled. As the fliers disappeared downwind after their models she turned to me with eyes shining and said, 'What a fascinating sport for a young man!' When I told her we had to do this sort of thing seven times in one contest she was overwhelmed.

Truly we have shaken off the 'toys for boys' label, which many of us have had to put up with. Free flight is equal to many physical contact sports and more fulfilling that other creative activities. Now is the right time to spread the delights of free flight amongst our youth, and pass on the benefits of our experience to the next generation. If we do not do this then, like the dodo, free flight will cease to exist."

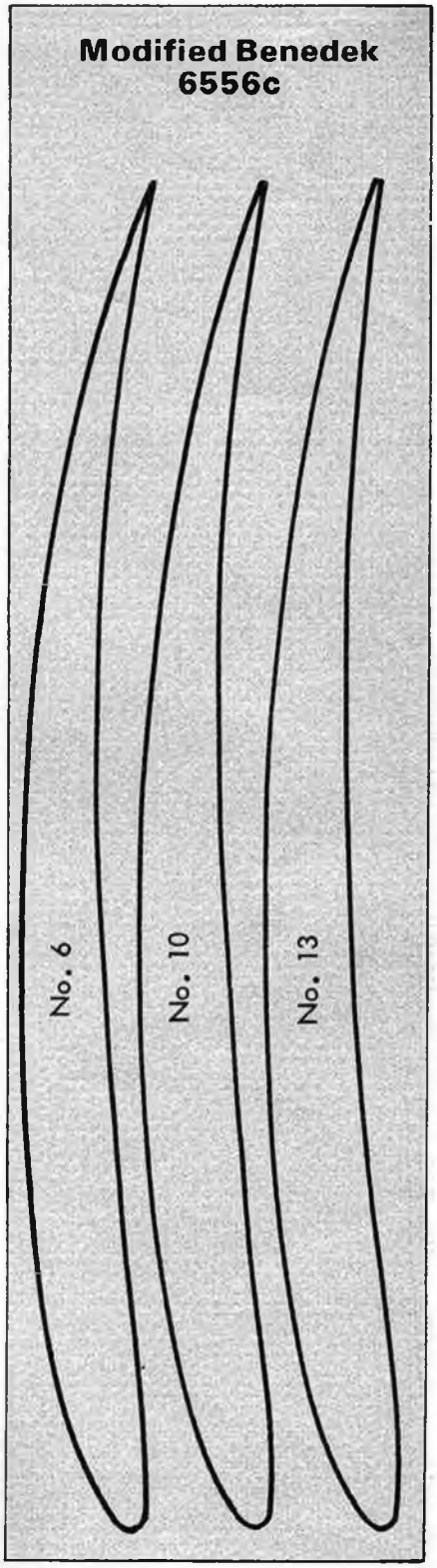
Free-Flight News

For those of us who want to keep abreast of current British and European contest F/F developments and events, Free Flight News is indispensable. Now in its thirteenth year of publication, this British newsletter is edited by a trio of experts, Malcolm Wood, Paul Masterman and CIAM F/F subcommittee chairman Ian Kaynes (to whom we offer our congratulations on his recent marriage to his Wakefield anchor-lady Chris Hollingum).

Dutch-developed F1A Airfoils

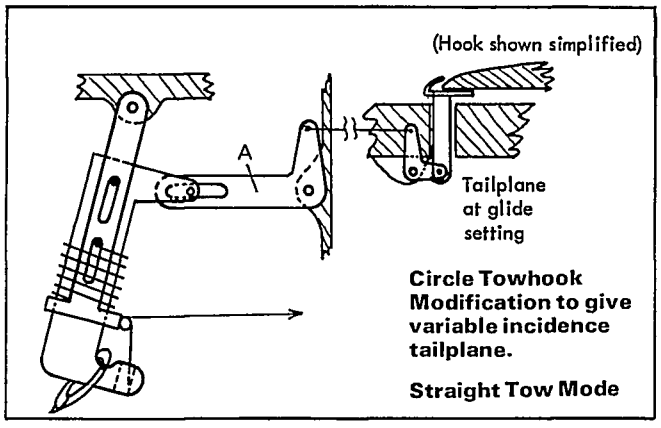
Piet de Boer sends some information on modified Benedek 6556c airfoils for gliders. Piet and some Dutch colleagues claim some interesting 'still air' times, flying near sunrise and sunset. Of course, we all know that *some* slight upwards and downwards air movement is possible, even at these times outdoors. It would be interesting to do some *indoor* testing, perhaps in one of the Cardington sheds; a standard launch technique would be needed, perhaps rather like the Wright Brothers' weight-operated catapult, and measurements would have to cease when the model reached a height of a wingspan or so above ground to minimise any ground effects. There you are, all you degree students looking for a useful project; all part of the Free Flight Scene service. Meanwhile, here are the Dutch results; no times are available for the B-6556c airfoils under the same conditions.

No. 6	Sunrise 3:25	Sunset 3:45
No. 10	Sunrise 3:05	Sunset 3:30
No. 13	Sunrise 2:35	Sunset 3:10



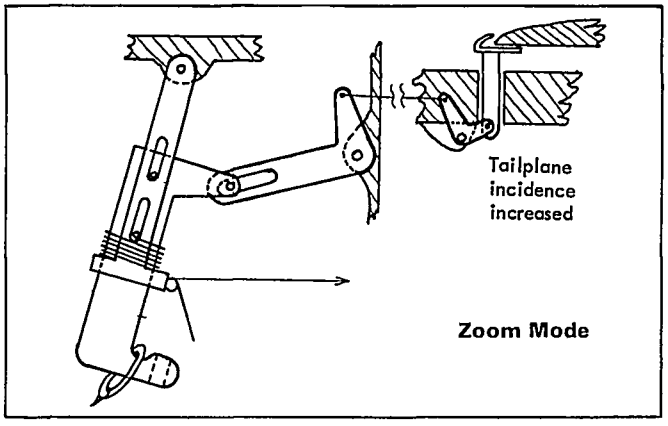
Modified Benedek 6556c

	%	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	95	100
No. 6	U	1.05	2.63	3.59	4.85	5.69	6.48	7.63	8.42	9.00	9.41	9.88	9.76	9.19	8.03	6.20	3.72	2.1	0.42
	L	1.05	0.24	-0.03	0.17	0.42	0.74	1.3	1.82	2.40	2.76	3.45	3.92	4.14	3.72	2.95	1.56	0.82	0.0
No. 10	U	1.00	2.61	3.56	4.81	5.63	6.40	7.53	8.29	8.94	9.24	9.68	9.56	8.97	7.84	6.04	3.65	2.06	0.42
	L	1.00	0.14	-0.76	-0.01	0.22	0.50	1.02	1.51	2.06	2.41	3.07	3.54	3.78	3.41	2.71	1.40	0.74	-0.04
No. 13	U	0.96	2.58	3.52	4.77	5.58	6.33	7.43	8.17	8.69	9.08	9.49	9.35	8.76	7.65	5.89	3.57	2.02	0.42
	L	0.96	0.05	-0.12	-0.19	0.01	0.25	0.74	1.19	1.71	2.05	2.68	3.17	3.41	3.10	2.46	1.26	0.67	-0.04



Circle Towhook Modification to give variable incidence tailplane.

Straight Tow Mode



Zoom Mode

A towhook-operated variable wing — or tailplane-incidence system

In order to reduce the looping or stalling tendency of a glider that occurs when it is released from the towline with a very much greater than normal airspeed, some flyers have been using a system to reduce the decalage, as in the hook described above. The following method can be used to vary either the wing or the tailplane incidence as the hook extends during unlatch. The operation depends on a pin on the sliding part of the towhook assembly; this pin can move backwards and forwards in a slot in the bellcrank (A); thus there is no movement of the bellcrank under normal towing loads. However, when the hook is extended during the un-latch and launch phase, the bellcrank moves and either lowers the tailplane platform or raises the rear wing fixing dowel, so the launch energy is used on the glider while it is in a low-drag configuration.

Throw-away models?

You see some odd things at contests. At the 1981 Nationals, for instance, there were models with only a telephone number on their model as a recovery aid. They obviously do not realise why a name and address is important, and how explicit instructons to a finder can help? It makes it far harder to locate the owner of a lost model returned to contest control when you have no name to Tannoy, nor any club to contact. And if you find a model downwind how much easier it is to shout a name to a distant searcher than to bawl a telephone number into the wind.

A source of Kevlar and FAI rubber

The Free Flight News bulk purchasing list of specialist items still reads like an inventory of the indispensables for free flighters. Two items of interest are Kevlar aramid cloth at £8.00 per square metre, and FAI Supplies ⅛in. (2.5mm) rubber at £7.00 for a 14oz (400gm) hank. Dave Stapleton, to whom we offer our congratulations on becoming a Fellow of the SMAE, will be glad to send you a list; send a stamped addressed envelope to him at 21 Ravensbourne Drive, Chelmsford, Essex.

Two new tissues

After a long search I have managed to locate a source of supply for ultra-light Japanese tissue with the type of uni-directional fibre grain that adds a lot of strength to a model's structure. The tissue appears identical to that sold by a long-vanished South London model shop in the mid-1950's, and weighs only 12.25 gm/m² — exactly the same weight as the pre-war Japanese tissue used in the Frog kits familiar to vintage enthusiasts. It is less porous than most of the random-grain tissues made in Japan that are now available, and will obviously pick up less weight from dope absorption as a result. The tissue is white and 36in. (910mm) wide; I could supply continuous lengths off the roll, but you will normally be able to have it in yard square sheets at 65p each from me at most contests.

A heavier and stronger tissue that was mentioned in this column some time ago is Mikelanta; those of you who have built a Saper from the Czech kit will know that it, too, has a very strong grain, which gives the Saper's rather light wing structure a lot of resistance to bending on tow and to puncturing. One peculiarity is that water spraying does not tighten Mikelanta; however any reasonably-done job of covering tightens satisfactorily after clear doping. Weight is 21 gm/m²; the tissue is made from a reed or grass fibre, comes from the USSR via Czechoslovakia, and costs 75p a square yard from me at contests.

Location bleepers

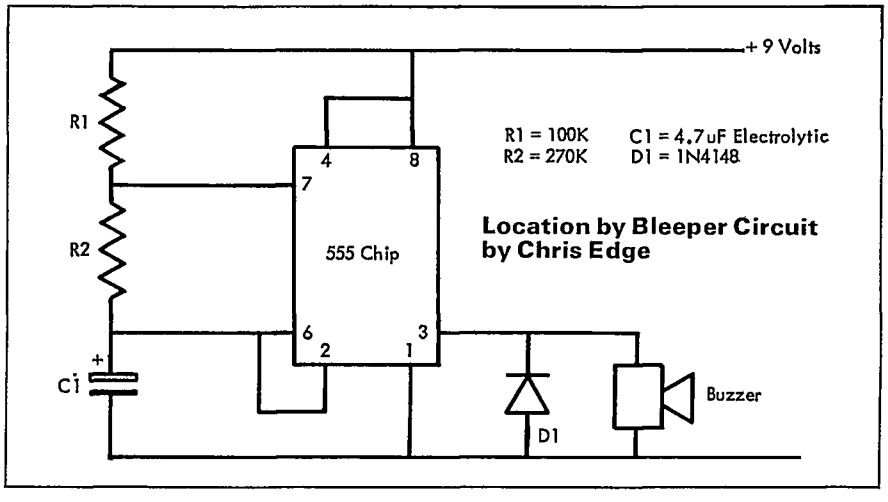
We have mentioned buzzers in Free Flight Scene in the past as a means of model location. Now, Chris Edge tells us the details of his modulated bleeper.

"The system I use was designed around two basic requirements. (1) To ease the problems of retrieval in difficult terrain, i.e. tall grass, crops, etc. (2) To give a greater chance of recovery by yourself or 'Joe Public,' in the event of D/T failure. It is logical to assume that a weird noise coming from a field is likely to be investigated rather than a 'coloured shape' in a field.

Assuming the bleeper itself does not fail, which cannot be guaranteed, (1) is easy to obtain in my system, and, as long as the timer runs for two seconds, (2) is obtained. Let me explain what I mean.

My original idea relied on a normal D/T operation to start the bleeper via the timer arm. I did not want to have the bleeper operating for the entire flight; there's no need unless you fly in fog, but after two D/T failures and no bleeper operating, a compromise between long battery life and a more reliable system was sought.

My present system is operated by the movement of the rudder delay stop on a Hatschek hook. This has a number of advantages: (A) If the timer runs long enough to release the rudder-delay arm — about two seconds — then both (1) and (2) are obtained if the timer subsequently fails. (B) You can now get an audible indication of when the rudder-delay operates, which makes catapult trimming about ten times



Location by Bleeper Circuit by Chris Edge

easier. (C) If the timer does not operate, you will know in the first 2+ seconds of flight, and can act on that information, i.e. get the compass out! In general if (C) occurs the model will probably be stalling anyway due to the reduced gliding turn. Even if the bleeper was *no* use for retrieval, I would still use one just for reason (B), as I think it gives me such an advantage.

Fig. 1 shows the basic switching circuit. As you see, it is remarkably simple; all the parts were obtained for me from: Maplin Electronic Supplies Ltd., PO Box 3, Rayleigh, Essex SS6 8LR, but doubtless any mail order company will do. The buzzers to get are white, about 18 × 22 × 25mm, and uses a grill to emit the sound; I think you can get a type that only operates on six volts so be careful. I have used other buzzers but they are nowhere near as loud as those described. I am not sure of present costs, but guess the components will not be over £2.50 total. I am sure you will agree that is little to pay for something that could stop your aircraft being eaten by a combine harvester.

On the ground the audible range is about 20 yards, but this increases rapidly with height. The buzzer is 'on' for 1.2 secs and 'off' for 0.8 secs. The problem people may experience is over batteries; you need to use a PP3 to get a suitable battery life. For normal batteries that is about 12-18 hours, but triple this is obtainable using a Duracell or similar type. Standard batteries weigh about 33gm, and hence you either build a 380gm A/2 and put the battery over the CG or put it in the nose. The batteries are about 18mm wide, so you need to use a Tchop-type tube or else thicken up the front of the fuselage if using a standard fibreglass tube boom. There should be no problem with an all-wood fuselage.

I would not recommend using a chip block to mount the 555 chip in, since it is possible for the chip to work loose, which could be awkward. It is best to solder the chip directly to the board. Similarly, the battery leads are also soldered directly, as clips could come loose on a hard D/T, which makes one more thing to check; this makes battery replacement difficult on the field, but if I find that I only use two standard batteries per season, if I don't lose the model. On my model the bleeper is epoxied onto the aluminium fuselage spine, and inset about 1.5mm under the fuselage top in a cut-out. The circuit board is epoxied onto soft balsa to enable a bit of movement, and the balsa epoxied to the spine. I am unable to get at the circuit board on my models without ripping the fuselage to bits, but as long as you test the circuit for a bit there are usually no problems with failure and it is kept away from dirt and fingers.

For a switch I use the movement of the rudder delay arm; this is directly attached to an arm on a Seelig timer. You could use a microswitch, but they tend to be expensive.

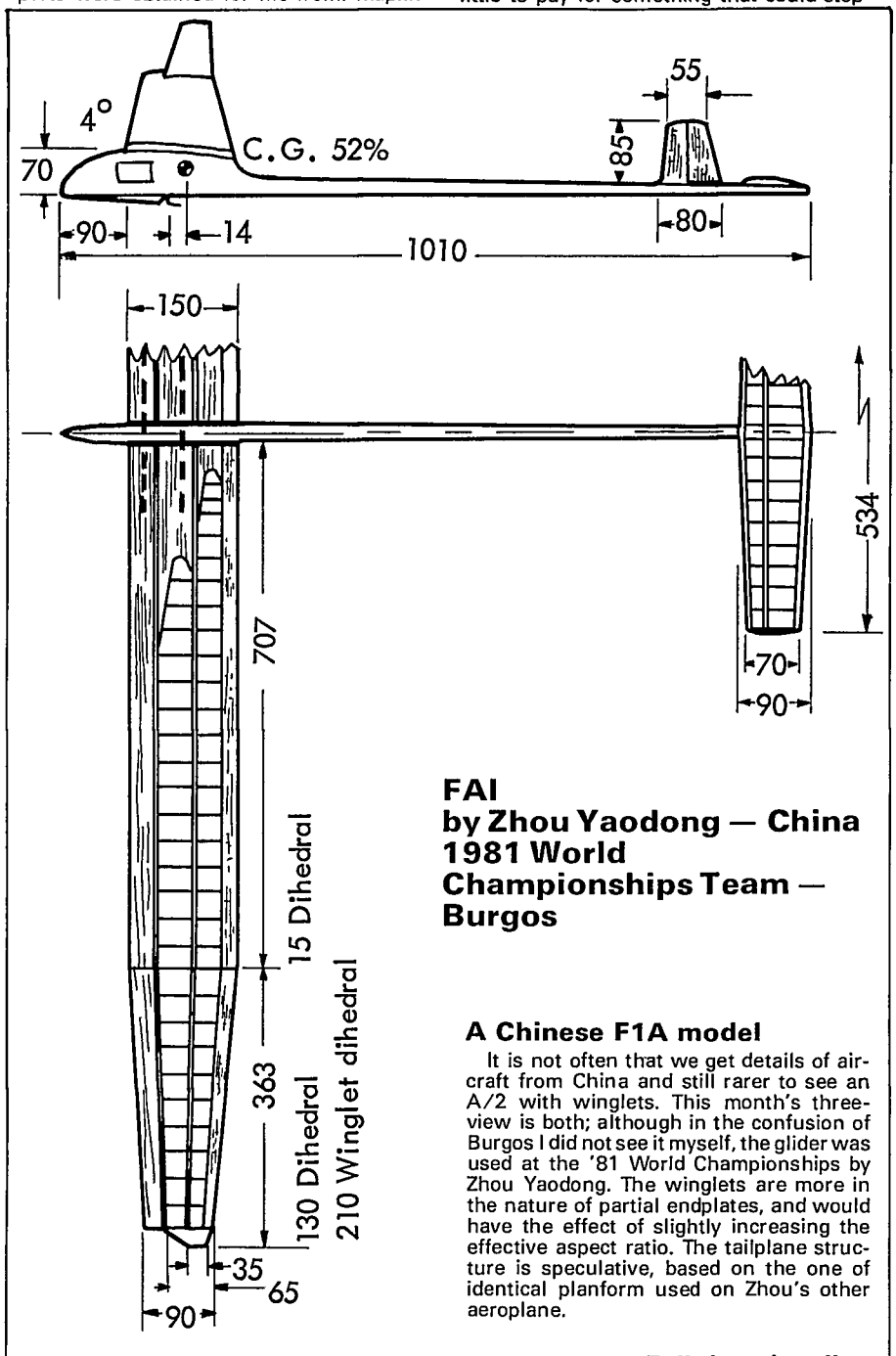
I've now been using a bleeper system for two and a half years and it enables me to find models much quicker than normally; it really amazes me that more people do not use them."

