

# AERO

## MODELLER



# MAGIC MEMORIES

Vintage views & kit review

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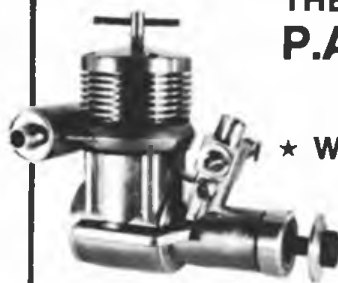
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PAW 29 DS + Silencer	36.80
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PAW 1.49 R/C + Silencer	25.30
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POSTAGE Kits ..... 1.75 Motors ..... 75 Other items ..... 50

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April 1986

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# AERO

## MODELLER



p.212



p.207

**Group Editor**  
**Graphic Design**  
**Advertisement Manager**

*Alec Gee*  
*Jenny Hine*  
*Jim Carrigan*

**Cover:**

The boom in vintage interest is impressively captured in this study of Fred Barnsley's magnificent 1.4 times larger 'Eros' (designed by John Coasby in 1948 and available still from Aeromodeller Plans Service - PET 280), photographed at ASP's Vintage Weekend at Old Warden last year by David Boddington. Power is O.S. Gemini 120 twin.

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**Other MAP Hobby Titles:**

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## Argus Specialist Publications Ltd.

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# HANGAR DOORS



Above, hangar doors open for the rebuilt D.H. 8B Comet at Farnborough - roll on the day this classic flies again! Photo: Ron Moulton. Below, two from the Sth. Manchester Jubilee show; left, CO<sub>2</sub> 'Comet' and right, rubber drive Stinson from Model Airplane News plan, both by Manchester Group member Gordon Seymour.

## South Manchester Models Group Silver Jubilee Exhibition

S.M.M.G. started life as an association of three model clubs in the area in 1960. The aim was to try to extend interest in modelling as a hobby by means of demon-

strations and Exhibitions.

In the intervening years the group has grown to encompass seven clubs representing a wide variety of modelling interests. During a recent weekend the group held its Silver Jubilee Exhibition at the Blessed Thomas Holford School, Altrincham, Cheshire.

## Knaresborough M.F.C. Yorkshire Modellers Weekend

Knaresborough M.F.C. is organising three events at the Yorkshire Modellers Weekend, 12 & 13 July, held at Newby Hall, Nr Ripon, N Yorks. They would like to hear from any control line modellers interested in competing. Classes will include Mini Goodyear - no age limit, but their will be a separate junior prize. Class A Teamracing - designs published/kitted as class A (not FAI) of any vintage, any 2.5cc diesel, standard FAI length lines. Diesel Combat - 2.5cc.

For further details contact J. Holman 20 Newton Gardens, Bondgate, Ripon N. Yorks. Harrogate 866096 daytimes, Ripon 2898 evenings.



## What's on..

**30th March**  
**MEON VALLEY SOARING ASSOC. OPEN EVENT.**  
F3F Nationals. Venue: Butser Hill, Petersfield, Hants. Contact: Ken Sapsed. Tel: 0705 453688. Entry Fees: £2.00 non-members, £1.00 members. Frequencies: 35 Mhz, even numbers only, two sets of crystals.

**30 March**  
**SOUTHERN AREA INDOOR ALL SCALE DAY.**  
Comps: Peanut, Open Rubber, Open CO<sub>2</sub>, SAM 35 Earl Stahl. Venue: H.M.S. Daedalus, Lee-on-Solent. Contact: Malcolm Leach. Also Fly-For-Fun. Entry: £1.25 (per comp of F-F-F), under 16 free. Anyone going must inform Malcolm Leach at least one week before. Flying 1pm to 6pm.

**13th April**  
**WITHAM CUP**  
Comps: F2B and Carrier. Venue: Slip End Playing Fields. Contact: Pete Burgess. Tel: 0376 516881. Pre-entry only. Camping on site from Friday 11th.

**20th April**  
**S.E. AREA SMAE "LONG MAN" SLOPE SOARING**  
Details S.A.E. to A. Lawson-Wood, 4 Cumberland Walk, Tunbridge Wells, Kent.

**27th April**  
**S.E. AREA SMAE "SPRING GALA"**  
(SMAE members only) at R.A.F. Odiham, Hants. R/C, F/F, Vintage F/F, Helicopter, & R/C Scale. Details S.A.E. to N. Couling, 7, The Green Walk, Willingdon, Eastbourne, East Sussex.

**PETERBOROUGH MFC**  
Class: Diesel 'A' Combat. Venue: The Embankment, Peterborough. Contact: Mick Taylor. Tel: 0733 204484.

**April 26/27th**  
**The Reading Society of Model Engineers' 40th Anniversary exhibition** at the Hexagon Civic Hall in Reading, open 10.00am to 6.00pm on both days.

**April 27th**  
**SMAE Indoor Scale National** at the Alumwell Centre, Walsall from 9.00am to 6.00pm. Classes: Peanut, Open Rubber and CO<sub>2</sub>. Fee per event £3 (Juniors half price), visitors £1.50. Pre-entry in all classes by March 31st. Large display of static models and a programme of demonstrations by leading free flight scale modellers. Full details and entry forms from Doug Sheppard, 13, Luckington Road, Monks Park, Bristol. Avon BS7 0UT (Tel: 0272 695955).