Thank you Chris. My only comment is that I would prefer to dispense with the audible indication of rudder delay and instead have the bleeper working all the time the model is in the air; maybe I've had a few too many towline breaks, hopefully cured now with 50lb (22kg) nylon monofilament. **M.D.**

Airfoil Sections

A new edition of John Malkin's useful book Airfoil Sections has just been published in New Zealand. The original book appeared first in 1971, but has been out of print for some time, and the 1981 revision includes corrections (the Conover ordinates, for example) and numerous additions, giving 70 more pages than the earlier book's 120. Of special interest to the free flight reader are ordinates for North Korean and Chinese airfoils, the Israeli slotted sections, the Canadian-developed glider airfoils with reflexed trailing edges, and both the original and the modified CH-407 sections favoured by a number of US flyers.

A small number of copies are available from Free Flight News; subscribers can contact Ian Kaynes for price and details. Another source is The Aviation Bookshop, 656 Holloway Road, London, N19.

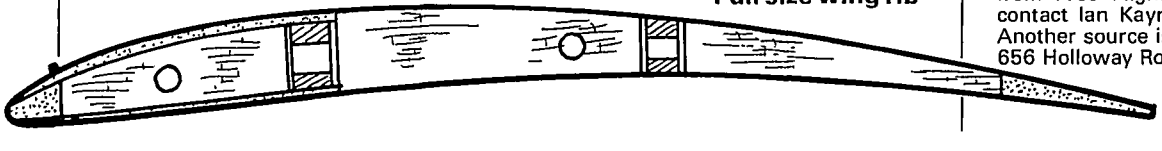


FAI by Zhou Yaodong — China 1981 World Championships Team — Burgos

A Chinese F1A model

It is not often that we get details of aircraft from China and still rarer to see an A/2 with winglets. This month's three-view is both; although in the confusion of Burgos I did not see it myself, the glider was used at the '81 World Championships by Zhou Yaodong. The winglets are more in the nature of partial endplates, and would have the effect of slightly increasing the effective aspect ratio. The tailplane structure is speculative, based on the one of identical planform used on Zhou's other aeroplane.

Full size wing rib



BOB BAILEY reports

S.E. Indoor Meeting, Crawley 7th February

For those of us indoor fans from the South who, because of the bad weather over the winter, were unable to make the trip to Slaithwaite on either occasion around Christmas, the Crawley 'do' provided a welcome chance to get some models out and fly them!

As the regulars will know, the hall is 120ft. square, nice and warm, with a clear ceiling 30ft. high. Excellent — except for one thing — the drift which seemed to be worse than ever this time for EZB.

HLG. This was the first event on the schedule. After some discussion with the organisers on the proposed accuracy of timing flights, they agreed to time to the nearest $\frac{1}{10}$sec. and not round down to the nearest whole second as was originally intended. This turned out to be a wise decision.

As per normal, the entry of 16 was divided between two circles. Models flown varied from small and relatively heavy to the large light Upstart 4s. These proved as always to be the ones to beat, but not everyone got the best out of them. Mick Molton who had not featured prominently in competition before, exhibited a faultless straight climb and transition with less than a foot height loss. He produced two flights of 36 seconds. Ron Green wasn't quite on top form with a little pattern problem but was neck and neck with Mick after the first 5 flights.

Onto the second half — Mick Molton pulled out an excellent 38.2 to give him the lead, Ron failed to improve significantly and I, who had been trailing somewhat, managed to get a bit more beef into the throw — these are not like outdoor gliders because the grip isn't the same — and managed to produce my best yet to be 0.8 seconds behind Ron, so I wasn't displeased.

A close tussle between Laurie Barr and R. Dines for 4th and 5th with Laurie trying Upstarts for the first time saw R. Dines just that little better.

A very closely fought event — Ron said afterwards that he was pleased to see some real competition!

EZB. This followed immediately afterwards — 2 hours being available for as many flights as desired.

The drift up top was so high that it was mandatory to keep the model off the ceiling otherwise 5 minutes into the wall *at the other end* was absolutely certain.

The turbulence at the 'upwind' end made it extremely difficult to judge the height correctly, so it was either scraping around at 20ft. over the organiser's table or off like a shot down the other end to pick up the model as it slid down the wall at 5-6 minutes. I was concentrating on the former, and Ron the latter.

Laurie Barr and Paul Masterman had EZB's which looked somewhat unusual — they were covered in microfilm! This did not give them an automatic advantage since the minimum weight is 1.2g without rubber according to the new SMAE rules which permit any covering. The main snag with microfilm is that it is somewhat vulnerable in the hurly-burly of most low ceiling events. Laurie lost a fin and Paul had large holes in the tailplane to contend with.

I had a slender lead with two flights of 7.40 which skirmished with the organiser's table after not clearing 20ft. Laurie Barr was going well, managing to miss the tables. Suddenly, after not really getting anywhere, Ron Green got a bit of drift free air to record a very nice 10.39 which naturally didn't touch anything — this made the results look a little lopsided and naturally won him the event by a large margin.

So capricious was the drift that my last flight which looked to be dead right for altitude got whisked into the far wall to make no difference to the final outcome — such is life sometimes!

Results

HLG (16 entries) 1. M. Molton 38:2 + 36:5 = 74:7; 2. R. Green 36:4 + 36:6 = 73:0; 3. R. Bailey 35:1 + 37·1 = 72:2; 4. R. Dines 26:1 + 26:0 = 52:1; 5. L. Barr 26:2 + 24:5 = 50:7.

EZB (20 entries) 1. R. Green 6:40 + 10:39 = 17:19; 2. R. Bailey 7·45 + 7:37 = 15:22; 3. L. Barr 7:26 + 7:51 = 17:17; 4. P. Lee 5:29 + 6:02 = 11:31; 5. J. Meaney 5:46 + 5:26 = 11·12.

Cardington 1981

The Indoor Tech Committee is pleased to announce that No. 2 shed is available for indoor flying — at less cost than last year — by about 30%. We are making some changes to the contest format following an interesting lead by the Northern Area. At each event we will be running two EZB events — an individual as per normal, but more importantly a pairs event.

Many people have felt that they weren't good enough to enter an indoor event so Laurie Barr developed the idea of pairing a non-expert with an expert so that the latter will be able to help with trim, rubber selection, tactics, etc. We hope this will encourage more people to come and improve their skill at indoor — it is a great feeling to beat your previous best!

At each day's contest a non-expert will be paired with a recognised indoor expert, being drawn from the hat. We will attempt to ensure that at each succeeding contest the pairs will be changed. The best 4 flight total (2 from each person) from any of the event up till and including 29th August will win the new trophy to be provided by A.G.M. The standard 1.2g ruled for the models will apply.

As No. 2 shed is good above 20ft. height, it is ideal for all duration classes except HLG and for this reason we will hold an all scale/HLG day for the Sweepette Trophy at Milton Keynes later on in the summer. For an extra, we will run an F1D contest to models with a minimum weight of *1.5g* — come on all you budding microfilm fliers — a chance to be much more on equal terms with the experts.

INDOOR CALENDAR (Cardington)

April 18

BRITISH NATIONAL INDOOR SCALE MODEL FLYING CHAMPIONSHIPS AND INDOOR SCALE FLY-IN. SMAE NATIONAL COMPETITIONS FOR PEANUT SCALE, OPEN RUBBER SCALE & CO_2/ELECTRIC SCALE. Venue Middleton Hall Shopping Precinct, Milton Keynes 10.00am-6.00p.m. Pre-entry this year, SAE to Barrie Hotham, 46 South Park Avenue, Mansfield, Notts NG18 4PL. Tel: Mansfield 34127. Fee £1 per event, non-competition flyers £1 each. Closing date for entries 1st April 1982.

May 1st. (*Sat*) E.Z.B. Expert/Novice pairs plus Open E.Z.B. individual. As the preliminary dates of May 2/3 clash with Raffma F/F they will be cancelled.

June 6th. 2 E.Z.B. competitions as above, plus FAI microfilm.

June 20th. E.Z.B. competitions as above, plus CO_2 Duration and Manhattan.

July 4th. Programme as June 6th.

July 25th. Programme as June 6th, plus Novice FAI microfilm to standard FID rules, except minimum weight 1.5 grammes. Experts will be attached to novices to help them with advice, rubber, etc.

August 8th. Programme as June 6th.

August 28th. Indoor Nationals. CO_2 Duration final, plus 35 c.m. microfilm.

August 29th. Indoor Nationals. E.Z.B. Final round of expert/novice pairs contest, plus individual contest for Houlberg Silver Trophy.

August 29th. Indoor Nationals. FAI-F1D microfilm for the Aeromodeller Trophy. Open microfilm (flights for this and any other contest eligible for Humbrol Longest Flight Silver Plate).

September 12th. Programme to be announced.

October 17th. Programme to be announced (but will probably include a new rubber speed class?).

All are welcome to fly for fun on any date. The daily fees are expected to be *half* last year's cost!!

SMAE Plaques are awarded for all events daily, plus prizes.

DAVE HIPPERSON reports

The Devon Rally Lives

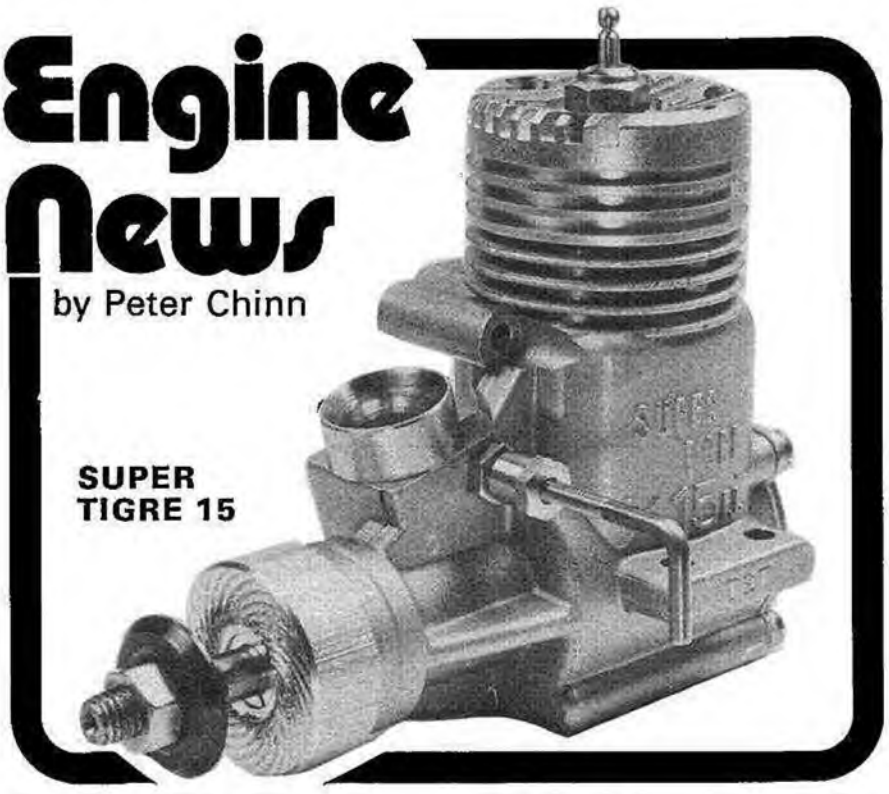
Chris Chapman sends details of the forthcoming Woodbury Common Free Flight Rally. Those that recall these in the past will probably have fond memories. Chris, now in the Bristol and West Club since the demise of the Torbay Club will be getting together with other ex-members to run three open events, Combined Mini, Vintage and HLG on August 8th at Woodbury Common near Exmouth, Devon — everyone welcome.

Your Society needs your ideas

Something rather unusual has occurred in the hierarchy of the SMAE this year. Something that might never happen again. As a consequence it will probably be more receptive to your ideas than ever before. As you know little has changed in the SMAE Contest Calendar for over two decades whilst flying site availability has shrunk dramatically. You want changes — I know because you tell me about them. However nothing can improve unless you do something more constructive than pulling a long face on the flying field. You don't have to sign up to the SMAE Council or even the Technical Committee although I am sure they would love your help. Many of you have seen a fair bit of 'active service' already anyway or are busy developing your own private ventures many of which are proving most popular. However we can't escape the fact that the SMAE are the body responsible over-all, no matter what is run or where and sadly its system is a little out of step and out of date. They need advice from you — they aren't psychic — they won't know what you want unless you tell them. Try writing with your ideas to the new Chairman, Dave Goodwin — he is a free flighter too. Make some suggestions as to how you would like to see things next year. Oh, yes, and what makes it so special this year is that he also happens to be on the Free Flight Technical Committee! Instant communication — what are you waiting for?

Engine News

by Peter Chinn



New Super-Tigre 15

Mick Wilshere, the U.K. Super-Tigre importer, tells us that the long-established G.20/15 has finally been withdrawn from production and is being replaced by a new version of the X.15.

The new model (actually it is the only 2.5cc Super-Tigre listed in the factory's 1982 catalogue) is designated X.15FI-SL-TST. The FI stands for 'front intake', the SL for *scarico laterale* (Italian for 'side exhaust') and the TST means that the engine has 'transfer Super-Tigre' type porting to distinguish it from models having one of the more recognisable forms of Schnuerle scavenging. As shown in our photos, with a plain venturi intake, the engine is known as the X.15FI-SL-TST 'Combat'. The same engine is also available with a Super-Tigre Mag-IV carburettor and then becomes the X.15FI-SL-TST R/C.

This new model uses a truncated version of the X.15FI casting. As with certain other recent Super-Tigre motors, the casting terminates just above the level of the exhaust duct and is then fitted with a short cylinder liner that extends upward only so far as is necessary to accommodate the piston at top-dead-centre. A deep cylinder head, fitting over the liner flange instead of plugging into the bore, is used. It has the usual bowl-and-squishband combustion chamber and, with a 0.10mm copper gasket, the engine examined had a measured (full stroke) compression ratio of 10:1.

The X.15FI-SL-TST is a conventional lapped piston unit with a steel cylinder liner and a ringless, flat crowned, cast-iron piston. Porting is, basically, the original Super-Tigre system, first seen on the Jubilee model G.20 in 1960, consisting of two very large upwardly inclined transfer ports, diametrically opposite a single unbridged exhaust port, used in conjunction with a deflectorless piston, but has the addition of an extra transfer port flanking the exhaust on each side and angled to direct incoming gas away from the exhaust. In other words, it is the traditional ST system, with extra ports to produce a gas flow pattern similar to that of a conventional Schnuerle-plus-third-port system. The ports are fed by a large milled bypass passage diametrically opposite the exhaust and by well-shaped cast-in channels fore and aft.

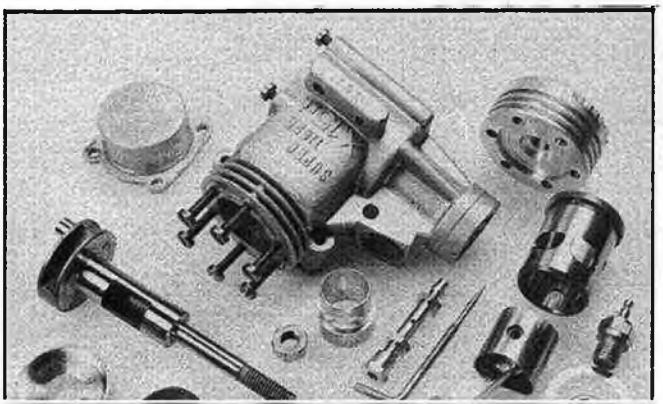
According to measurements of the engine examined, the exhaust period is 156 degrees of crank angle, the ST ports are open for 132 degrees and the side ports for 135 degrees. The cylinder has a wall thickness of 1.5mm. A machined connecting-rod with bronze bushed big-end is used and is coupled to the piston with a 4mm o.d. hollow gudgeon-pin retained by wire circlips.

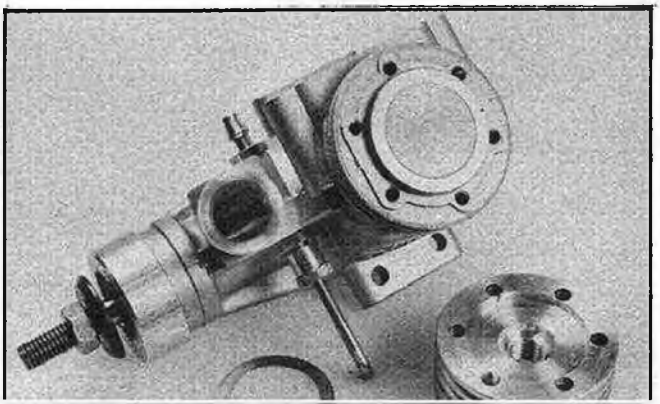
The bottom end is generally in accordance with previous Super-Tigre 15 practice. The crankshaft has a 10mm o.d. main journal, a 5mm front journal and a 7.5mm i.d. gas passage fed from an 11.5mm long rectangular valve port that opens, according to our measurements, at 38 deg. ABDC and closes at 57 deg. ATDC. A full disc crankweb is used, having unsealed peripheral counterbalancing slots each side of the integral 5mm crankpin. The shaft runs in ball bearings fore and aft; a 5 × 16 mm 6-ball brass-caged bearing at the front and a 10 × 22 mm 8-ball steel-caged bearing at the rear. As in the G.15 and certain other front induction Super-Tigres, the intake boss is offset to the right so that the induction port gives a tangential gas flow into the crankshaft. In the X-15FI-SL-TST, the boss is fitted with a 9mm i.d. venturi, located by a tangent spraybar and giving a very large effective choke area of approximately 62sq. mm.

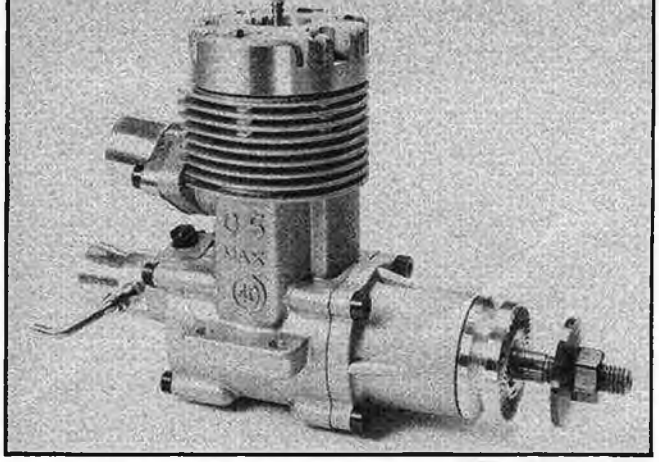
Like all previous X.15, G.15 and G.20/15 models, this new engine has the standard 15 × 14 mm bore and stroke combination and a swept volume of 2.474cc or 0.1510cu. in. Current manufacturer's literature rates the engine at 0.55bhp at a very high peak of 25,500rpm, fuel and exhaust system unspecified. Weight is quoted, pessimistically inaccurately, as 180gm or 7¾ oz. The checked weight of the example shown here was 170.5gm or only just over 6.0oz.

The engine is supplied with an ST long-reach glowplug and, like all Super-Tigres, is well finished in all the places where it matters most.

Left: parts of the new Super-Tigre X15FI-SL-TST, as seen in the heading photo. Engine uses lapped ferrous piston/liner assembly. Right: X15FI-SL-TST has ST's new cylinder construction featuring short liner and flush fitting head.







Recent addition to the ranks of racing type .40 engines, is the rear disc valve, rear exhaust OS Max 40VRP. Already doing well in US and Australia. Full details in April Radio Control Models and Electronics.

Mystery solved

The photo, in the March *Engine News,* of the two unidentified team-racing diesels, brought forth just one response. Ewan Jones, the U.K. agent for the Rossi engines, was kind enough to telephone with the answer to the mystery. Ewan has no doubt that these engines, made about twenty years ago, were the work of Norman Kirton, former Novocastria club member and FAI team-racing contestant back in the '60s, who now lives in Australia. We gather that the engines, strictly 'one-offs', were two of about half a dozen specials, all different, made around that time.

Another What-is-it . . .?

International Model Aero Engine Collectors' Society secretary, Peter N. Scott, sent along the photo of the baby diesel shown here in the hope that we might throw some light on its identity. We have to confess that it rings no bells. It looks as though it might have been made in the '40s or very early '50s and we would guess that it is probably of Continental origin. It could be strictly a one-off, but, if not, is likely to be a product of one of the many short-lived, one-man-band model engine operations of 30 or so years ago.

Any ideas, anyone?

Diesel Wax

The following query came from an Australian reader more than a year ago (it was answered personally at the time!) but, as it raises a problem that is not unknown among 'home-brewers', it was thought to be worth mentioning here.

"I am currently experiencing a problem with sedimentation in model diesel fuel.

"Ingredients used: diethyl ether (lab reagent) 25%, oil (Castrol M) 25%, kerosene (Shell Household) 47%, amyl-nitrite (lab reagent) 3%. Batches of fuel made up to the above formula are showing the following behaviour.

1. An initial state in which a fine globular wax-like white sediment grows and is uniformly dispersed throughout the liquor. This is visible after a period which can be as short as two weeks.

2. A final state which leaves the liquor largely clear, but a considerable heavy wax-like deposit in the bottom of the container.

"Filtering the fuel, at either stage 1 or 2, through a filter paper, produces a clear liquor. However, this is only temporary and, following further storage, sedimentation is again experienced.

"Shaking does not cause the sediment to be taken up . . . Experiments indicate that this phenomenon is not critical of the mixture proportions.

"This problem is not mine alone and is shared by a fellow modeller who likewise mixes his own fuel. He reports that he has also experienced sedimentation when using amyl-nitrAte (now virtually unobtainable) as well as with amyl-nitrIte."

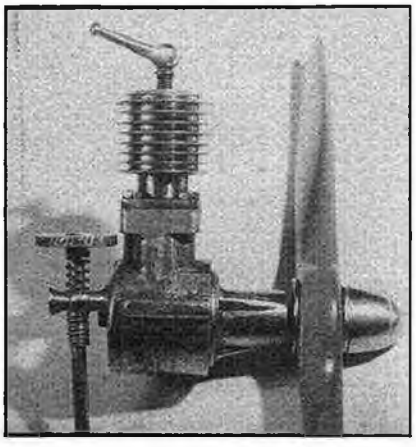
The only occasions on which we encountered this problem, personally, were a very long time ago when, due to the periodical non-availability of amyl-nitrate, it was necessary, sometimes, to fall back on the only other known diesel additive obtainable at that time, namely amyl-nitrite, i.e. the additive used by our Australian reader.

In other words, we have always found that the use of amyl-nitrite is to blame. Although our correspondent mentions that a friend reports having similar trouble when using amyl-nitrate, we have never experienced this. The problem has always appeared to be due to the additive reacting on the castor-oil to produce the waxy precipitate experienced.

All the other symptoms mentioned confirm this diagnosis, but perhaps one should not exclude the possibility of the lubricant used being a contributory factor. At the time of encountering the problem, we were experimenting with a variety of castor-oil based lubricants, including Castrol M and R, Duckhams racing castor, Shell Super-Heavy and one supplied by the Esso people, but the oil companies have a habit of changing the additives in their oils from time to time. The additives are usually put there to deal with some problem quite outside the realm of model two-stroke engine fuels and, although we have found the technical departments of most of the oil companies very helpful, it is obvious that the last thing one can expect them to consider, is whether any change in the formulation of one of their lubricants is likely to have an adverse effect on the suitability of their product for use in a model engine fuel in the presence of other chemical additives.

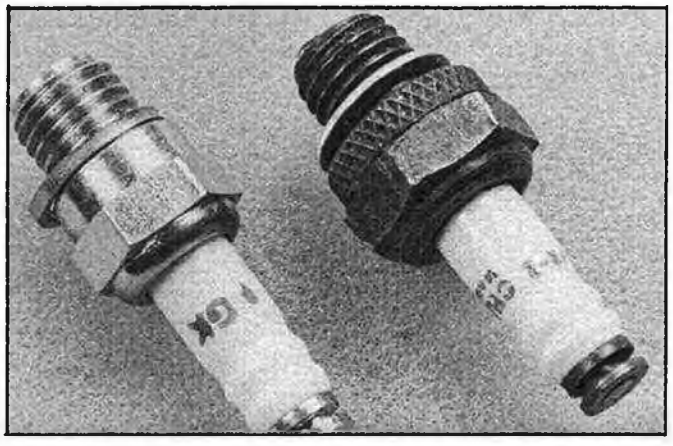
While bearing these other possibilities in mind, one cannot help but come back to the view that the first recommendation is to try discarding amyl-nitrite as a model diesel fuel additive. The only thing it ever had going for it, by comparison with amyl-nitrate, was its cheapness and availability. Against this, it not only introduces the risks of coagulation or precipitation, as already discussed, but is less effective as a cetane improver and is slightly hazardous to handle, producing a strong cardiac reaction if inhaled.

Nowadays, with *iso-propyl-nitrate* available there seems to be no good reason at all for using amyl-nitrite. Iso-propyl-nitrate, which is produced commercially by I.C.I. as a cetane improver for full size high-speed diesel engines, is directly comparable with amyl-nitrate as regards effectiveness and, over a period of several years, we have never encountered any problem with it in model diesel fuels. It is readily available: in fact, it can be obtained through any stockist of Model Technics products in the U.K. or overseas.



Left: another 'What Is it?' Can anyone identify this little diesel? About 0.3cc and probably made at least 30 years ago.

Right: good news for vintage. Japanese NGK sparking plugs (used by Lotus) now include this miniature version, the ME-8, shown here, for comparison, with well-known Champion VR-2.



SCALE MATTERS

by Alan Callaghan

Crawley Indoor Meeting

This meet has now celebrated its fifth birthday and continues to make a very useful contribution to the indoor flying calendar. Amongst many flyers of my acquaintance, it has always been one of the first meetings "to build for" during the dark winter months, and with contests run for many classes of model, not just scale, the afternoon is mostly a very busy one for the active competitor. Having myself at the time not fully recovered from a thoroughly debilitating heavy cold, I was content to spend the time merely watching and relaxing rather than taking part, which made a pleasant change.

The scale events were not memorable from the point of view of new and statistically impressive models, but the average standard of flying seemed to be higher than in previous years. The CO_2 event in particular saw a good session of virtually non-stop high quality flights by many models unfortunately not all entered in the contest. When the floor is cleared, as it usually is for CO_2, then both the spectator and the flyer are able to enjoy so much more of the activities taking place. The contest drew a healthy entry of eleven, of which at least two were using the new Brown Campus A-23 motor. These were John Meaney's *Fike* converted from a peanut plan, and Doug Sheppard's interesting own design *Consolidated PT-1* biplane. This model was built using the paper construction method recently detailed in the SMAE Model Flyer Newsletter by Mike Hetherington. The *PT-1* unfortunately was nibbled rather badly by the large 26in. (660mm) span CO_2 *Farman Moustique* being tested for the first time by Bernard Sexton.

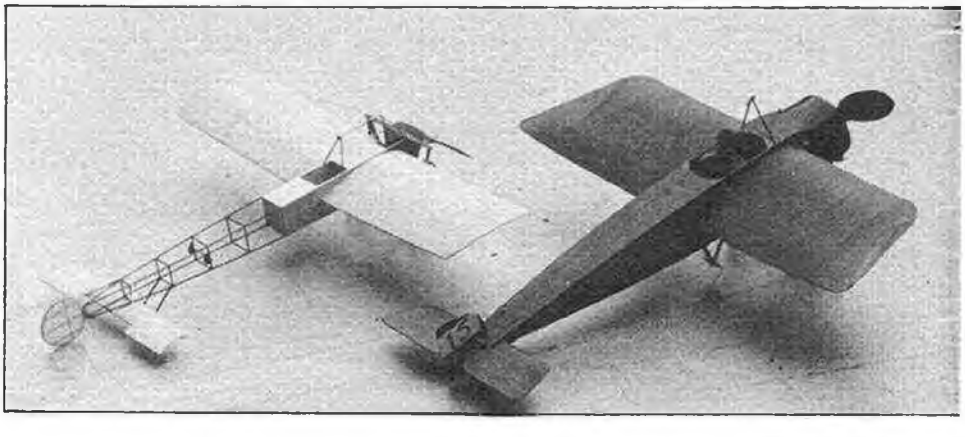
From seeing the two small models flying and my own experience of the motor, it is apparent that the A-23 needs a deal more operational care than the average CO_2 power-plant. Thrust only seems adequate for peanut-size models, and fool proof flights that are as consistent and long as those by the larger models are yet to come. My own example is temporarily shelved due to problems in securing the aluminium feed piping to the filler valve and a conversion to the usual copper tubing is planned before putting it into a model. At the same time the filler valve is being changed to a Telco unit so that all of my CO_2 models can be filled from the same set of chargers even though the motors also include a Brown twin and a Humbrol unit.

One new CO_2 model that flew well enough to finish top in flying but only third place overall was an *Eastbourne Monoplane* by Crawley regular Robin James. The model was simply built, but with much enlarged tail surfaces and dihedral made its static score was rather low. These aids to stability paid off in the air however and with it slow flying speed, a very good scale impression was made. Nick Peppiatt's *Tabloid* proved a winner yet again, closely followed by Butch Hadland's convertible to rubber *Lacey*.

As well as the aforementioned new *Moustique* which was eventually trimmed out to fly well, there was a brand new untested *Vought Corsair* from the "Flying Models of WWII" book, built by Pete Iliffe. With a fully painted finish, moulded cockpit, and neat construction, it was most attractive. This was not the ideal occasion for initial test flights with a more challenging subject such as this, but outdoors on a calm day over grass this one should give a fairly good account of itself in due course. A similar version by Rex Oldridge flies very well in the open air.

The Peanut event was, as usual, very well supported, with no less than twenty-six official entries. The winning model, a new clipped-wing *Piper Cub*, was being flown for the first time by Peter Frostick and it won by a sizeable margin which is quite unique for a brand new model on its first day out. Placing second in static, the condenser paper covered but fully painted 8 gram *Cub* also

Heading picture: Brand new Corsair by Pete Iliffe for CO_2 scale was superbly finished but was a difficult subject to test for the first time in a crowded hall. Above right: This 26in. (660mm) span Farman Moustique is Bernard Sextons first try at indoor CO_2 Scale although he has long experience of other types of flying scale models. Covered in blue jap tissue, the model flew well from many smooth take-offs. Below: Butch Hadlands two pioneer age peanuts include the 1911 Cessna (left) and the Morane - Saulnier. The latter is a fine flyer despite the tiny tail surfaces.



Above: Pete Michel winds up his vintage Cessna monoplane for one of its many impressive flights at Crawley.

Left: Robin James (left) and Nick Pepplatt caught in a candid moment during the entertaining CO flying session with the Eastbourne Monoplane and Sopwith Tabloid. Indoor models are getting larger!

had a two flight lead of twenty-eight seconds over its nearest rival, Butch Hadland's *Morane Saulnier*, and with more performance yet to come. Butch has now retired his peanut *Laceys* and on this occasion brought out a delightful new racing version of the *Heinkel 100* monoplane fighter but was unwilling to try it out in the full hall. Another new low-winger was a peanut version of the *Corsair* being tried by Rex Oldridge but which did not make any official flights. It was cheering to see such difficult subjects being tackled and perhaps as a further incentive we could in future arrange for a prize specifically for the best flying low-wing subject.

Eight of the peanut entries did not return flight scores which was a bit unfair to the hardworking judges, wasn't it chaps? A study of the results table however, shows some extremely close flying between third and sixth place. John Whatmore with a neatly finished *Comper Swift* showed that good average placings (4th in static, 5th in flying) can still put you in the top three at the end of the day.

The Open Rubber event was poorly supported with only three entries and all of these were old campaigners — if they'll pardon the expression! Some official flights were spoiled by the rather over-crowded floor — these models need just as much room as their CO_2 brethren — and but for this, the results could well have been different. Well-known vintage flyer Peter Michel put in some superb flights with an unentered *Cessna No. 1* monoplane built from a vintage Henry Struck plan published in a late 1930's American 'Air Trials' magazine. The model made use of every inch of ceiling height and was a lovely smooth and consistent performer. If only the documentation had not been left at home Peter would have been well in amongst the other three closely-marked entrants.

Another but much simpler vintage design was Vic Dubery's 15in. span *Taylorcraft* which originates from an old Megow's kit plan. The model was all the more remarkable for its large pair of floats which appeared not to hidder flight performance to any great extent during its close surveys of the ceiling. It had taken off from a puddle, too! What more can one ask?

* * *

VINTAGE SCALE

Vintage scale model flying as such is not my own cup of tea, but for those with access to vintage model magazine or an old plan collection, there are many very airworthy subjects to be found after a little research. At a SAM (Society of Antique Modellers) get-together at Chobham Common a few weeks after the Crawley meeting, Don Knight was successfully flying an early Earl Stahl designed French *Caudron* racer in beautifully calm air. Despite all the hearsay you may encounter concerning low-wingers, there are many which can be made to fly well in the right hands. No-one would pretend that it is easy but where would the fun be if it were? To those about to go delving amongst vintage scale plans I would say on the whole don't expect to find models accurate enough to rank with the best of today's designs. Whatever the reasons were for the lack of it, scale fidelity was not usually the strongest feature of these old designs from most of the modelling magazines. There were exceptions as with some makes of kit such as those produced by the American Cleveland firm, whose standards were very high indeed. Remarkably, their vast range of plans is still available today albeit at no small cost per item. To look through a Cleveland catalogue is a stimulating and eye-opening experience with most designs being available in several different scales

The latest SAM Newsletter features a photo of a Cleveland model prototype of a *Boeing China Clipper* flying boat for rubber power, spanning no less than ninety-seven inches! Total power was sixty-four strands of ¼in. flat rubber 30ins. long, split between four motors. Modellers trying this one these days would be wise to open a savings account for the Pirelli upon slicing the first of the built-up wing ribs.

Results

Open Rubber Scale (3 entries)		Static	Flying	Total
1. Butch Hadland	Lacey M10	85	24	109
3. Ron Ashby	Hanriot	82	20	102
3. Nick Peppiatt	Bristol 138Q	77	22	99

CO Scale (11 entries)		Static	Flying
1. Nick Peppiatt	Sopwith Tabloid	92 (1st)	16 (3rd)
2. Butch Hadland	Lacey M10	85 (4th)	17 (2nd)
3. Robin James	Eastbourne	75 (8th)	24 (1st)

Peanut Scale (26 entries)			Static Flying
1 Peter Frostick	Piper Cub	2nd	55 + 54 (1st)
2. Butch Hadland	Morane Saulnier	6th	40 + 41 (2nd)
3. John Whatmore	Comper Swift	5th	36 + 30 (= 4th)
4 John Coker	Stampe SV4	4th	32 + 27 (8th)
5. P. Lee	Lacey	9th	35 + 31 (= 4th)
5 J. Meaney	Lacey	10th	33 + 34 (3rd)

FROM THE HANDLE

JIM WOODSIDE reports

Northern Area Winter Rally, January 24th

The weather was extremely kind for this meeting with barely a breath of wind and temperatures combatible with only a couple of pullovers. A very healthy entry turned out including an entry from the London Feltham Club.

Haydon Sykes ran FAI and Goodyear teamrace. Although several teams brought ½A models there was no time, before an early sunset at 4.0pm, to run off the heats.

FAI Teamrace

The heats went off without any hitches, followed by two rounds of semis for six instead of nine teams.

	Heat	Semi	Final
1. Langworth/ Broadhead	3.39:9	3.35:9	7.38:7
2. Fry/Thorpe	3.42:6	3.35:9	7.59
3. Wilson/Gardiner	3.56	3.50:5	8.10
4. Heaton/Woodside		3.52:9	
5. Hill/Metcalf		4.07:5	
6. Nixon/Campbell		4.07:9	

Goodyear Teamrace

Only three teams recorded times under 5 minutes. These three were so far ahead that the final was run off on this basis rather than run semis. In the final Catlow-Jephcott were disqualified for running the model outside the flight circle whilst landing.

1. Hammersley/ Horne	8.54
2. James/Howard	9.26
3. Catlow/Jephcott	Disq.

1982 SMAE Control Line Sub-Committee

The present committee is as follows:

Bob Horwood, Chairman;
Tom Jolley, Aerobatics;
Dave Day, Aerobatics;
John James, Combat;
Richard King, Teamrace;
Pete Halman, Speed.