**3/4/5th May**  
**BRISTOL AND WEST WOODBURY WEEKEND.**  
Venue: Woodbury Common, Nr Exmouth, Devon. Contact: Elton Drew, 2 Downfield Close, Alveston, Bristol BS12 2NJ for contest details, camping instructions and accommodation booking forms. Comps: May 3 - Champagne Fly-offs for Open Rubber, Open Glider, Open Power and Vintage Rubber. (5-8pm). May 4 - Open Rubber, Open Power, Open Glider. Vintage to SMAE rules (10am start). May 5 - Combined FAI rounds, Vintage to South Bristol rules (8am start).

**4th May**  
**TONBRIDGE RADIO FLYERS OPEN THERMAL SOARING COMP.**  
BARCS rules, entries on all frequencies except 27 Mhz blue and green with alternative. Contact: Keith Miller, 18 Bounds Oak Way, Southborough, Tunbridge Wells, Kent TN4 0TX. Entry Fee: £2.00 with s.a.e. A hand launched glider comp. will also be run. Entry 50 pence with Open entry or on the field.

**May 4-5th**  
**Model Aircraft Rally at Holker Hall and Park, Cark-in-Carmel, Grange-over-Sands, Cumbria. LA11 7PL. (Tel: Flockburgh 328 (044 853) Enthusiasts from all over the North of England will display their scale models (R/C). Contact: Mrs. Carolyn Johnson.**

**GRANTHAM & D.M.A.S. VINTAGE DAY**  
Comps: C/L: Fly for fun; Class A & B Team Race (Grantham Rules); Vintage Class 1 Speed (1986 SAM 35 Rules); possibly Vintage Stunt. Venue: R.A.F. Barkston Heath. Contact: Dave Campbell. Tel: 0455 611724. All SMAE and SAM 35 vintage C/L flyers welcome.

**11th May**  
**THREE KINGS C/L SCALE FLY-IN.**  
Stand-off and Profile scale classes. Venue: Old Croydon Aerodrome. Contact: Derek Bird. Tel: 01 874 6394. Silencers essential.

**1st June**  
**S.E. AREA'S R/C "FLY FOR FUN" DAY.**  
Venue: Ardingly, Nr Haywards Heath, Sussex. Details S.A.E. to M. Richardson, 64 Grange Close, Horam, Heathfield, East Sussex.

**WALSALL M.A.C. SCALE DAY**  
Comps: F/F, C/L and R/C. Venue: Walsall Airport, Bosty Lane, Aldridge, Walsall, West Midlands. Contact: Malcolm Taylor. Tel: 0922 415316.

**THREE KINGS C/L SPORT & VINTAGE DAY**  
Classes: Vintage Stunt, Midge Speed, Fly for Fun. Venue: Old Croydon Aerodrome. Contact: Derek Bird. Tel: 01 874 6394. Silencers essential.

**June 8th**  
**North London MFC Scale Day.** R/C scale at the club's flying field at Baldock, Herts. Snacks will be available and prizes awarded. Entry will be £1 on the day. Contact: Richard Barley, 44 Orchard Avenue, Berkhamsted, Herts HP4 3LS.

**8th June**  
**3rd ANNUAL HUDDERSFIELD & DISTRICT VINTAGE EVENT**  
All vintage event will be R/C assist and classes will include Taxaco, Precision and Duration. It is also hoped to run Flying Fifteen this year and radio frequencies are restricted to odd 35MHz Yellow, Green,

Blue or U.H.F. only. Refreshments will be available on the field all day and further details are available from Colin Thompson, 132, Slatthwaite Road, Meltham, West Yorkshire HD7 3PW. An sae would be appreciated.

**15th June**  
**MEON VALLEY SOARING ASSOCIATION OPEN EVENT.**  
Cross Country. Venue: Butser Hill, Petersfield, Hants. Contact: Ken Sapsed. Tel: 0705 453688. Entry Fees: £2.00 non-members, £1.00 members. Frequencies: 35 Mhz, even numbers only, two sets of crystals.

**15th June**  
**THE OXFORD M.F.C. FREE FLIGHT RALLY.**  
At Port Meadow, Wolvercote, Oxford. Classes: A1 Glider, Coupe d'Hiver in rounds starting at 10.00am. Hand Launched Glider and Vintage - no rounds. N.B. Vintage is rubber and glider combined, span limit on rudder 36in. No power models to be flown. Contact: Andrew Crisp 30 Portland Road, Summertown, Oxford.

**22 June**  
**PETERBOROUGH MFC.**  
Class: Diesel 'A' Combat. Venue: The Embankment, Peterborough. Contact: Mick Taylor. Tel: 0733 204484.

**28/29th June**  
**THREE SISTERS C/L GALA**  
Comps: FAI T/R, Goodyear, Stunt, Class 2 Goodyear, Novice Stunt, Diesel Combat (Mainstream Trophy), Vintage T/R A & B, FAI Combat, Open Speed (inc. Jet), Mercury Midge Speed. Contact: John Noble. Tel: 061 790 4056. Events start: 12.30pm Sat. 9.00am Sun.