Contact should be addressed to: *Bob Horwood, 21 Burghley Road, St. Andrews, Bristol 6. Phone: Bristol 48769.*

The 1982 Control Line World Championships, Oxelosund, Sweden, 20th-26th July

This year's Championships are to be held in the small town of Oxelosund which is about 120km south of Stockholm. The town is chiefly a holiday centre for climbing, water sports and fishing.

The contest site seems to be an area of tarmac used for ball games. An adjacent football field looks the likely combat area. The administration buildings are next to the contest circles. The organisers state that training areas will be available in Oxelosund. I sincerely hope that they are plentiful, in good condition and close-by the contest area, as the provision of practice sites has been a bone of contention at several recent Championships.

The organisers are offering hotel, dormitory accommodation and camping sites. Entry fees vary according to the choice and are in the range of 300-475 Swiss Francs (£86-£135) subject to review.

Those needing full information should contact: Forbundsexpedition, Sandbergesgatan 4, Box 10022, 60010 Norrkoping, Sweden.

The proposed jury, subject to confirmation, is:

FAI Jury	S. Pimenoff	Finland
	L. Jackson	USA
	C. Sundstedt	Sweden
Judges:	M. Harvey	UK
F2B	J. van Ommeren	NL
	K. Throstle	USA
	K. Plotsin	USSR
	L. Helje	Sweden
F2C:	P. Hasling	DK
	D. Heaton	UK
	J. Gustavsson	Sweden
F2D:	R. Evans	UK
	M. van Geytenbeek	NL
	I. Larsson	Sweden

All three of the British teamrace teams have recorded time in the sub-3.40s on many occasions and so our hopes must again be high for honours in the F2C nations prize. The U.K. has won this in 1978 and 1980 — let us hope it can be a hat-trick of wins. Mind, there will be some pretty stiff opposition — remember the incredible airspeed of the Soviet teams in Genk 1980.

We wish good luck to all competitors.

1982 Control Line Contest Calendar

Date	Venue	Organiser	Events
April 25	Long Marston	1st SMAE Centralised	FAI. GY
May 9	North Weald	2nd SMAE Centralised	FAI. ½A
Mat 22/23	Three Sisters	Open International	F2A, F2B, F2C, F2D
June 6	Dishforth	Northern Area	GY Marathon, ½A
June 13	Three Sisters	3rd SMAE Centralised	FAI. ½A
June 27	Dewsbury	Wharfedale	Open Mini GY
July 4	Albemarle Barracks	Tynemouth	FAI. GY
July 18	Barkston Heath	4th SMAE Centralised	FAI. GY
Aug. 15	Dishforth	Northern Area	GY & ½A 500 lap
Aug. 28/30	Barkston Heath	Nationals	FAI. GY. ½A
Sept. 12	Church Fenton	Northern Area Gala	FAI. GY. ½A
Oct. 10	Church Fenton	Northern Area	FAI. GY ½A
Oct. 17	Church Fenton	Northern Area	FAI Rally
Oct. 25	Dishforth	Northern Area	Class 'B' 1000 lap

C.B.14 — F2C by Vladimir Suraev

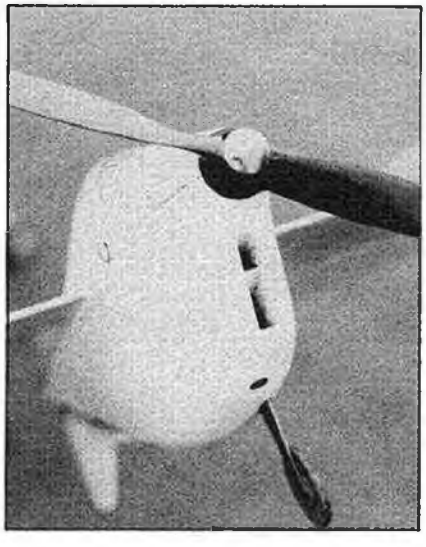
Some months back the column featured two 'flying wing' models for F2C. The purpose of that article was to comment on the rise of that style of model and advertise the sources of working drawings. Serious competitive teamrace is essentially serviced by a 'cottage industry' of machinists and draughtsmen who work long hours for love rather than money. Partly for this reason the basic outline sketch of Walt Perkins' 'Shadow Wing' did not have any dimensions shown. The full size plan did contain considerably more detail and the small purchase price of $2.00 does its bit towards sustaining a valuable service. A commercial magazine like Aeromodeller has to tread a narrow path in cases like these: to acquaint the reader without killing the source. However having said all this, no such problem exists with C.B.14.

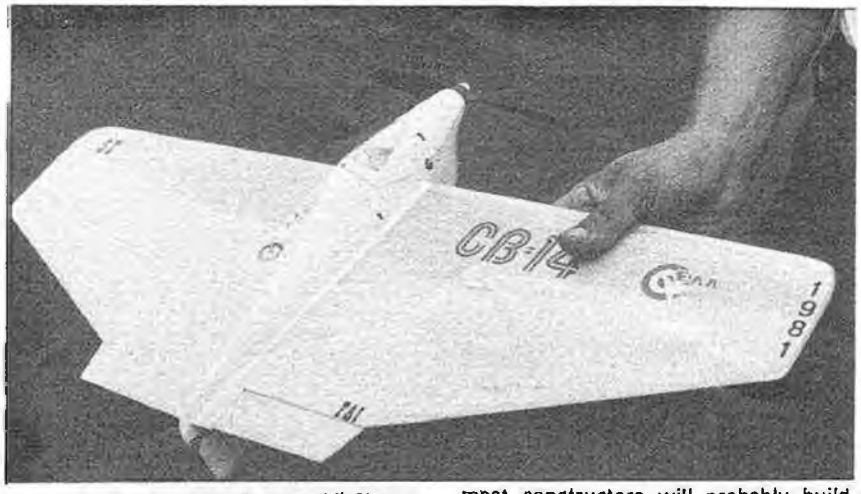
Since the 1981 European Championships I have received several requests for details of Vladimir Suraev's F2C model designated C.B.14. You may remember that the model was regularly clocked at 17.8 seconds for 10 laps and that despite one desperate pit-stop, still recorded a 3.32 heat — representing a potential time in the very low 20s. Impressive! However I was unable to help with requests for working details. Thus I was more than pleased to receive a letter from Vladimir asking that the plan be published as he was himself unable to meet the demand for plans. I would like to take this opportunity to thank the designer, on behalf of T.R. fans, for his generous gesture. Let us now discuss some of the main features of the design.

The Fuselage

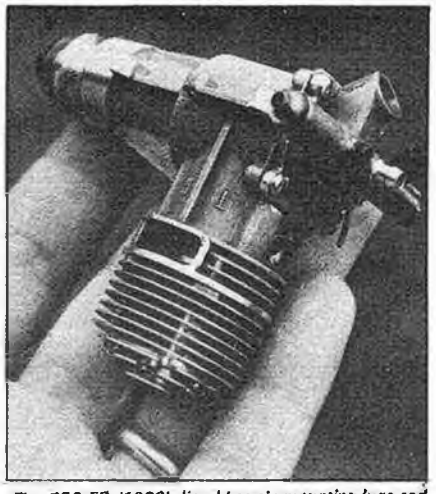
There are several interesting and novel ideas in this component. 1. Engine mount — the very powerful C.B.2.5D (1982) now features six hold-down points on a long web which runs from the front bearing to the rear cover. Thus the model has no need for a conventional metal motor mount, which has been the norm for many years.

Front view of the CB-14 showing cooling arrangement. Upper slot cools crankcase.





Photograph taken at the 1981 European C/L Champs where the model placed fourth, flown by Barkov/ Sourzov.



The CB2-5D (1980) diesel has six mounting lugs and bolt direct to the fuselage moulding.

Instead six small dural pillars are moulded into the fuselage shell. The engine is screwed directly to these. Obviously weight is saved by this move — as much as 26gms.

2. Fuselage shell — this item is moulded in glass carbon, incorporating the cooling duct. No great strength is needed beyond the wing leading edge as the wing is the strength member. The moulding is clean and aerodynamic. Note also that the prop nut and prop form a 'spinner' in the style of the Metkemeijer prop when fitted to the latest 'Turtle' designs. An obvious difficulty is the need to build in the mounting studs at 0-0° with the mould split line. However most constructors will probably build a conventional fuselage in balsa, using a magnesium pan on which to mount their engine. It is worthwhile noting that the whole fuselage is mounted with an inthrust of about 1-2° — an aid, I would think, to achieving tangential flight.

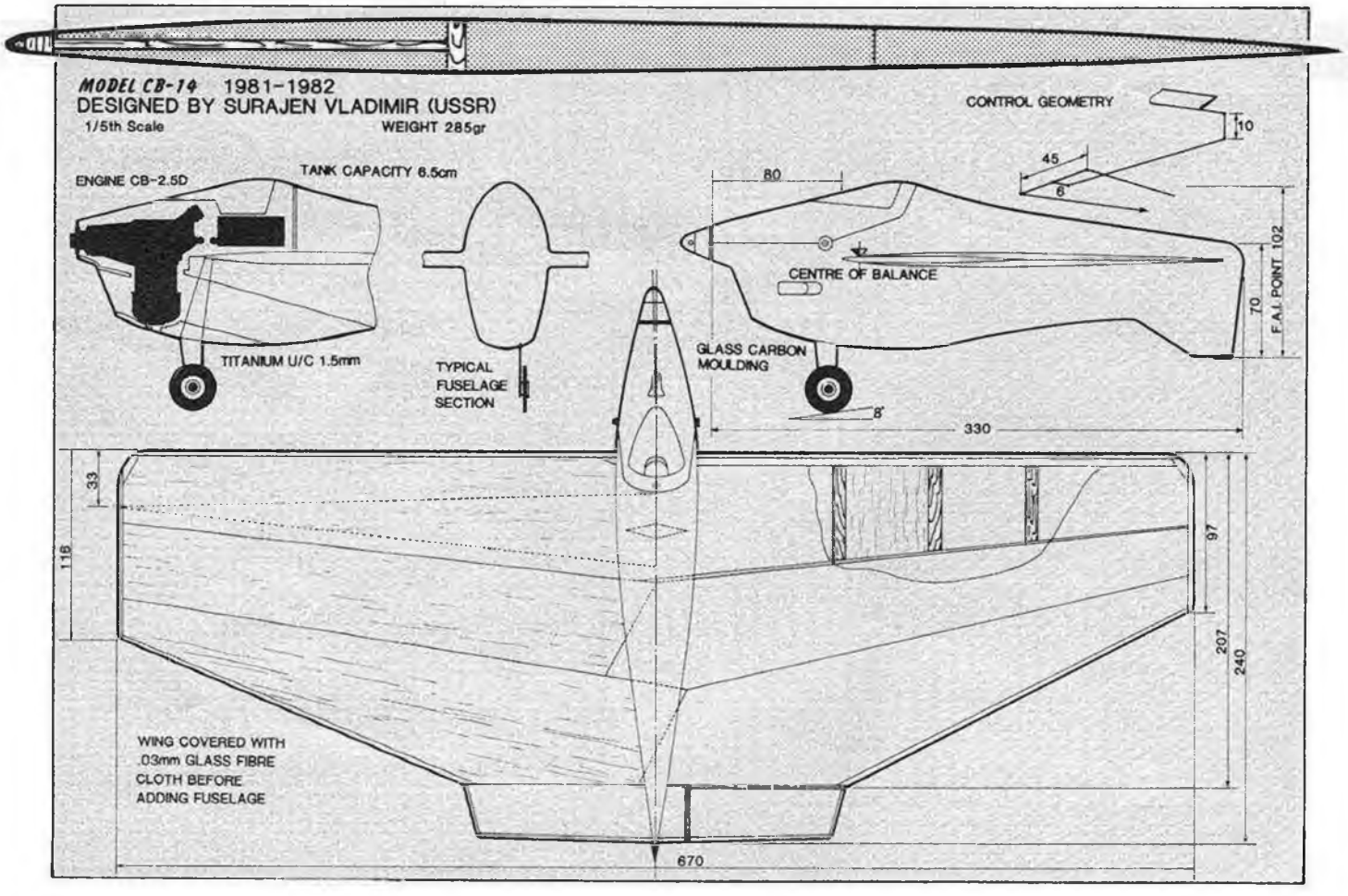
Finally constructors should remember that the moment of the nose (80mm) is based on two factors.

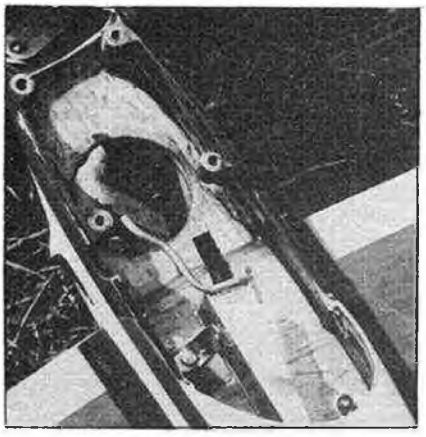
(a) a light engine of something like a Nelson Mk100 (110gms);

(b) a lighweight rear end.

It may thus be necessary to adjust this dimension to suit either heavier engines or conventional (heavier) fuselage structures. One of the difficulties of the short (or shorter) nose remains finding space to locate the landing gear. The original, I think, featured a rigid leg bonded to the fuselage shell and supported by the wing leading edge.

3. The Wing — the most obvious feature is the construction, employing no less than 31 separate pieces of timber! In this respect CB-14 is akin to the Shadow Wing — many pieces used to construct a light stiff structure. The use of jointed span-wise pieces is not new — older builders may remember the Soviet 'Fresco' design by Chourski which had the wing built in four panels; the outer panels being cranked forward. The advantages can be





Not the CB-14 but the Onufrienko's model which has a mounting system for the engine almost identical to the CB-14.

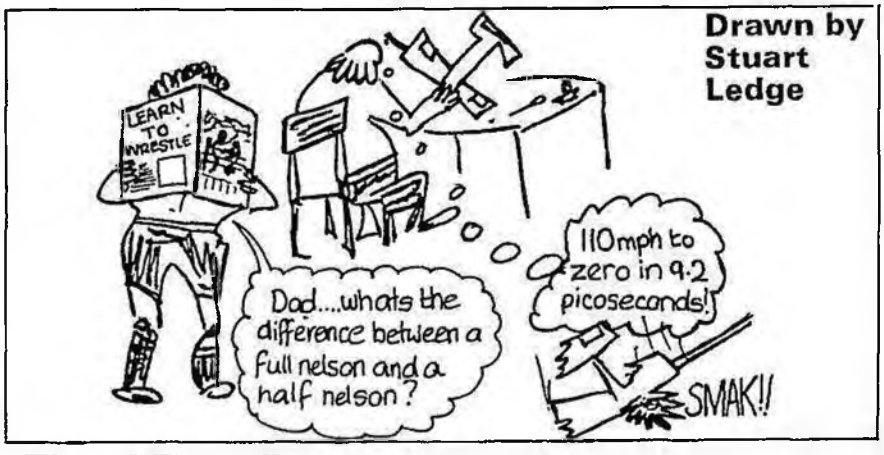
summarized thus:

(a) the laminated leading edge: the 'sandwich meat' of cord-wise grain gives improved rigidity. The introduction of lime keys firmly resist crushing during pitstops. An additional joy is that the leadout tubes can be very easily fitted simply by slotting the centre layer. The 'Jefe II' model of Stockton-Jehlik had a similar construction but this involved the whole wing. A double leading edge on the outboard side lends additional strength. Note the use of a hornbeam strip — this wood has considerable resistance to twisting and shearing. It should not be too difficult to find samples of this wood at hardwood timber dealers.

(b) the trailing edge panels — the main feature here is that the grain direction can be directed to give maximum stiffness. The offsett joints should present no problems of reliability but it might be wise to use slow set epoxy on the end grain joint.

The balsa wood must be of lightweight throughout to achieve the original's all-up 385gms. Note also that the maximum wing section is 8mm (5/16in.). This size has long been admired by T.R. fans — it is obviously lighter than 3/8in. timber and avoids the problem of accidentally over-thinning 1/4in. wings. Perhaps our domestic suppliers might consider introducing this size — after all this is the age of metrication.

4. The Leadout Position: many competitors are becoming aware that the leadout position is not a matter of fashion. Both speed and weight play a part as well as the location of the C.G. If your model is likely to be heavier, then the exit point should be further forward. I have some material on hand regarding this subject for a future column. In the meantime, if you can lay hands on a copy of the 1971-72 Aeromodeller Annual, there is an excellent article by Pete Soule (pp. 100-7) on how to fix the position by using some readily applied formulae.



AEROMODELLING TECHNOLOGY

Here are a few tips received from readers. If you have any ideas worth telling others, why not send them in and win a year's free subscription to Aeromodeller, or the equivalent in plans.

SELF LAUNCH DEVICE FOR GLIDERS

From Peter Lumsden

Introduction

Successful glider towing, especially circle towing requires considerable practice, which is difficult to acquire unless you have a dedicated helper available for launching. This device enables single handed launches of both A/1s and A/2s. I have yet to use it for R/C gliders, although given something of a wind, even the more heavily loaded ones should get away successfully.

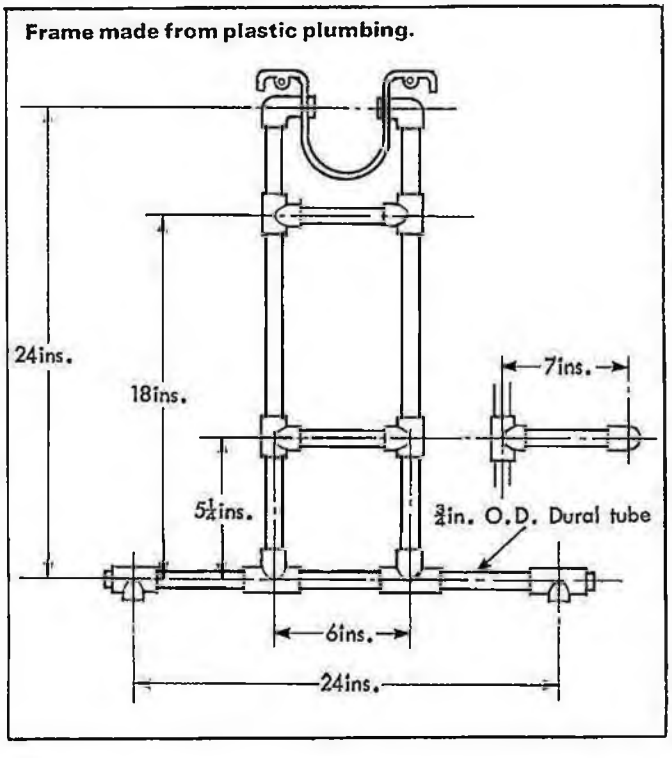
This is the second launcher I have made, the first being Hank Cole's excellent device published in Aeromodeller Annual '75-'76. I lost this at Everleigh last year, o.o.s. in the long grass! The mode of operation of my device is identical with Hank's; the model is held in a cradle at the end of a swinging arm, towline tension both accelerates the model and activates its release from the launcher. It has proved very reliable flying in average conditions and as yet has not been tried in a gale!