**29th June**  
**PAISLEY TROPHY**  
Class: Open F/F. Venue: Newbigging, Nr Carnwath. Contact: Ron Sabey. Tel: 0698 429170.

**6th July**  
**PETERBOROUGH MFC**  
 Classes: C/L Stunt and Midge Speed.  
 Venue: The Embankment, Peterborough.  
 Contact: Mick Taylor. Tel: 0733 204484.  
 SAM 35 Rules.

**WALSALL M.A.C. VINTAGE DAY**  
 Comps: R/C Assist and F/F. Venue: Walsall  
 Airport, Bosty Lane, Aldridge, Walsall, West  
 Midlands. Contact: Jim Shelley. Tel 0922  
 28553.

**12/13th July**  
**C.L.A.P.A. CHAMPIONSHIPS**  
 C/Comps. Open Novice Stunt, Profile and  
 Scale Carrier, C/L Scale (C.L.A.P.A.  
 members only). Venue: Essex Show  
 Ground, Nr Braintree. Contact: Pete  
 Burgess. Tel: 0376 516881. Camping  
 available. Pre-entry from Pete at 42 Blunts  
 Hall Road, Witham, Essex CM8 1LY.

**July 13th**  
**North London MFC Vintage Day.** R/C only  
 (no free flight) Vintage character models.  
 Barbecue will be available - bring own food.  
 Contact Richard Barley, 44 Orchard  
 Avenue, Berkhamsted, Herts HP4 3LS.

**13th July**  
**S.E. AREA R/C SCALE DAY.** Ardingly, Nr  
 Haywards Heath, Sussex. Details S.A.E. to  
 N. Couling, 7 The Green Walk, Willingdon,  
 Eastbourne, East Sussex.

**July 20th**  
**Shuttleworth Model Group Fly for Fun**  
**Open Day.** Venue: Old Warden Aerodrome  
 Biggleswade, Beds. SG18. Gates open at  
 9:00 am. Contact M.S.F. Staples 11,  
 Whitehill Road, Cambridge CB5 8LT.

**27th July**  
**F.A.C.C.T. BARCS LEAGUE**  
 Comp: R/C Thermal Soaring. Venue: RAF  
 Weston-on-the-Green. Contact: N G  
 Webb, The Bungalow, 13 East Street,  
 Fritwell, Oxon OX6 9PX. Pre-entry £2.00  
 plus s.a.e. plus frequency details.

**July 27th**  
**RAF Alconbury 1986 Airshow.** Full-size  
 flying programme. Contact Public Affairs  
 Division, RAF Alconbury, Huntingdon,  
 Cambridgeshire. (Tel: Huntingdon 52131  
 ex 2174/2125).

**27 July**  
**DREAMING SPIRES F/F SCALE - SILENT**  
**VINTAGE GALA**  
 Comps: Open Rubber (15in span plus),  
 CO<sub>2</sub>, Power/Electric (max 1.5cc), Twin  
 Rubber Scale and also Mass Launch.  
 Vintage: Wakefield. Lightweight,  
 Lightweight Freewheel and Glider. Venue:  
 Port Meadow, Oxford. Contact: C.  
 Newman. Tel: 086 773020. Note: Absolutely  
 no diesel/glow powered models permitted -  
 other than those entered in the F/F Scale  
 event.

**17th August**  
**SCOTTISH FREE FLIGHT NATIONALS.**  
 Classes: FA1, Open Mini and Vintage.  
 Venue: Newbigging, Nr Carnwath.  
 Contact: Ron Sabey. Tel: 0698 429170.

**August 16-17th**  
**Annual Model Show at Plumpton**  
**Racecourse.** 300mph Dutch pulse jets,  
 parachutists, planes, cars, boats, trains,  
 traction engines, space rockets, junior  
 comps, camping, live entertainment,  
 helicopter rides, children's fairground,  
 videos, bar, refreshments, lectures, special  
 ladies entertainment, trade stands, etc.  
 Contact Dave Bishop, DB Sound, 17 The  
 Square, Tatsfield, Nr. Westerham, Kent  
 TN16 2AS (tel: Tatsfield 77550)

**7th September**  
**STEEL TROPHY**  
 Class: F/F FA1. Venue: Newbigging, Nr  
 Carnwath. Contact: Ron Sabey. Tel: 0698  
 429170.

**MEON VALLEY SOARING ASSOC. OPEN**  
**EVENTS. CROSS COUNTRY.**  
 Venue: Butser Hill, Petersfield, Hants.  
 Contact: Ken Sapsed. Tel: 0705 453688.  
 Entry fees: £2.00 non-members. £1.00  
 members. Frequencies: 35 Mhz, even  
 numbers only, two sets of crystals

**September 7th**  
**Shuttleworth Model Group Silent Day at**  
**Old Warden Aerodrome, Biggleswade,**  
**Beds.** All welcome but no I.C. engines to be  
 run. Contact M.S.F. Staples, 11, Whitehill -  
 Road, Cambridge CB5 8LT.