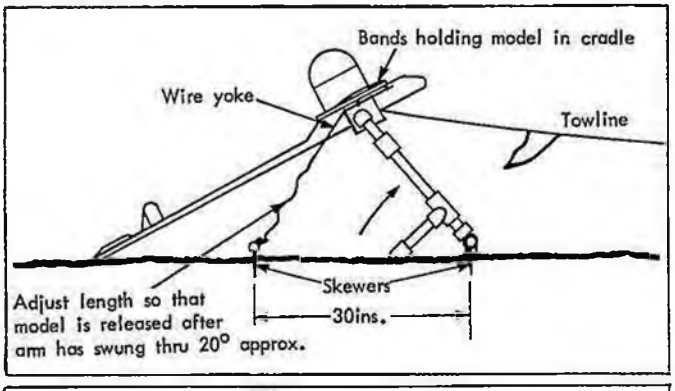
The device is pinned to the ground by metal skewers (cheap tent pegs!) passing through plastic plumbing T pieces and a dural tube. A slack line is similarly attached to the ground and the other end is fastened to a wire yoke which passes through two eyelets in the arms of the cradle. Rubber bands attached to the rear of the cradle, pass over the wings and hook on the ends of the wire yoke.

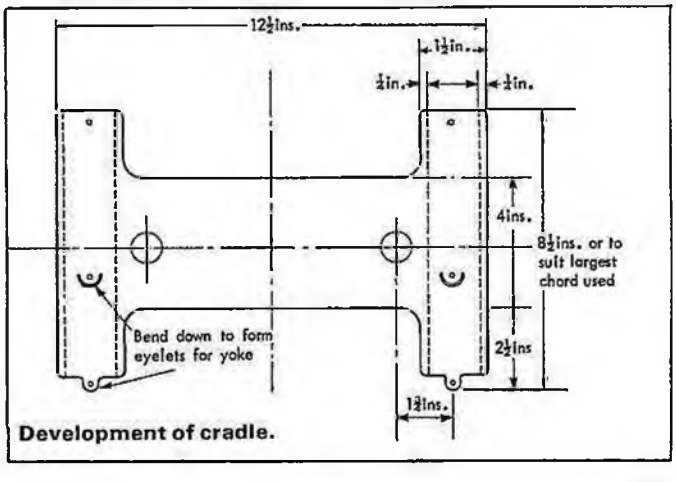
Right: ensure the launcher is held down firmly with substantial pegs.

Construction

The arm is made from 20mm i/d plastic plumbing, readily available from DIY shops. I assembled mine dry and used cyano on all the joints. More courageous types can use the special cement but it sets fast and firm! The cradle is made from 16swg dural and its depth is determined by the largest fuselage you are likely to fly (with wings attached of course!) I put small rings on the ends of the model retaining bands to reduce friction on the yoke. Occasionally, given flat calm and a timid pull on the line, the rear of the cradle has clouted the tailplane. Bands, stretched between the arms of the cradle and pushed down by the fuselage when the model is inserted, solved the problem.







DYEING TISSUE

from David Verloden

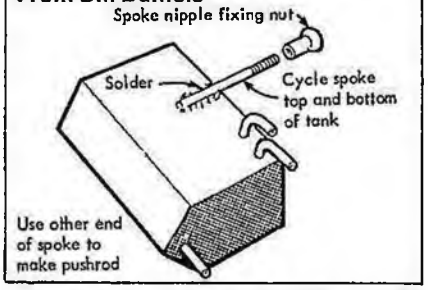
Further to Peter Miller's article on dyeing tissue in the October 1981 *Aeromodeller*, there is still available an excellent range of dyes from Dylon including some easy-to-use cold water dyes. These need handling with extreme caution as they are very potent and you could end up dying half the house (cerise spots all over the kitchen can make you far from popular). They are well worth the bother as a vast range of colours awaits the experimenter.

Actually, provided you follow the instructions, no major problems should arise. There are two main problems — one is to ensure an even spread of colour and to avoid a streaky finish. To this end the tissue must be well soaked in the dye mixture and well mixed round. The next difficulty is to restore the tissue when dry, ironing with a steam iron is quite effective on lightweight tissue but heavyweight tissue is much more difficult and the best way of dealing with it is to iron it as best you can, then when actually using the tissue, cut the panels you require about 1in. oversize all round, then with an ASL spraymist indoor plant spray or equivalent (these are easily obtained from hardware shops or garden centres) spray both sides of the tissue just enough to make it limp, then cover the model in the usual way carefully working out any wrinkles, lifting the entire sheet if necessary. It is best to work from the centre out, especially with large wing panels. Once the covering is finished, another light spray from the spray gun will ensure a nice taut finish. It is better to apply the adhesive before spraying the panels.

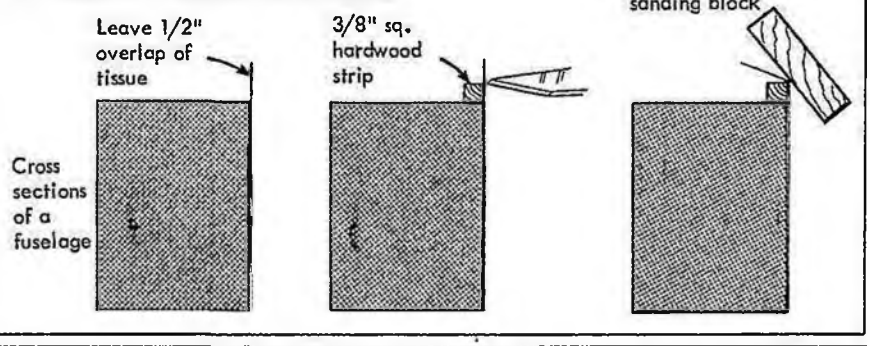
While on the subject of adhesive, by far the best is the Grip Fix, many older modellers will immediately remember its distinctive and not unpleasant aroma. Also its habit when drying of breaking away and rattling around the wing cavities. You can always tell a Grip Fix modeller; just shake his wing. The great advantage of this adhesive is that it is water soluble and if used with the limp water sprayed tissue technique, it makes covering very easy.

FIXING A C/L TANK TO A PROFILE MODEL

From Bill Daniels



TRIMMING TISSUE NEATLY from Brian Faulkner



SHOP TALK

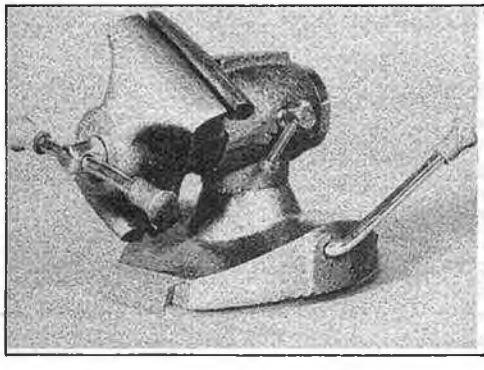
The latest in products for the modelling scene

Model Cleaner

'Modelene' supplied by Modelene, 15 Windermere Court, North Anston, Sheffield, is formulated to remove greasy exhaust residue from fuelproof surfaces. It can be diluted with up to four parts of water. Price 99p from the above address.

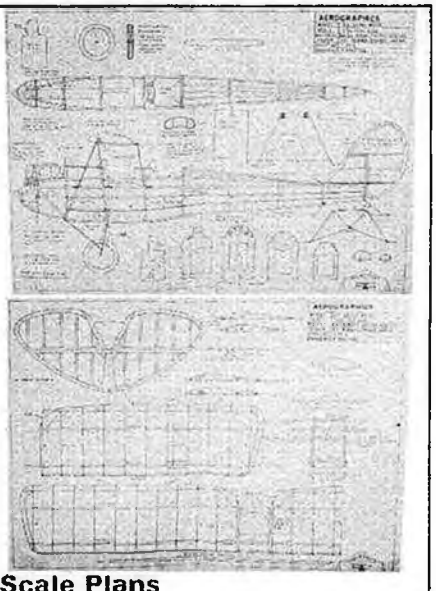
Clivedon Collection

If you are interested in collecting anything connected with aviation The Clivedon Collection, Hunterscombe, Dorking Road, Leatherhead, Surrey KT22 8JT, will almost certainly be able to help you. Their catalogue includes items ranging from brand new Rolls Royce Griffon exhaust pipes at £8.00 each to U.S.N. high altitude helmet, complete with accessories such as earphones, oxygen tube, at £120, or you can buy a WW1 Captain's uniform for around the same price. It is one of the most amazing list of articles we have ever seen, well worth the 22p stamp required to have it sent to your door!



Vacuum Bench Vise

This useful versatile tool is available from Electroware, Dutton Lane, Eastleigh, SO5 4SL. The vice is held down by a lever operated vacuum pad. This does require a very smooth surface if it is to stay put for any length of time and the rubber dampened to ensure good contact. Nevertheless, even free standing, the vice has many uses. The twin jaws can be rotated to any angle and the jaw has a horizontal and vertical groove to hold round objects. Available from the above address, price £5.00.



Scale Plans

Now available from Aerographics, 43 Chamberlain Road, Chippenham, Wilts. SN14 0TF, are plans for a Gipsy Moth and Tiger Moth. Both designs have a 20in. span and can be rubber or CO_2 powered. The models incorporate scale structure and are well conceived. Price £1.50 each. Aerographics will also soon have plans available for an Auster J4, DH Hornet Moth, DH Puss Moth and an Avro Avian.

OVERCOMING NICAD PROBLEMS

By John Stroud

We have heard of a number of people having trouble with dry cell transmitters when converted to Ni-Cads. It never seems to present problems in the receiver but only in the transmitter. Not until one of our regular contributors started having similar faults with Ni-Cads in his camera flash gun did we decide to investigate. The fault that occurs is that Ni-Cads often make poor electrical contact between cells.

In a transmitter battery pack of eight cells, there are a total of 16 connections which are relying on spring pressure. The slightest piece of dirt or a weak spring and any one of the 16 contacts can cause the pack to fail. For some time we have considered this to be the source of the trouble. Taking the cells out, cleaning them and 'fiddling', usually cures the problem although it is always slightly worrying to know that getting a good contact is such a hit and miss affair. The episode with the camera flash was different and a new set of Ni-Cad cells just refused to work until, in exasperation, the flash gun was given a very heavy 'tap.' Ordinary dry cells in, perfect, Ni-Cads in, nothing. It was time to investigate.

Close exmination of the springs and the contact end of the cells reveal no reason for failure. After fitting different makes of cells quite a few times, it was noticed that some go in slightly more easily than others. This was the clue. Out with a vernier caliper and lo, all the Ni-Cads are at least 1mm fatter than the dry cells. We tried half a dozen makes and they were all fatter than Boots HP7's. When put in a battery pack, the Ni-Cads are a tight fit and do not slide easily under the pressure of the spring. Easing them along after fitting normally makes a satisfactory contact but does little to help the confidence. In the worst case one could shake the transmitter and lose contact again! Removing the plastic covering was briefly considered as a way to reduce the diameter but then rejected as it will cause disastrous short circuits in the pack. DO NOT REMOVE THE PLASTIC SLEEVE OF A NI-CAD. The most satisfactory solution is to buy Ni-Cads with tags and solder all the necessary connections. This means of course, that the batteries cannot be removed for charging so a charging socket must be fitted at the same time. Another point to note is that when 8 × 1.2v Ni-Cads replace 8 × 1.5v dry cells, one can expect a slightly lower battery voltage on the indicator. That is why some sets take 7 dry cells or 8 Ni-Cads.

The circuit of the normal eight cell battery pack is shown in **Fig. 1.** Start by soldering on the short links to make up four pairs of batteries connected end to end, positive to negative. When soldering to the tags, bend them away from the cell body otherwise the heat will melt the plastic insulating cover and can cause a short. Cover the whole link and tag with a small piece of plastic insulating tape to avoid accidental short circuits later. Carefully bind the cells together in a pack, keeping the links away from each other and the outside of the pack. See **Fig. 2.** Do not be too generous with the binding tape or the pack might be too large to go in the transmitter.

Follow the circuit through to work out where the end links go and solder up the connections using insulated wire. In the Futaba transmitter shown it was easy to remove the redundant contact plates and make room for the pack. Remove the wires from the old contact plate and solder to the new pack. A charging socket can be connected up and fitted in any convenient place on the transmitter. In the one shown, a loudspeaker plug and socket is used as they are cheap and easy to obtain.

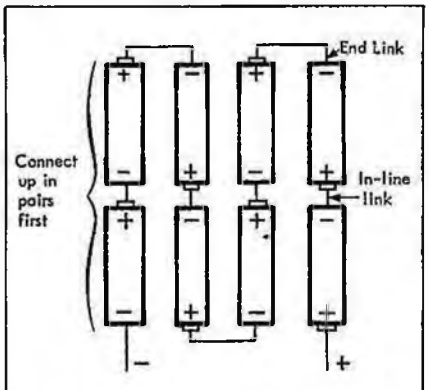
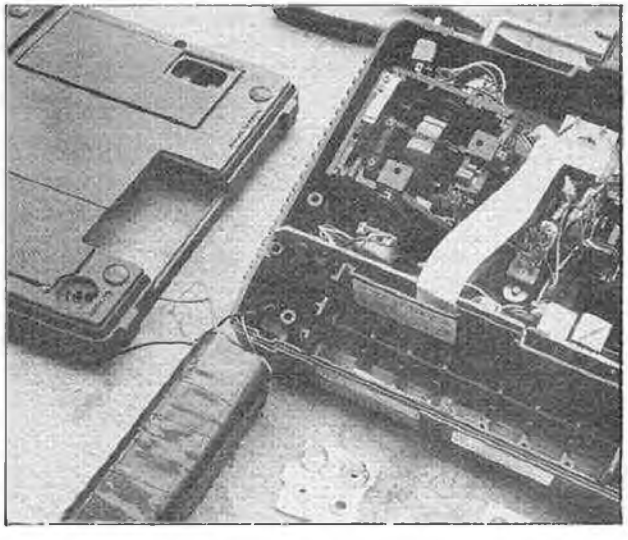
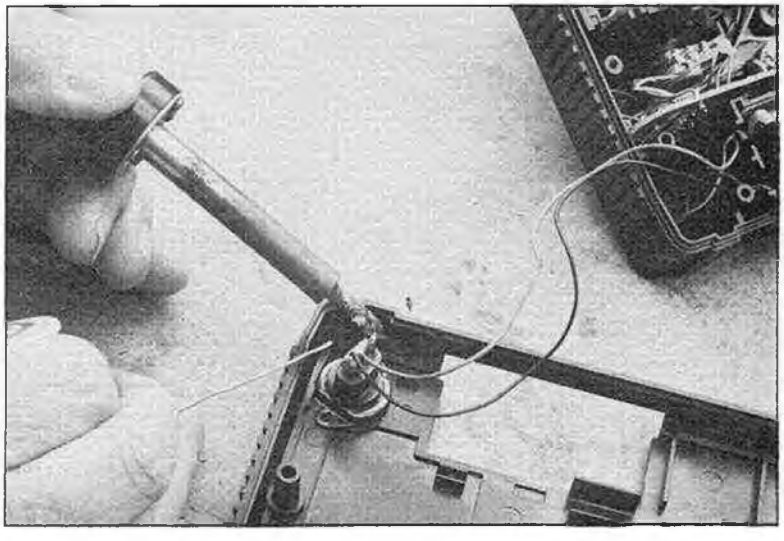
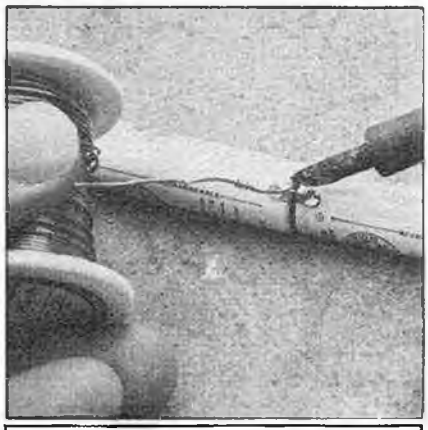


Fig. 1. Circuit of an eight cell transmitter pack shown as if laid out flat.

Below right: soldering the connections to the two pin Din socket, ensure that the polarity is the same as the plug. Below: dry battery contact plates removed, Ni-Cad pack wrapped with tape and ready for installation.







Left: avoid overheating the Ni-Cad batteries when soldering connections, a powerful, hot soldering iron used for a short time is best. Once again before charging, check that the plug polarity is the same as the socket.

Whatever you do, standardise on one type for all your gear.

Soldered up battery packs have always been considered good practice but did you know why? Perhaps it is standard practice in your club but it turned out to be news to a lot of people we know. If you have experience you think might be useful to others, then drop us a line so that we can pass it on.

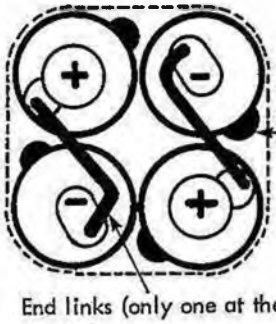


Fig. 2. End view of battery pack.

MARCH PRIZE-WINNERS

Chris Pudney, Southampton, Hants.
K. W. Mitchell, Choppington, Northumberland.
Colin Lamond, Broxburn, West Lothian.
Matthew Gregory, Tiptree, Essex.
David Harman, Oxmoor, Huntingdon.

PLANS SERVICE AGENTS

At your service?

MAP

AVON
BAILEY'S DAILIES MODELS,
48 Sandy Park Road,
Bristol 4.

LOCO PARTS,
P.O Box 24,
Avonmouth, Bristol.

THE MODELLING DEN,
2, Lower Borough Walls,
Bath, Avon BA1 1QR.

BEDFORDSHIRE
CORD ELECTRONICS,
2C Cleveland Street,
Kempston, Bedford.