**14th September**  
**"TOWNER TROPHY" R/C Thermal**  
**Soaring, Golden Cross, East Sussex**

Details S.A.E. to N. Couling, 7 The Green  
 Walk, Willingdon, Eastbourne, East Sussex.

**21st September**  
**SMAE "SOUTHERN GALA" (SMAE**  
**Members only) at RAF Odiham, Hants. F/F,**  
**R/C Scale, Vintage F/F, Helicopter and R/C**  
**aerobatic. Details S.A.E. to N. Couling, 7**  
**The Green Walk, Willingdon, Eastbourne,**  
**East Sussex.**

**28th September**  
**SOUTH MIDLANDS AREA BARCS**  
**LEAGUE**  
 Comp: R/C Thermal Soaring. Venue: RAF  
 Weston-on-the-Green. Contact: J.H. Shaw,  
 'Alvere', Witney Road, Freeland, Oxon OX7  
 2HQ. Tel: 0993 881350. SMAE members  
 only. Pre-entry £2.00 plus s.a.e. plus  
 frequency details.

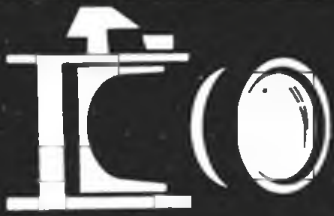
**5th October**  
**S.E. AREA SMAE "LONG MAN" SLOPE**  
**SOARING.** Details s.a.e. to A. Lawson-  
 Wood, 4 Cumberland Walk, Tunbridge  
 Wells, Kent.

**EASTBOURNE CLUB VINTAGE DAY (R/C**  
**only).** Golden Cross, East Sussex. Details  
 from S. Coombe, 7 Pelworth Place,  
 Hampden Park, Eastbourne, East Sussex.

**19th October**  
**PETERBOROUGH MFC**  
 Class: Diesel A' Combat. Venue: The  
 Embankment, Peterborough. Contact:  
 Mick Taylor. Tel: 0733 204484.

## 1986 SMAE CONTEST CALENDAR

Date	Class	Events	Contact	Telephone	Area	3rd F3B/F3E Soaring League	S Mid Area			
16-02-86	FF	Driffield	A1, 1/2A, Cd'H, HLG, CO <sub>2</sub> , Vintage, SOP	FF Tech Committee	RAF Swindley	FAI Pylon	B M P R A			
02-03-86	FF	Area	1st Area Centralised OR, OP, F1A	Area Comp Sec	Lindholme Three Sisters	FAI Aerobatics 4th Centralised F2C, G/Y Open and Class II, F2B, F2D, 1/2A Combat, Handicap Speed	G B R C A A C/L Tech Committee			
16-03-86	T/S	Area	1st Regional Centralised Open Soaring League	Area Comps Secs N, S	Cardington	All-in Index event	Indoor Tech Committee			
16-03-86	FF	Area	2nd Area Centralised OR, OG, F1C	Area Comp Sec	Cardington	Fly-in and Team practice	Indoor Tech Committee			
16-03-86	Scale	RAF Wyton	C/L Team Trials (Entry fee £8.00)	E Coates	Unconf'ed Area	FAI Pylon	B M P R A			
23-03-86	R/C	Unconf'ed	FAI Pylon	B M P R A	5th Regional Centralised Open Soaring League, 5th F3B/S F3E Soaring League	Area Comp Secs NW, 5th F3B/S Mid and London	Area Comp Secs NW, 5th F3B/S Mid and London			
29-03-86	FF	Area 8	Easter Meet OR, OR, OP	FF Tech Committee	LARKS field	STD/SNR Aerobatics	G B R C A A			
06-04-86	CL	Three	1st Centralised FAI T/R, G/Y Open and Class II, 1/2A and A Combat	C/L Tech Committee	Area	4th Regional Centralised Open Soaring League, 2M/100 Task Event, 100S Class Soaring and 4th F3B/F3E Soaring Events	Area Comp Secs N, EA, W, SE and London			
13-04-86	FF	Lindholme	Vintage and Pannell	Northern Area	23-08-86	R/C C/L	Barkston	Three Day Event British National Championships - R/C and C/L	S M A E	0533-58500
20-04-86	T/S	Long Man, Wilmington	1st Round S/S for Long Man Trophy	South East Area	24-08-86	Indoor	Cardington	Three Day World Cham'ships	Indoor Tech Committee	
27-04-86		Odiham	Spring Gala FF, Vintage, R/C Scale Helicopter and Aerobatics	N F Couling	24-08-86	FF	Area 9 Salsby Plain	Two Day Event London Area	London Area Comp Sec	
27-04-86	Indoor	Alumwell Centre	Indoor Scale Nationals	D Sheppard	24-08-86	FF	Area 9 Salsby Plain	OR, OP, OG	FF Tech Committee	
27-04-86	FF	Barkston Heath	Spring Meeting OR, OG, OP, Vintage, SOP	FF Tech Committee	30-08-86	Indoor	Cardington	Two Day Indoor Internation - Events unconfirmed	Indoor Tech Committee	
27-04-86	R/C	Barkston Heath	FAI Pylon	B M P R A	07-09-86	T/S	Area	FAI Cross Country	South Midland Area	
27-04-86	R/C	Beaulieu	STD/SNR Aerobatics	G B R C A A	07-09-86	R/C	Lindholme	STD/SNR Aerobatics	G B R C A A	
27-04-86	R/C	Donisthorpe	FAI Aerobatics	T Watson	07-09-86	FF	Area	5th Area Centralised, A1, F1B and Team Rubber	FF Tech Committee	
27-04-86	T/S	Unconf'd	2nd Regional Centralised Open Soaring League	Area Comp Secs NW,	14-09-86	R/C	Barkston Heath	FAI Aerobatics	T Watson	0533-412368
11-05-86	FF	Area	3rd Area Centralised OP, OG, F1B	Mid W, London Area Comp Sec	14-09-86	FF	Lindholme	Northern Area Gala	Northern Area	
11-05-86	T/S	Area	2nd F3B/F3E Soaring League	Northern Area	14-09-86	T/S	Golden Cross	R/C Thermal Towner Trophy	SE Area	
11-05-86	C/L	Barkston	2nd Centralised Handicap Speed, F2C, 1/2A, T/R, G/Y Open and Class II, F2B and Novice Aerobatics	C/L Tech Committee	14-09-86	Scale	RAF Elvington	R/C International Class and Light Scale	D Kerswell	0653-2580
11-05-86	Scale	Merryfield	R/C International and Light Scale	P McDermott	21-09-86	R/C	Don'thorpe Odiham	FAI Pylon SMAE Southern Gala FF, RC, Scale	B M P R A N Couling	0323-53116
11-05-86	R/C	RAF Burton- wood	STD/SNR Aerobatics	B Caton	28-09-86	FF	Area	6th Area Centralised	Area Comp Sec	
18-05-86	R/C	Don'thorpe	FAI Pylon	B M P R A	28-09-86	T/S	Area	6th Regional Centralised Open Soaring League	Area Comp Secs NE, Mid W and London	
24-05-86	FF	Barkston Heath	Three Day Event, British National Championships - All classes FF	S M A E	28-09-86	C/L	Three Sisters	5th Centralised F2A, F2B, F2C, F2D, Mini G/Y, A Combat	C/L Tech Committee	
24-05-86	R/C	Lindholme	National Championships - SE Area 'Fly-for-Fun' day	Y Weller	05-10-86	R/C	Bullford Camp	FAI Aerobatics	G B R C A A	
01-06-86	R/C	Ardingly, Sussex	SE Area 'Fly-for-Fun' day	SE Area	05-10-86	T/S	Long Man, Willingdon	2nd round S/S for Long Man Trophy	SE Area	
01-06-86	R/C	Kendal Club Site	STD/SNR Aerobatics	B Caton	05-10-86	FF	Unconf'ed	F1E SMC Trophy	FF Tech Committee	
01-06-86	FF	Unconf'ed	F1E Trials (Reserve)	FF Tech Committee	05-10-86	R/C	Golden Cross	Eastbourne Club Vintage Day R/C Only	S Coombe	
01-06-86	Indoor	Cardington	All-in Index event	Indoor Tech Committee	05-10-86	T/S	Area	6th F3B/F3E Soaring League	Northern Area	
08-06-86	T/S	Area	3rd Regional Centralised Open Soaring League	Area Comp Secs, North, Mid and SE	11-10-86	Scale	RAF Elvington Sculthorpe (Prov)	R/C FAI - F4C European Team E Trials	A Coates	0329-832713
08-06-86	Scale	Amesbury	RC International Class only	P McDermott	11-10-86	FF	Hullavton	2nd Team Trials F1A, F1B, F1C	FF Tech Committee	
08-06-86	C/L	Three Sisters	3rd Centralised FAI T/R, 1/2A T/R, F2B, Handicap Speed, 1/2A and A Combat	C/L Tech Committee	12-10-86	C/L		6th Centralised Handicap Speed, 1/2A and A Combat, B T/R, 1/2A T/R, G/Y Open and Class II, F2B and Novice Aerobatics	C/L Tech Committee	
08-06-86	FF	Area	Cd'H, F1C, Astral	Area Comp Sec	12-10-86		Barkston	Midland Area Rally R/C, FF	Midland Area Comp Sec	
15-06-86	FF	Port Meadow	Oxford FF Rally	Oxford Club	12-10-86	Scale	RAF	R/C FAI - F4C European Team E Trials	A Coates	0329-832713
22-06-86	R/C	Unconf'ed	FAI Pylon	B M P R A	12-10-86	R/C	Unconf'ed	FAI Pylon	B M P R A	
22-06-86	FF	Barkston Heath	RAFMAA Championships	R A F M A A	12-10-86	FF	Sculthorpe (Prov)	2nd Team Trials F1A, F1B, F1C	FF Tech Committee	
22-06-86	R/C	RAF West Raynham	FAI Aerobatics	G B R C A A	19-10-86	FF	Lindholme	Northern Area FAI Rally	Northern Area	
22-06-86	R/C	Noltingham	STD/SNR Aerobatics	A Waterfall	25-10-86	FF	Barkston Heath	Trials reserve date F1A, F1B, F1C	FF Tech Committee	
28-06-86	FF	Unconf'ed	Two Day Event: 1st Team Trials - F1A, F1B, F1C	FF Tech Committee	26-10-86	FF	Barkston Heath	Trials reserve date F1A, F1B, F1C	FF Tech Committee	
06-07-86	Scale	RAF	R/C International, C/L and FF	P McDermott	02-11-86	FF	Barkston Heath	East Anglian Vintage - 4oz Vintage Wakefield, F1B, Pre-51 Rule Wakefield	East Anglia Area	
06-07-86	Indoor	Abingdon	All-in Index event	Indoor Tech Committee	16-11-86	FF	Lindholme	Falcons Gala OR, OG, OP, Vintage	FF Tech Committee	
06-07-86	R/C	Andover	STD/SNR Aerobatics	C Waller						
13-07-86	R/C	Ardingly, Sussex	SE Area R/C Scale Day	N Couling						
13-07-86	R/C	Fleetwood	STD/SNR Aerobatics	B Caton						