D. H. MODELKRAFT,
106 North Street,
Leighton Buzzard,
Beds. LU7 7ET.

BUCKINGHAMSHIRE
MIKE SMART DESIGNS,
102 Frederick Street,
Waddesdon, Aylesbury,
Bucks. HP18 0LX

CHESHIRE
NORMAN SPINK,
MODEL ENGINEERING SUPPLIES,
52 Highfield Lane,
Chester S41 8AY

CLEVELAND
HOBBY & MODEL SHOP,
64 Station Road, Redcar,
Cleveland TS10 1DU

LIVESTEAM SCALE MODELS,
G. McKie & Son,
17 Lambard Road, Hartlepool,
Cleveland TS24 9NE.

THE STOCKTON MODELLER,
17 High Street,
Stockton on Tees, Cleveland.

DERBYSHIRE
MODELCRAFT,
119 Saltergate,
Chesterfield, Derbys.

DEVON
EXETER MODELS,
15 South Street,
Exeter, Devon.

MANSEL'S,
Palace Avenue,
Paignton, Devon.

THE MODEL SHOP,
(P.C. Lindsay),
9 City Arcade,
Fore Street,
Exeter EX4 3JE.

RUNWAY SOUTH WEST,
16 Devonport Road,
Stoke, Plymouth, Devon

ESSEX
LOCO STEAM,
37 Victory Road,
West Mersea, Colchester,
Essex CO5 8LX,

GLOUCESTERSHIRE
MORETON PRECISION MODELS LTD.,
Grays Lane, Morton-in-Marsh,
Glos GL56 0LS.

K. G. PASKELL,
Hobbies & Handicrafts,
Westmoor Road, Cirencester,
Glos. GL7 1LO

HERTFORDSHIRE
C. L. R. DISTRIBUTORS LTD.,
Great Northern Works,
Hartham Lane,
Hertford, Herts SG14 1QN.

MODEL CENTRE,
44 High Street,
Hemel Hempstead, Herts

S. J. MODELS,
350 Whippendale Road,
Watford, Herts WD1 7PD

KENT
ERO MODELS,
199 London Road,
Dover, Kent. CT17 0TF

LANCASHIRE
A. D MODEL SUPPLIES,
22 Plumbs Street,
Burnley, Lancs

N. S. & A. HEMINGWAY,
30 Links View, Hall Acre,
Rochdale OL11 4QD

JOYCRAFT,
(J & M W. Whatmough),
3, Bolton Road,
Moses Gate, Farnworth

MODEL & MINIATURE RAILWAYS,
120/122 Drake Street,
Rochdale, Lancs.

THE MODEL SHOP (Manchester),
209 Deansgate,
Manchester M3 3NW.

THE MODEL SHOP (Nelson) LTD.,
57 Railway Street,
Nelson, Lancs. BB9 9AE,

STEAMCRAFT,
33 Trafalgar Road,
Southport, Lancs.

VANGUARD MODELS,
182/184 Queens Drive,
Liverpool L13 0AR, Lancs.

LEICESTERSHIRE
THE HOBBY SHOP,
(Prop. V. C. Redfern),
15 Nelson Street,
Market Harborough, Leics.

LINCOLNSHIRE
MODEL SHOP,
18 Landon Road,
Grantham, Lincs.

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

H. A. BRUNT & SONS LTD.,
133 The Broadway,
Mill Hill, London NW7 4RH

MARITIME MODELS,
7 Nelson Road,
Greenwich, London SE10

MICHAELS MODELS,
646-648 High Road,
Finchley, London N12 0NL.

MODEL AIRCRAFT SUPPLIES,
207 Camberwell Road,
London SE5 0HG

HENRY J. NICHOLLS & SON LTD.,
308 Holloway Road,
London N7

NORWOOD JUNCTION MODELS LTD.,
3 Oaton Buildings,
Portland Road, London SE25.

LEE PALMER (Flightboy),
157 Whitecross Street,
London EC1.

MERSEYSIDE
FOTO-KAM LTD.,
27 Market Sweet,
Birkenhead, Merseyside.

MODEL ENGINEERING SUPPLIES & SERVICES,
193 Parr Stocks Road,
St Helens, Merseyside

MIDDLESEX
RADIO CONTROL SUPPLIES,
581 London Road,
Isleworth, Midde.

N. IRELAND
THE MODEL SHOP (Belfast) LTD.,
10/16 Queen Street,
Belfast BT1 6ED, N. Ireland.

NORFOLK
GALAXY MODELS,
88 Catton Grove Road,
Norwich, Norfolk

MODEL CRAFT,
22 Staniea Road,
Sheringham, Norfolk.

NOTTINGHAMSHIRE
SUTTON'S MODEL & HOBBIES CENTRE,
135 Outram Street,
Sutton in Ashfield, Notts.

SCOTLAND
DURRAN'S,
5 Princess Street,
Thurso, Caithness.

MODEL DEN (A Wylie),
205 Main Street, Prestwick,
Ayrshire KA9 1LH

U-CONTROL MODELS,
171 Byres Road,
Glasgow G12, Scotland

WOKING PRECISION MODELS,
Harbour Lane, South Queensferry,
Nr Edinburgh EH30 9PT
Scotland.

SOMERSET
HOBBYSHOP, (T Mayhew),
14 Abingdon Street,
Burnham on Sea, Somerset

STAFFORDSHIRE
JOHN W BAGNALL LTD.,
18 Salter Street,
Stafford ST16 2JU

TAME VALLEY MODELS,
5 Bed Street, Lichfield,
Staffs, WS13 6FW

SURREY
EGHAM RADIO MODELLER & ENGR.,
23 Victoria Street,
Englefield Green,
Egham, Surrey

R A E MODELS,
43 Church Street,
Weybridge, Surrey

REIGATE TOYS & MODELS,
7 Western Parade,
Woodhatch, Reigate, Surrey

SUSSEX
MARTLET MODELS,
49 North Street, Chichester,
Sussex PO19 1NF

MECHANICAL & MODEL SUPPLIES,
39 Kings Road, St. Leonards on Sea,
Sussex TN37 6DX

SUSSEX MODEL CENTRE,
24 Station Road, Bognor Regis,
West Sussex

SUSSEX MODEL CENTRE,
10 Terdle Gate,
Worthing, West Sussex

TYNE & WEAR
JOHN HUDSON ENGINEERING,
Unit 11, Maurice Road,
Industrial Estate,
Wallsend, Tyne & Wear

PARK MODELS,
10 Nesham Road,
North Shields,
Tyne & Wear

WALES
HOBBYCRAFT MODELS,
27 Maycock Street,
Pembroke Docks, Dyfed

THE KIT SHOP,
44 Richards Street, Graig,
Pontypridd, Mid Glam CF37 1RE

BUD MORGAN (Cardiff) LTD.,
22 Castle Arcade,
Cardiff CF38 2RN

SWANSEA MODELS & HOBBIES LTD.,
Plymouth Street,
Swansea SA1 3QQ,
West Glamorgan

WARWICKSHIRE
ENGINE DEVELOPMENTS LTD.,
Somers Road, Rugby, Warks

WEST MIDLANDS
BOB'S MODELS LTD.,
99 Hobs Moat Road,
Solihull, West Midlands

BOB'S MODELS LTD.,
520 Coventry Road,
Birmingham B10 0UN

JIM DAVIES MODELS,
313 Marsh Lane, Erdington,
Birmingham B23 6JQ

P C MODELS,
2 Marsh Lane,
Birmingham B23 6NX

A J REEVES & CO (Birmingham) LTD.,
Holly Lane, Marston Green,
Birmingham B37 7AW

WILTSHIRE
COMPLETE-A-PAC,
PO Box 3,
Bradford on Avon,
Wilts BA1 1YF

THAMESDOWN HOBBIES,
21 High Street,
Old Town, Swindon, Wilts

YORKSHIRE
AIRDALE MODELS,
155 Station Bridge,
Bradford Road, Keighley,
West Yorks

BLACKGATES ENGINEERING,
209 Wakefield Road,
Drighlington, Bradford,
West Yorks BD11 1EB

FLYING MODELS,
88 Crossgates Road,
Leeds 15

MORLEY MODELS,
10/12 Cheapside, Morley,
Leeds, West Yorks

M M C NORTHERN MODEL CENTRE,
3 Ropergate End, Pontefract,
West Yorks WF8 1JX

PARK MODELS,
201 Bellhouse Road,
Sheffield, S Yorks

YORK R/C MODELS,
69 East Parade, Heworth,
York YO3 7YB

YORK MODEL CENTRE,
17 Davygate Centre, York

25 YEARS AGO IN AEROMODELLER

By Dave Day

April 1957-May 1957

In an editorial bemoaning the slow advance of R/C technology in this country compared with the 'prodigious' advances made in the USA, the Editor expressed the hope that the advent of the transistor would enable us to catch up. It seems strange today that no-one even considered Japan in this context.

The closing remark of the editorial is as apt today as it was then: "It is our considered opinion that people who are not prepared to make a first class job of their radio controlled model aircraft should leave this branch of model flying severely alone."

To help the progress of British R/C flying, the first of the month's plans was for the now famous 'Smog-Hog' designed by Howard Bonner. By modern standards, the Smog-Hog looks like a docile trainer, yet it set the world alight at the time. At 74½in. span and 5-6 lb. weight, it would do just about anything on a .35 motor (non-Schnuerle remember!)

Another plan feature was for an equally famous model, namely Dave Posner's 'Dream Weaver', an open power model for 2.5cc motors, which had an impressive list of contest successes.

A report of the New Zealand Nationals made interesting reading, particularly the news that 1st and 2nd places in the R/C event were obtained by Mills 1.3 powered models!

'How to be a World Champion' was the title of an article by Rudi Lindner; one section of this was headed 'British Weather Effect' — no comment.

Trade notes included news of a new electric motor for solid models(?) and the new Mercury 'Spitfire' and 'Marvin' C/L kits, the latter designed by Dave Platt.

In Motor mart was news of a new.02cu. in. engine to be produced by L. M. Cox and to be known as the 'Pee Wee'.

Third plan of the month was for a 30½in. span Free Flight Scale D. H. Fox Moth for .8cc diesels by B. Barton. This is a highly attractive and much neglected subject for scale modelling.

Famous Biplanes No. 8 featured the Spad XIII by G. A. G. Cox with hints on producing a solid model of this aircraft. Engine Analysis featured the Byra 1.5cc and the Webra 1.7cc. Webra of course went on to greater things but whatever became of the Spanish Byra?

R/C equipment from Tri-ang (yes, really!) was described in Radio Control Notes together with further notes on the McQue *Crystal Controlled* transmitter.

Aeroplanes in Outline had 1/72nd scale plans of the Grumman F9F-8 'Cougar', now finding favour with those who like the propeller *inside* the model.

Balloon tanks were among the various types described in Tanks and Fuel Feeds ('Know Your Engine' Part 10). Following some drastic mods to the English language, these are now better known as pacifiers!

Among the remaining features, 'Aeromodelling Step-by-Step' dealt with covering with metallised wallpaper or metal foil and Model News had photos of a pair of Spad XIII models (surprise!).

Really quite a notable month with two famous designs and news of a famous kit among the new products.

May 1957

"As we write these words, the first day of Spring has just passed by and young men's thoughts throughout the land are turning, not in the direction of the female species but in the case of aeromodellers, more towards the local flying field.

The sun is shining, the birds are singing, the whirr of the Wakefield prop can be heard and above, the steady drone of a diesel motor or sometimes the howl of a glo-motor competes with Mother Nature. Mr. Brown, snoozing quietly after his Sunday lunch, recuperating after a week of honest toil, sighs, eventually snorts, and

Continued on page 258

SHOP GUIDE

READERS PLEASE NOTE:

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

AUSTRALIA

MELBOURNE 3000 Tel: (347) 8029
RIVERSIDE HOBBY CENTRE *
16 LITTLE LATROBE STREET
9 am-5.30 pm Mon.-Fri.
9 am-12 noon Sat.

AVON

BRISTOL Tel: (0272) 662544
BEV's MODELS *
35 WEST STREET
BEDMINSTER
Mon.-Thurs. 10 am-6 pm
Wed 10 am-1 pm
Friday 10 am-7 pm
Sat. 10 am-5 pm

BRISTOL Tel: (0272) 716522
FRED COULSON MODELS *
515 WELLS ROAD
HENGROVE
Mon., Tues., Thurs. & Sat. 9 am-5.30 pm. 9 am-8 pm Friday
Closed all day Wednesday

BEDFORDSHIRE

BIGGLESWADE Tel: (0767) 313840
IVEL MODELS & HOBBIES
94-96 SHORTMEAD STREET
Mon.-Sat. 9.00-6.00
Wed. closed
Friday 9.00-9.00

LEIGHTON BUZZARD Tel: (0525) 376134
D H MODELKRAFT *
106 NORTH STREET, LU7 7ET
Tues.-Sat. 9.00-6.30
Friday 9.00-8.00
Half day Monday

BERKSHIRE

WINDSOR Tel: (07535) 56321
WINDSOR MODEL SHOP *
45 ALBANY ROAD
Open Mon.-Sat. 9 am-6 pm
Late night Fri. 7 pm
Half day Wed. 1 pm

CAMBRIDGESHIRE

CAMBRIDGE Tel: (0223) 59620
MODEL MANIA *
17 KING STREET
Open: 9.30 am-5.30 pm
Mon.-Sat. Inc. Lunchtime

CHESHIRE

MACCLESFIELD Tel: (0625) 29467
HOBBYCRAFTS
(MACCLESFIELD) LTD
PARK MILL
HOBSON STREET
Open: 9.30-5.30 Mon.-Sat.

SALE Tel: (061 962) 4561
HOBBYWORLD *
200A MARSLAND ROAD
Mon.-Sat. 9.30-6.00
Wed. early closing

STOCKPORT Tel: (061 480) 5478
THE MODEL SHOP
280 WELLINGTON ROAD SOUTH
Open Mon.-Sat. 9 a.m.-5.30 p.m.
Closed Tuesday

CLEVELAND

MIDDLESBROUGH Tel: (0642) 211212
HOBBYDROME
283 LINTHORPE ROAD
Open: 9.30 am-5.45 pm
Late night Friday 8 pm
Closed Wed.

DERBYSHIRE

DERBY Tel: (0332) 46579
THE BALSA TREE *
16/18 HOWE STREET
DE3 3ER
Open: Mon.-Sat. 9 am-8 pm
Tues. 4 pm-8 pm

DEVON

EXMOUTH Tel: (039 52) 72540
EXMOUTH MODELS *
78 EXETER ROAD
Mon.-Sat. 9.00-6.00

PLYMOUTH Tel: (0752) 263133
RUNWAY SOUTHWEST *
22 FRANKFORT GATE
CITY CENTRE
Mon.-Sat. 9 am-6 pm
Late night Friday 8 pm

TORBAY Tel: (0803) 521767
MANSEL'S MODELS *
PALACE AVENUE, PAIGNTON
Open 9.15 am-5.30 pm
Mon.-Sat. inclusive
Half day Wed.
Late night Fri. 7 pm

DORSET

BOURNEMOUTH Tel: (0202)
R. F. AUSTIN, MODEL SHOP 424038
156 SEABOURNE ROAD *
SOUTHBOURNE BH5 2JA
Open: 9 am-5.30 pm Mon.-Sat.
Closed 6 pm Thurs.-Fri.
Half day Wed.

BOURNEMOUTH Tel: (0202) 517032
J. & H. MODELS
823 WIMBOURNE ROAD *
MOORDOWN, BH9 2BA
Mon.-Thurs. 9 am-5.30 pm
Fri. 9 am-6.30 pm. Sat. 9 am-6 pm

ESSEX

CHELMSFORD Tel. (0245) 352553
CHELMSFORD MODEL
CO LTD
204 MOULSHAM STREET
Open Mon., Tues., Wed., Thurs & Sat. 9 am-5.30 pm. Fri. late night 9 am-7.30 pm

HORNCHURCH Tel: (040 24) 40016
RADIO ACTIVE
94 ARDLEIGH GREEN ROAD *
Open: Mon., Tues., Thurs. & Sat 9 am-6 pm, Fri. 9 am-7 pm
Half day Wednesday

HAMPSHIRE

FAREHAM Tel: (0329) 234136
G. M. H. BUNCE & CO LTD *
206 WEST STREET
Open 9 am-5.30 pm. Closed Wed.

PORTSMOUTH Tel: (0705) 25049
RAY BROWN MODELS
10 KINGSTON ROAD *
Open: 10 am-5.30 pm
Lunch 1 pm-2.30 pm
Closed all day Wed.

PORTSMOUTH Tel: (0705) 733208
SOUTHSEA MODELS
35 HIGHLAND ROAD *
SOUTHSEA
Open: Mon.-Sat. 10.00-6.00

SOUTHAMPTON Tel: (0703) 617849
EASTLEIGH MODEL
CENTRE
2e HIGH STREET, EASTLEIGH
Open 9 am-6 pm. Half day Wed.

HERTFORDSHIRE

HATFIELD Tel: (070 72) 63404
DESIGN & HOBBIES
5 MANOR PARADE
Tuesday-Friday 9.30 am-6 pm
Closed 2-3 pm for lunch
Saturday 9.30 am-5.30 pm
Closed all day Monday

ST ALBANS Tel: (0727) 53954
S A M S *
12 HATFIELD ROAD
Mon.-Sat. 9 am-5.30 pm

HONG KONG

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

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

ISLE OF WIGHT

RYDE Tel: (0983) 64051
WIGHT MODELS
84 HIGH STREET, PO33 2SU
Open daily 9 am, through lunch, till 5.30 pm except Sunday and Monday, closed all day.

KENT

BEXLEY Tel: (0322) 522308
BEXLEY MODEL CENTRE
18 BOURNE ROAD
Mon.-Sat. 9.00-5.30
Thursday closed all day

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

MAIDSTONE Tel: (0622) 51719
THE MODEL SHOP *
19-23 UPPER STONE STREET
Open 9.30 am-1 pm, 2.30 pm-5.30 pm. Closed all day Wed.

TUNBRIDGE WELLS Tel: (0892) 31803
BALLARDS
54 GROSVENOR ROAD *
Open Mon.-Sat 9.00-5.30
Wednesday 9.30-12.30

TUNBRIDGE WELLS Tel: (0892) 36689
E. M. MODELS
42 CAMDEN ROAD *
Mon.-Sat. 9 am-5.30 pm
Closed Wed.