# PHOTO PRIZE

## Model News With Fliar Phil

### Wood for the Winner

100 Sheets of balsa, nearly 200 lengths of strip wood — some prize!

All you have to do is send Fliar Phil your photograph - good quality black and white or colour prints will do, with your name and address plus details of the model, its construction, etc., on the back. Post your entries to Aero-modeller Photo-Prize Feature, P.O. Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts HP2 4SS. Photos will be returned after publication.



**F**liar Phil is feeling Sad!!! BOTH his local model shops have closed! No more friendly chats with the knowledgeable proprietors while selecting balsa or giving that new kit the once over. Ordering by mail seems to be in. Certainly most mail order firms are good - although F.P. did have to wait a fortnight for a catalogue! If your model shop is still in business, support it - thankfully. Now to this month's 'super pics'...

#### Photo 1

Despite 'power unit' problems, you cannot keep the scale enthusiast away from modelling a jet plane! Certainly Joe Briffa of

London has provided a superb model of the jet powered German WWII aircraft the Arado 234. Powered with two Jetex 50s, span is 45 cm, weight 59 grms. It looks, and indeed is, a good, stable flyer. Fliar Phil's congratulations Joe, on a model that is rarely modelled but is most impressive!

#### Photo 2

'Dannato' is a fully aerobatic control-liner (by Leonardo Cavallaro). Taken from plans in the *Aeromodeller Annual* 1959, it is the latest model to join the stable of Jerry Metcalfe, of Port Elizabeth, South Africa. Up front is an O.S. Max 20 FSR. Jerry writes to say how much he enjoys *Aeromodeller* and how much it has done to stimulate his