LANCASHIRE

FARNWORTH Tel: (0204) 74688
JOYCRAFT *
3 BOLTON ROAD, MOSES GATE
Open Mon.-Sat. 9 am-6.30 pm
Closed all day Wednesday

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

MANCHESTER Tel. (061-834) 3972
THE MODEL SHOP *
(MANCHESTER)
209 DEANS GATE
Mon.-Fri. 9.30 am-6 pm.
Sat. 9 am-5 pm

PRESTON Tel: (0772) 51243
PRESTON MODEL CENTRE LTD ★
(Opposite Polytech.)
2 FYLDE ROAD
Open: 9.30 am-6 pm Mon.-Sat.

WIGAN Tel (0942) 45683
G FORSHAW & SON ★
58 MARKET STREET
Open 9.15 am-5 45 pm
Early Closing Wednesday

LEICESTERSHIRE

HINCKLEY Tel: (0455) 30952
PUNCTILIO MODEL SPOT ★
6 WATERLOO ROAD
Mon. 9.15 am-7 pm
Tues., Wed., Thurs. 2 pm-7 pm
Fri. 9.15 am-7 pm
Sat. 9.15 am-5 pm

LEICESTER Tel: (0533) 666363
THE LEICESTER MODEL ★
CENTRE LTD
STAFFORD STREET CORNER
MELTON ROAD
Open: 9 00 am-5 30 pm Mon.-Sat.

LONDON

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

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

BISHOPSGATE E1 Tel. (01 283)
HADLEY HOBBIES 9870
131 MIDDLESEX STREET ★
Sun. 9.30 am-2 pm
Mon.-Fri. 9 am-6 pm
Very close to Liverpool Street Station

LONDON Tel (01-703) 4562
MODEL AIRCRAFT SUPPLIES LTD
207 CAMBERWELL ROAD, SE5 ★
Open Mon.-Sat. 10 am-6 pm
Fri. 10 am-7 30 pm
Closed all day Thursday

LONDON Tel (01 607) 4272
HENRY J. NICHOLLS & SON LTD. ★
308 HOLLOWAY ROAD, N7
Open Mon.-Sat. 9 am-5.30 pm

LONDON Tel (01 653) 4943
NORWOOD JUNCTION
MODELS LTD
3 ORTON BUILDINGS
PORTLAND ROAD, SE25 4UD
Open 9 30 am-1.30 pm —
2 30-6 pm Mon -Sat
Early closing Wednesday 1 pm

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

MIDDLESEX

HARLINGTON Tel: (01 897) 2326
RADIO CONTROL MODEL CENTRE ★
214 HIGH STREET
Mon., Tues., Thurs. & Sat. 9.15 am-6 pm, Fri. 9.15 am-7.30 pm
Closed Wednesday

HARROW Tel: (01-863) 9788
THE MODEL SHOP
190-194 STATION ROAD
Mon.-Sat. 9.30-6.00
Wednesday 9.30-5.00

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

WEMBLEY Tel: (01 902) 4823
WALLY KILMISTER LTD
6 & 7 NEELD PARADE
Mon.-Sat. 9-5.30
Closed Wednesday

NORFOLK

KINGS LYNN Tel: (0553) 63164
BARNEY'S MODEL SHOP
SOUTH EVERARD STREET
Open 9 am-6 pm

NORWICH Tel: (0603) 42515
GALAXY MODELS ★
88 CATTON GROVE ROAD
Open 6 days a week

NORTHANTS

NORTHAMPTON Tel: (0604)
THE MODEL SHOP 31223
230 WELLINGBOROUGH ROAD ★
Open 9 am-6 pm.
Half day Thursday

NORTHAMPTON Tel: (0604)
STAGG MODELS 35718
22 BRIDGE STREET ★
Open 9 am-5.30 pm
Early closing 2 pm Thursday
Late night opening Friday until 7 pm

NOTTINGHAMSHIRE

NOTTINGHAM Tel: (0602)
GEE DEE MODELS LTD 50273
19-21 HEATHCOTE STREET ★
OFF GOOSEGATE
Open 9.30 am-5.30 pm
Early closing Thursday

WORKSOP Tel: (0909) 472855
RUSSELL MODELS ★
MODEL CENTRE, RYTON STREET
Open Mon.-Sat. 9.30 am-5.30 pm
Thursday 9.30 am-1 pm

OXFORDSHIRE

OXFORD Tel: (0865) 42407
HOWES OF OXFORD
9-10 BROAD STREET OX1 3AJ
Open 9.00 am-5.15 pm
6 day week

SCOTLAND

GLASGOW Tel: (041 221) 0484
DUNNS MODELS ★
3 WEST NILE STREET
Open: Mon -Sat 9.00 am-5 30 pm

PERTH Tel: (0738) 24540
DUNNS MODELS ★
29 SCOTT STREET
Mon.-Sat.9.00-5.30
Wednesday Closed

SHROPSHIRE

SHREWSBURY Tel: (0743) 245539
SHREWSBURY MODEL CENTRE ★
32 ST. JOHN'S HILL
Open 9 am-5.30pm Mon.-Sat.
Late night Friday 9 am-7 pm

STAFFORDSHIRE

STAFFORD Tel: (0785) 3420
JOHN W. BAGNALL LTD ★
18 SALTER STREET
9 am-5.30 pm
Closed all day Wednesday

STOKE-ON-TRENT Tel: (0782)
JOHN W. BAGNALL LTD 263574
30 PICCADILLY, HANLEY
9 am-5.30 pm
Closed all day Thursday

SUFFOLK

IPSWICH Tel: (0473) 79279
GALAXY MODELS ★
160 FELIXSTOWE ROAD
Open 6 days a week

SUDBURY Tel (0787) 76825
THE MODEL CENTRE ★
51 GAINSBOROUGH STREET
CO10 1ET
Mon., Tues. 10.15am-5.30pm. Thurs.
Fri. Sat. 9.15am-5 30pm Closed
Wednesday

SURREY

ADDLESTONE Tel: (0932) 45440
ADDLESTONE MODELS LTD ★
63 STATION ROAD
Open 9 am-6 pm
Closed all day Wednesday
Late night Friday 6.30 pm

NEW MALDEN Tel: (01-942) 0012
MICK CHARLES MODELS
33 COOMBE ROAD
Mon., Tues., Thur., Sat. 9.30-5.30
Fri. 9.30-8.00
Closed all day Wednesday

WOKING Tel: (048 62) 66493
WOKING MODELS ★
9 GOLDSWORTH ROAD
Open 9 am-5.30 pm Mon.-Sat.
Closed Wednesday afternoon

SUSSEX

BOGNOR REGIS Tel: (0243)
SUSSEX MODEL CENTRE 820651
24 STATION ROAD ★
9 am-5.30 pm Mon.-Sat.
Late night Friday till 7 pm

BRIGHTON Tel: (0273) 418225
HARRY BROOKS ★
15 VICTORIA ROAD
PORTSLADE
Open every day except Sun.
8.30 am-5.45 pm (no half day)

CRAWLEY Tel: (0293) 21921
HEATHER CRAFT ★
60 HIGH STREET
Open 9 am-5.30 pm Mon.-Sat.
Closed all day Wednesday

EAST GRINSTEAD Tel: (0342)
SOUTH EASTERN MODELS 21750
5 THE PARADE
LONDON ROAD, FELBRIDGE
Open: Mon.-Sat. 9.30 am-5.30 pm
Closed Wednesdays

WORTHING Tel: (0903) 207525
SUSSEX MODEL CENTRE ★
10 TEVILLE GATE
9 am-5.30 pm. Open six daysa week
Monday to Saturday

TYNE AND WEAR

NEWCASTLE UPON TYNE
Tel: (0632) 22016
THE MODEL SHOP ★
18 BLENHEIM STREET
Mon.-Fri. 9 am-5.30 pm
Sat. 9 am-6 pm

WALES

CARDIFF Tel: (0222) 29065
BUD MORGAN ★
22 CASTLE ARCADE
SOUTH GLAMORGAN
CF1 2BW
9 am-5.30 pm
Early closing Wed. 9 am-1 pm

CARDIFF Tel (0222) 31367
THE CARDIFF MODEL CENTRE *
34 LLANDAFF ROAD
CANTON,
Open 9 30-5 30 six days a week.
Late closing Friday 7 00 pm

NEWPORT Tel (0633) 65061
MAKE A MODEL
123 COMMERCIAL STREET
Mon. to Sat 9 am-5 30 pm
Thursday closed all day

WEST MIDLANDS

BIRMINGHAM 10 Tel: 021-772 4917
BOB'S MODELS *
520-522 COVENTRY ROAD
SMALL HEATH
Open 9.30 am-6 pm
Early closing Wed. 1.30 pm

BIRMINGHAM Tel: (021 373) 5945, 3535
JIM DAVIS MODELS
311-313 MARSH LANE
ERDINGTON
Mon.-Sat. 9.30 am-6.30 pm

COVENTRY Tel: (0203) 76409
MODEL CRAFT
61 SPON END
Open: Mon.-Fri. 10 am-5.30 pm
Sat. 9 am-5.30 pm
Closed Wednesday

SOLIHUL Tel: (021 744) 3374
SHIRLEY MODEL SUPPLIES *
62 STRATFORD ROAD
Open: Tues.-Sat. 9 am-2 pm & 3-6 pm
Late night Thurs. 8 pm

WILTSHIRE

MELKSHAM Tel: (0225) 703311
MELKSHAM MODELS
19 BATH ROAD
MELKSHAM
Open Mon.-Sat. 9 a.m.-5.30 p.m.
Wednesday 9 a.m.-1 p.m.
Free car park opposite

SWINDON Tel: (0793) 26878
SWINDON MODEL CENTRE *
2 CIVIC CENTRE
THEATRE SQUARE
(Next to Wyvern Theatre)
Open daily 9 am-5.30 pm
Open all day Wednesday

YORKSHIRE

BARNSLEY Tel: (0226) 43561
DON VALLEY SPORTS *
28 NEW STREET
Open 9 am-5.30 pm Mon.-Sat.
Closed Thursday

BRADFORD 8 Tel: (0274) 26186
MODELDROME *
182 MANNINGHAM LANE
9.30 am-5.45 pm.
Closed Wednesday

DONCASTER Tel: (0302) 62524
B. CUTTRISS & SONS
40 DUKE STREET
Open: 9 am-5.30 pm
Closed all day Thursday

DONCASTER Tel: (0302) 27255
EVANS MODEL CENTRE
D. C. EVANS & CO.
(HOLDINGS) LTD
65 SILVER STREET
Open: Mon.-Sat. 9 am-5.30 pm
Closed all day Thursday

KEIGHLEY Tel: (0535) 65662
AIREDALE MODELS *
156 STATION BRIDGE
BRADFORD ROAD, KEIGHLEY
WEST YORKS
Mon.-Sat. 9.30 am-6 pm. Tues. closed. Thur. 9.30 am-7 pm

LEEDS Tel: (0532) 646117
FLYING MODELS *
88 CROSSGATES ROAD
CROSSGATES
Mon.-Sat. 6 am-6 pm
Sun. 8 am-1 pm

LEEDS 2 Tel: (0532) 456060
JUST MODELS *
98 THE MERRION CENTRE
(Georgian Arcade)
Mon.-Sat. 9.30 am-6.00 pm

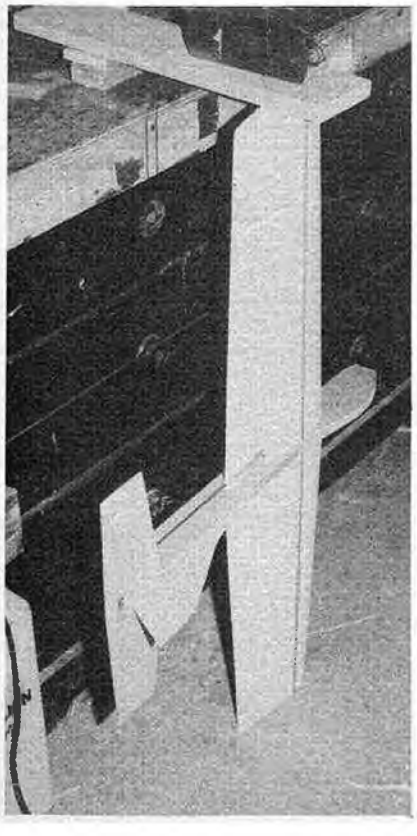
OTLEY Tel: (0943) 466535
MODEL SHOP (H. & S. CLIFF)
FLYING MODELS
57 GAY LANE
Mon.-Sat. 6 am-6 pm

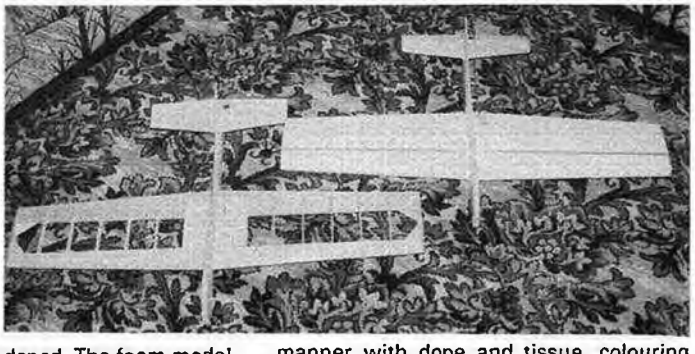
YORK Tel: (0904) 34281
YORK MODEL CENTRE *
17 DAVYGATE CENTRE
DAVYGATE
Open Mon.-Sat. 9 am-6 pm
No half day

You can buy with confidence from the shops in this Shop Guide

** Shops offering a mail order service are denoted by an asterisk.*

Continued from page 229





Foam and conventional wing structures compared.

the usual way and doped. The foam model can be covered in decorated wrapping paper as follows:

Cut four pieces about 25mm (1in.) oversize. Paint a wing panel with a stiff mix of Polycell. Draw a ready-cut piece of paper through a bowl of water, drain off excess and smooth down over the pasted panel. Repeat for the other panels, overlapping at L/E and T/E and moulding over the tips. (It is best to cover the bottom first so that the overlaps don't show.) Leave overnight to dry thoroughly, then fuel proof with polyurethane varnish.

An alternative, and much tougher, method is to cover with thin brown wrapping paper as before and then to iron on a film covering. Fuselage and tail of either model are finished in conventional manner with dope and tissue, colouring with enamel and fuel proofer or Epoxycote.

Method of applying pressure to wingtips while gluing foam wings to the fuselage.

Engine mounting

Mount the engine on 3mm (⅛in.) aluminium plates. Fit tank and, if required, the optional undercarriage (which is only required to protect the silencer on a side exhaust motor).

Flying

Correctly rigged (all mine have 'flown off the board') the model is smooth and stable while being capable of performing anything in the schedule so is equally suitable for the novice or experienced pilot looking for a 'fun' model. The foam model makes an ideal club project as, once the templates are made, duplicate wing cores are very quickly cut.

* Ramin is much cheaper than beech and spruce and can be obtained from DIY stores

CLASSIFIED advertisements

All classified Advertisements must be pre-paid.
Private and trade rate 18p per word minimum £3.00. Box numbers £1.00 extra. Display box rate £4.00 per single column centimetre minimum 2.5cm (1in.), 5cm (2in). All Advertisements are inserted in the first available issue. Box Replies to be sent care of Advertising Department, PO Box 35, Bridge Street, Hemel Hempstead, Herts., England, HP1 1EE. There are no reimbursements for cancellations.

FOR SALE

Retired Modeller has a few items of use to vintage enthusiast. Contact M. White, 80 Kilmersdon Road, Haydon, Radstock, Nr Bath. H

For Sale: Frog 100 MkI-MkII Mills 1 3E.D. Penny slot E.D. comp £25 each. Frog 500, Frog 249 B B Webra 2.5R, Webra 2 5, Webra 8 ETA 15 £20 each. Frog .8, Taifun 15 Taifun 2.5 E D Fury £15 each. Mills 1 3 (1948) A.S.55 miss tank £30 each. E D. Bee MkI Ok col. £10 each. P.A.W. 1 5cc 8 £5 each. O/R.5/p23 Vivell 35, Merlin Super B, Majesco 4 4 £55 each Streamling 6cc £75. Ross 10cc R/C flat twin gold head £125 Ross 10cc R/C Inline twin new boxed £175. Buco 10cc R/C flat twin new boxed £125 Morton M5 £600. Taplin 8cc boxed new £90. Alfa 10cc flat twin R/C £75 Nordec 10cc Glow new £40. B M P 3.5cc £65 Albon 2 8cc £60 D C Tornado twin £90 Mills 2 4 £55 O/R 22cc Glow £30. Frog 175 petrol £55. O/R race car fitted with O/R 23 new £100. Tear Drop car fitted Dooling 29 £125. Ok car fitted Ok col. new boxed £30 Aeromodeller 1939 to 1980. Model Aircraft 1950 to 1965 Air Trials 1936 to 1950. Man 1939 to 1950 Aeromodeller annuals 1948-1967 + other books on models and full size aircraft Send for lists of mags. Have a few Frog model interceptors for sale/swop + a Frog Puss moth for swops only Wanted Frog Silver Arrow airliner. Hawker Hart/Fury bi-plane, + any Frog models, kits, plans Also wanted any M.S G H G Clansman 5cc. Masco Mite Leesil + any rare diesel engines. Have a few rare diesels for swaps Also wanted any Jetex kits, fuel engines. Will buy wanted items or will swop any of the above items. Please ring days 0634 46755-404491, nights 0634 79011 (Medway). P Rossiter, 4 Sandycroft Road, Stroud, Kent. Thanks all the people who replied to my last ad. H

T/R Motor collection for sale. Write for details R. Tribe, 19 Shelbury Close, Sidcup, Kent, England Also new Cox 15, MVVS 15 £20 each, X15 ABC £15 H

Lightweight Glasscloth — the original 0 6oz/sq.yd. cloth 1, 2 & 3 yard packs available at £2 50 per yd J A Leigh, 18 Stonehill Drive, Rochdale, Lancs. H

Vintage Model Engines, kits and magazines for sale, and wanted, anything considered S.A E for lists to 'Hailwood', Heron Way, Banbury, Oxon. GH

Attention RTP enthusiasts. Multiple Permax 5 pole motors, superb RTP standard £3. Extra power £4. Prop 25p p/p included. Stennards, PRS, Rinteln, BFPO29. FGH

BOOKS AND PUBLICATIONS

'Sailplane and Gliding' — the only authoritative British magazine devoted solely to the sport of gliding and soaring, 52 pages of fascinating material and pictures. Published every other month Send £7 15 (or $17 00) for a year's subscription to British Gliding Association, Kimberley House, Vaughan Way, Leicester, England. T/C

GENERAL

Engine repair service, repro' parts, rebores, etc. Send engine or details for quote. P. Mason, 186 Hatton Road, Bedfont, Middx FGH

We are the officially approved service agents for Austro-Webra, Cox, Davies-Charlton, Enya, Fox, Fuji, HB, HGK, HP, Kavan, ME, Merco, P.A.W., Thunder Tiger Retail dealers for O S., Irvine, E D , G-Mark. May we estimate for spares, accessories, repairs, overhauls, new motors, part exchanges? For express delivery quote your Access or Barclaycard number. John D. Haytree, The Haven, Rixey Park Road, Chudleigh, Devon. TQ13 0AN Tel· (0626) 852330. Callers by appointment please. T/C

WANTED

Wanted — Books by C. E. Bowden Send price and condition to P Chattenton, 7 Common Lane, Wilmington, Dartford, Kent. H

Wanted — Ready-built model aircraft, boats, yachts, cars, steam driven models, also engines, kits, radio control equipment etc If you are selling up Tel: Godalming 21425. T/C

25 Years Ago in Aeromodeller

Continued from page 253

then reaches for pen and paper to compile the inevitable complaint to the local council." So ran the opening words of an editorial which is just as apt today as it was then. The same piece ended with an exhortation not to fly close to overhead power lines — still worth noting.

A piece in Hangar Doors noted the donation of tracksuits to the SMAE for the use of future international teams with the comment: "No doubt the reputation we have for fielding the scruffiest teams at internation events will fast disappear when our contest fliers sally forth such pictures of sporting sartorial elegance." As we remember it, the suits were uncomfortable and hardly ever used, so our reputation continued to be unblemished.

One of the main features of this issue was the *Aeromodeller* transistor receiver designed by Tommy Ives. At the time this was a great step forward, but the characteristics of early transistors left much to be desired and I remember that you had to retune if the sun disappeared behind a cloud! There were three plans in this issue, a 26in. span Stunt Trainer for 1.5cc, diesels by Ron Moulton (who?); a 38in. span Walrus II for 1cc diesels by H. J. Wright and 'Southern Sue,' an A/2 Glider by Australian Bob Howie, The latter featured the then fashionable 'dimensioned-plan-with-full-size-ribs-and-formers' approach which always struck me as a good idea.

Other plans were the 'Morane Saulnier' type 'L' to 1/72nd scale (Aircraft Described No. 84) and the Westland 'Whirland' to the same scale (Aeroplanes in outline No. 50).

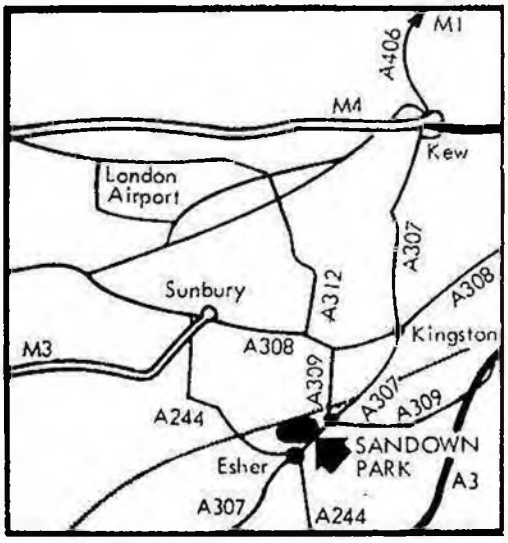
Backing up the Morane Plan was the story of Lt. Warneford VC by Arch Whitehouse.

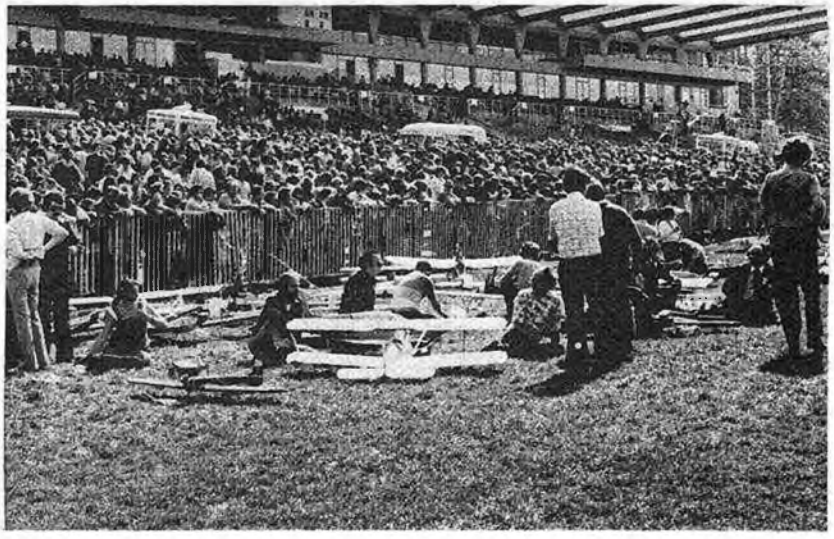
Dave Platt encouraged us to try off beat colour schemes in 'Scheme those Colours' with some useful notes on how they should be applied.

"Into the Oliver Tigers Den" described a visit to the Oliver Tiger works with photos of some interesting early twin cylinder motors, together with motors having twin output shafts or reduction gearing (back in fashion again).

"Engine Analysis" featured the Barnini .973cc diesel which produced a resounding .107bhp at 15,500rpm, while "Gadget Review" had the usual interesting selection of ideas.

"Club News" had an advance notice of the British Nationals (this was to be the writer's first Nats!) with the news that car parking was to cost 2s. 6d. per day — Gad! what next!





7th YEAR

THE WORLD FAMOUS

SANDOWN PARK MODEL SYMPOSIUM AND EXHIBITION

7th YEAR

ESHER, SURREY

SATURDAY 15th & SUNDAY 16th MAY — 10 a.m. - 7 p.m.

REFRESHMENTS — BARS — AMPLE PARKING

The largest Trade Exhibition and Display of working Models in EUROPE if not the World — No other Exhibition has so many Manufacturers-Distributors & Importers to the Model Trade under one roof. Continuous Displays by the Trade of their products — Radio Controlled Aircraft, Helicopters, Boats, Cars, and many other items new this year — Display Teams, Control Line demonstrations, Car Racing, all this takes place within the grounds of Sandown. Most of the outside displays can be seen from under cover.

TRADE HALL 31,000sq.ft. Exhibitors to date: Morris & Ingram (Badger), Duplex Craft, Henry J. Nicholls, Watford Model Centre, MacGregor Industries, Edmond Model Products, Fan Jets, W. Hobby, D & D Models, Viking Electronics, Rojair, Galaxy Models, Kaycee Distributors, Avicraft, Ted Longshaw, Kraft Radio Systems, Soar-Ahead-Sailplanes, Sprengbrook Precision, Sussex Model Centre, Micro-Mold, Jim Davis Models, Richard Kohnstam, Bowmans Models, Fleet Control Systems, Colmax Models, Irvine Engines — O.S. Engines, D.P.R. Models, World Engines, Ripmax Models, Flair Products, Dave Nieman Models, Thamesdown Models, Skyleader Radio Control, Tri-Plane Models, Air Art Products, Clive Hall Models, Magnum Engines, Chiltern Models, Model & Allied Publications Ltd., Tommy Harris, Miniature Tool Co., Stagg Models, Chris Foss Designs, Ramsey Engineering, Sailplanes International, Slough Radio Control, Powermax Ltd., Model Avionics, Precedent Balsa, Precision Petite Models, P.M.C. Engines, Southern Model Craft, Pegasus Models, Micron Radio Control, Howard Blackwell Models, Model Flight Accessories. Stewart Aviation, Linaze Ltd., Beatties (Railways) C & W Electronics, Barry Voisy Plans, Bromley Model Supplies, Precision Paints, Live Steam Services, Slaters Plasticard.

ADMISSION
Adults £2.00. Children 5 to 16 years old & O.A.Ps. £1.00. Under 5 Free.
Party Rates and Family Tickets (2 Adults + 4 paying children £5.00) in advance only S.A.E. From: G. Hazlewood, 46 Wrens Avenue, ASHFORD, Middlesex. Telephone: Ashford43022.

HOW TO GET THERE
BY CAR: Sandown is off the A307 (Old A3) London to Portsmouth Road, and is easily reached from the M3, via the A308 & A309. From the M1 via the North Circular Road A406 to Kew Bridge, then A307 via Kingston to Esher.
BY BUS: Green Line 715, Red Buses – 215, 218 & 219.
BY RAIL: SPECIAL B.R. DISCOUNT. 20% reduction on production of B.R. Ticket. Esher Station open both days. Free bus service from Esher Station.

MAKE A DATE TO BRING THE FAMILY TO SEE THE BIGGEST WORKING MODEL EXHIBITION & DISPLAY IN EUROPE

MacGregor CARS AND ACCESSORIES

The Driving Force

TRIAL 12

The rough, tough Trial 12 is a good looking, all purpose electric car with adjustable suspension for either "rough" or flat surface driving and a three gear ratio option. Well engineered fun model in the truest sense.

£44.95

HILUX and SANDSKIPPER

The ultimate in "off road" electric buggies. Designed to reproduce that elusive thrill and satisfaction of controlling a quality car. Centrifugal clutch to give those smooth "take offs" and large low pressure nobbly "doughnut" wheels for grip and zip.

£54.95

12X

Rear wheel drive? Front wheel drive? Four wheel drive? The 12X has the lot. — Choose the drive you want. The 12X does the rest, to give you race winning performance in one twelfth electric.

£39.95

ADRENALIN RAISERS!

BMW M1 and SIGMA PANTHER

Designed for winning "off road" races. A superbly engineered, rugged, aggressive cars. Featuring hydraulically damped front and rear trailing arm suspension to give unbelievable road holding that's in a class of its own.

£139.00 each

RANGER 11

Ranger 11 — I/C powered for hot rod hairy performance. An 09-11 engined ⅛th scale Ford Bronco styled Shooting Brake with a difference. Special tough nylon moulded chassis, independent trailing arm suspension in front with semi independent trailing arm suspension in rear. Nobbly tyres, disc brake and patented snap starter to allow easy starting of engine by hand or by an electric starter.

£59.00

FUJI 11 & 21 CAR ENGINES

Powerful, long lasting engines that start easily, thanks to ABC construction, ball races, Schneurle porting and IBS. Also available in aero and marine versions

£23.95 with muffler

£35.95 less muffler

PART OF OUR SUPERB RANGE OF HIGH QUALITY ACCESSORIES

4142
Glow Plug Connector
£3.95

4102
Multimeter
£6.95

4101
Multichecker
£29.50

4118
Electric starter **£21.95**

4000
Heat Gun with alternative nozzle **£9.95**

4143
Glow Plug Spanner
£2.25

4104
Mini Tachometer
£8.95

400
Heat Sealing Iron **£11.95**

4202
Twice Wall Silicone Fuel Tubing
50p per metre

SELECTION OF NI-CADS AND SEALED LEAD ACID BATTERIES

Nicad packs with standard plug and socket

4003 3 cell 1.2A **£7.00**
4005 5 cell 1.2A **£11.00**
4006 6 cell 1.2A **£13.00**
4035 5 cell 1.2A charge lead with croc clips **£4.95**
4036 6 cell 1.2A charge lead with croc clips **£3.95**
4037 6 cell 1.2A universal charge lead with croc clips **£3.95**

Sealed Lead Acid Batteries

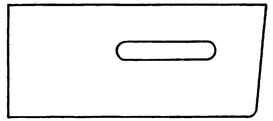
4050 12v 6A **£19.95**
4058 2v 8A **£5.95**
4053 6v 4A **£9.95**
4052 6v 8A **£13.95**
4051 6v 10A **£15.50**
4031 2v charger, 240v suitable for 4058 **£5.95**
4032 6V Charger 240V suitable for 4051, 4052 and 4053 **£5.95**

MacGregor

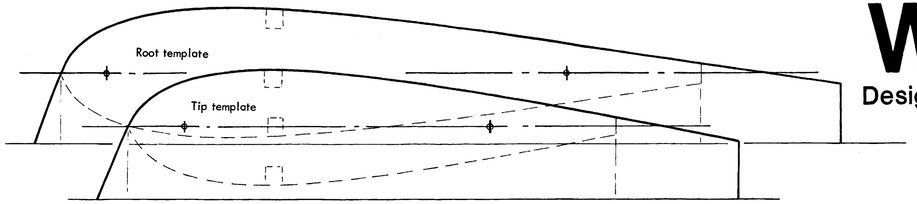
MacGregor Industries Limited, Canal Estate, Langley, Slough, Berkshire, SL3 6EQ. England.
Telephone: Slough 49111/42251 Telex: 848028 MACIND G

Wildcat

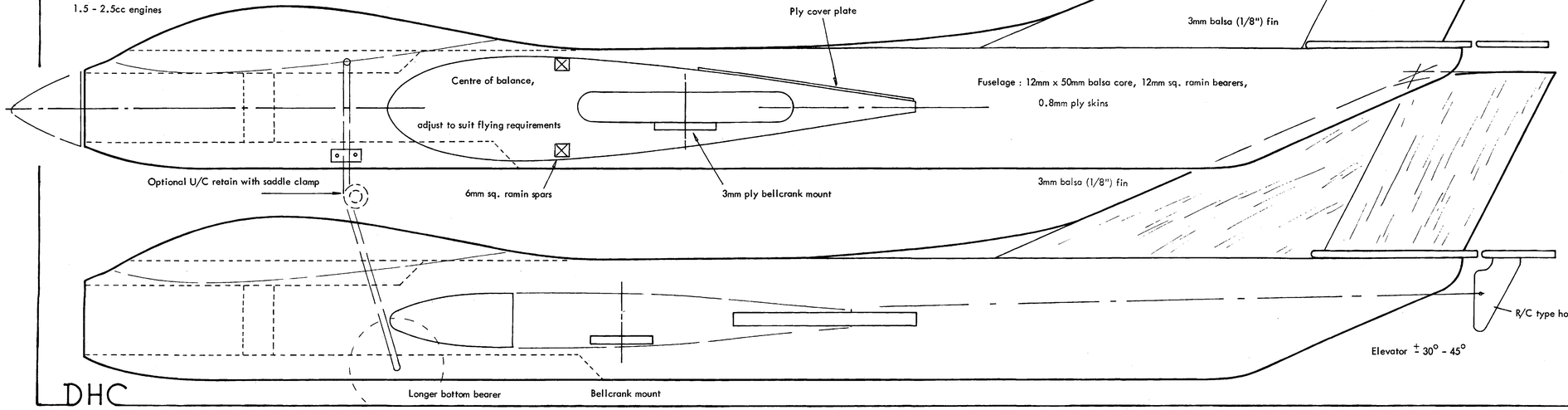
Designed by D.H. Cowburn

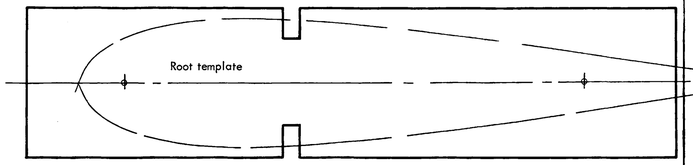


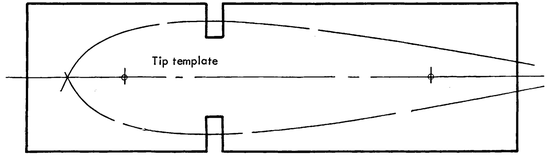
0.8mm ply wing cover plate, for push rod outlet

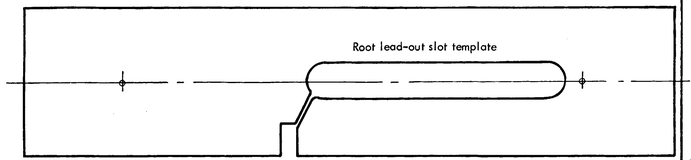


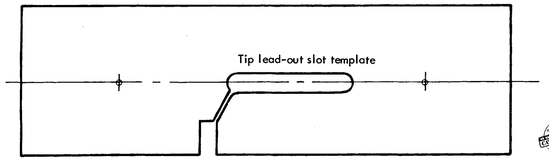
Formica templates. Cut with fine tooth saw and filed very smooth



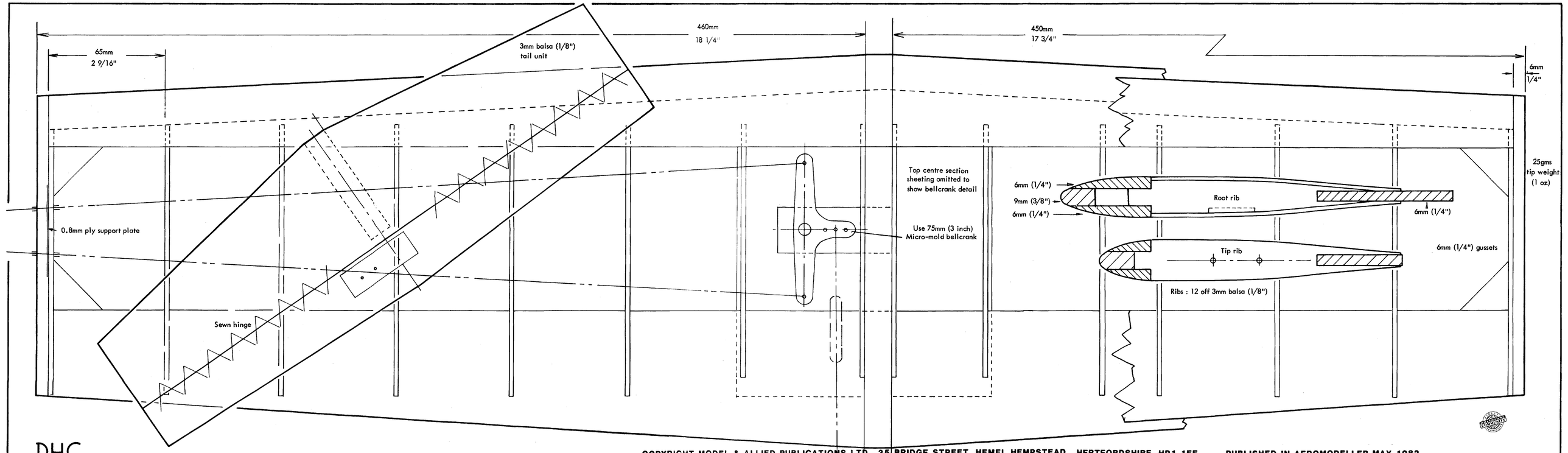








DHC



DHC

 PUBLISHED IN AEROMODELLER MAY 1982