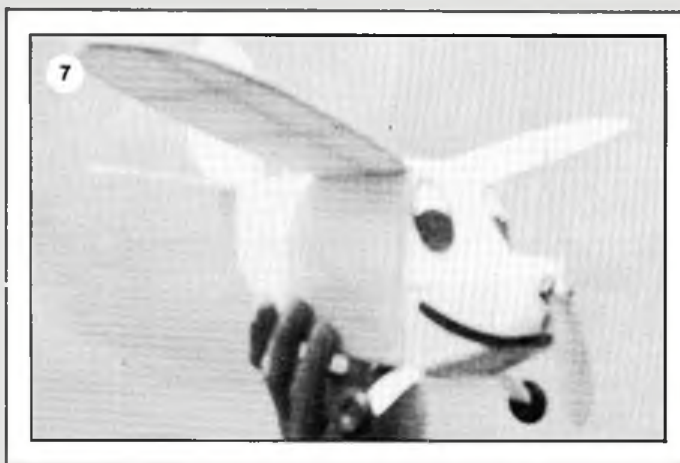
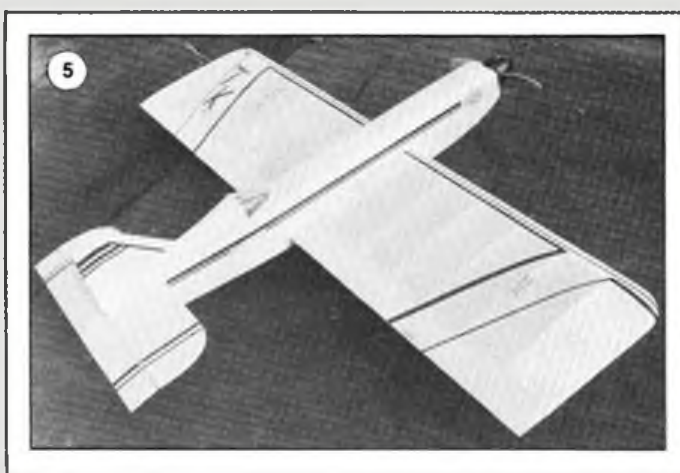
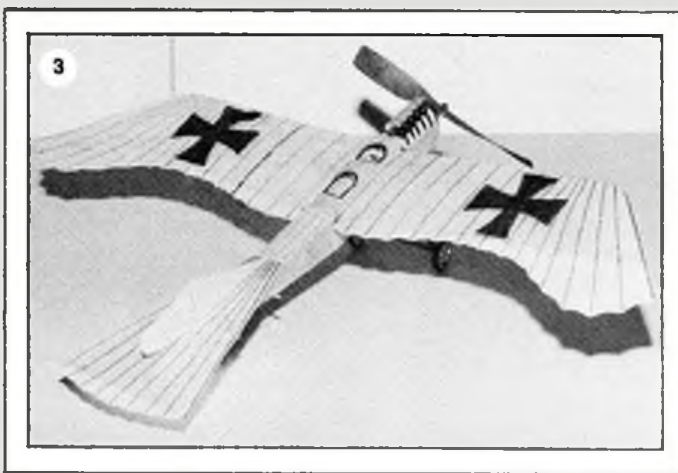
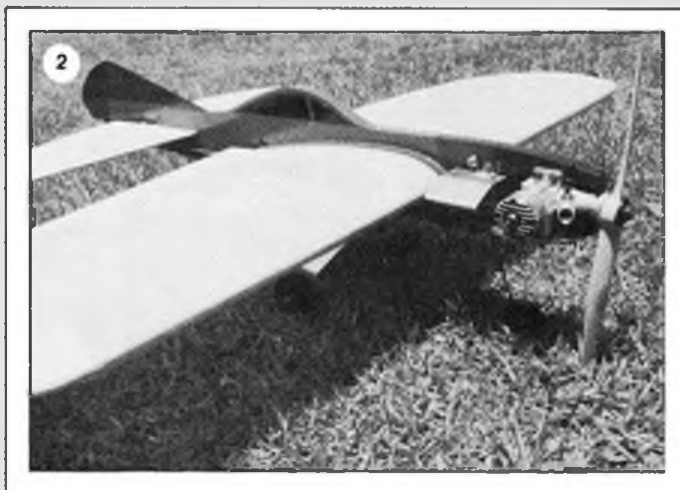
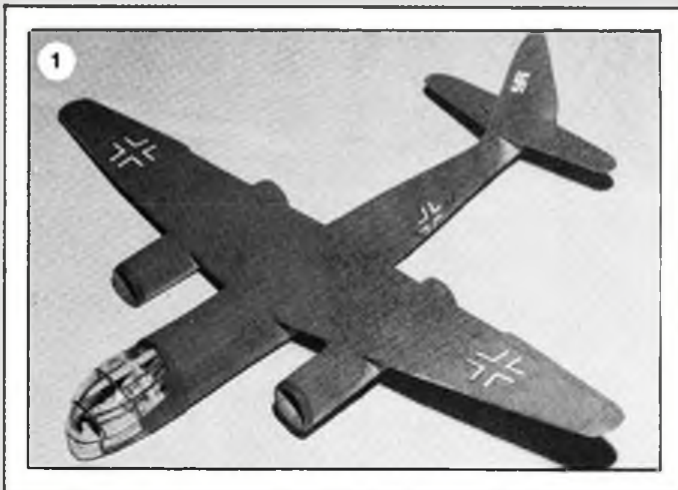
aeromodelling interest. Many thanks to Jerry - happy stunting!

#### Photo 3

The Rumpler Taube of the German Army Air Service had graceful, almost bird-like lines. The grace of the real aeroplane is masterfully captured in this model by Al Backstrom of Frisco, Texas, USA. To peanut scale. Al says it flies nicely with durations around the 40 sec. mark. A fine model of a most fascinating WW1 aircraft Al! An example of 'Lookability and flyability'.

#### Photo 4 Winner

When you build a model to this standard



and photograph it so realistically you've just got to be up with the winners! A 1/5th scale Jodel Robin 400 (68in span), it is the work of Dennis Foskett of Mickleover, Derby. Engine is a Super Tigre 75 and model has 4 function R/C plus flaps and glider tow release. Dennis says (although F.P. had already guessed!) We will enjoy your photo Dennis - you enjoy the balsawood.

#### Photo 5

Built from a free *Aermodeller* plan ('Akro-Kat', designed by Dave Cowburn), Roger Ford of Welwyn Garden City, Herts says the model is as plan except for the rear end to give it 'the 1930s racer look' with cockpit and

fairing, plus a more attractive fin. Roger calls his superb C/L model 'Tiger Kat'. Power is an Oliver Tiger diesel. He would like to give a word of thanks to Dave Cowburn for his first class stunt trainer 'Wildcat'.

#### Photo 6

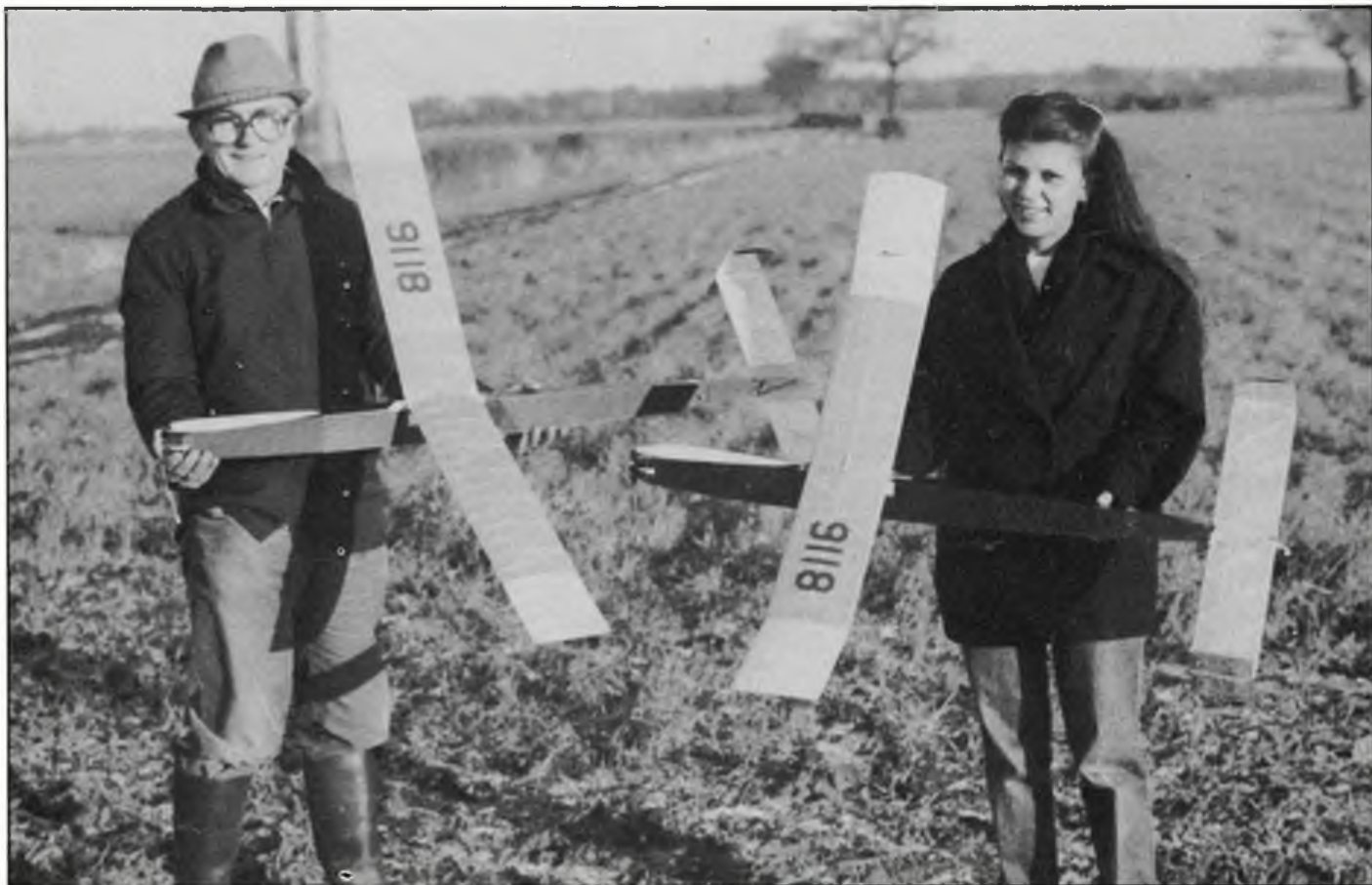
Back to those 'golden oldies' - and the Eastbourne Monoplane is a most eye-catching oldie! (F.P. did a rubber powered version way back). This fine example comes from Steve Dunne of Bradford. Built from a plan in the American mag *RCM* it weighs 8 lbs. Quoting Steve 'it is an amazing sight pulled slowly round the sky by its O.S. 60 fourstroke'.

#### Photo 7

Building and flying model aircraft is a serious (but enjoyable) business. However, we can all appreciate a design with a sense of humour! This little CO<sub>2</sub> powered model, besides raising a smile, also flies well. It was photographed at an Old Warden Vintage Day by Adrian Culf of Saxmundham, Suffolk. A model that tickles F.P.'s fancy so, to the designer and Adrian, a big 'Ta'.

We'll be in the prize-winning pic business again next month. See you then!

# EXPENDABLE



## Designed around modern available rubber, this Open Rubber model by John Pool climbs fast and high — build one and see!

This model is a direct development of the one published in *Model Aircraft*, May 1963. It has traces of Ken Rutter, Ron Firth and Ken Attiwell, Ken Grant and Alan Nobbs from my old Halifax Club.

In those 4.00 min max days models disappeared more easily and so I was aiming at an easy-to-build and duplicate model which was inexpensive to operate and easy to pack. Up until the 50 gr. rubber limit introduction, we at Halifax had been Wakefield fliers. Ken Rutter came along and persuaded us that Open Rubber was an alternative, but his own experience indicated that the conventional size lightweight had visibility disadvantages. So ours becomes lightweight Wakefields!

People nowadays often mistake "Expendables" for Vintage Wakefields. Airframes rapidly came down to 3oz, rubber remaining at 2.8ozs (80gr). Subsequent development over a longer period produced models with 2½oz airframes and the same or 3oz rubber. These showed a marked reluctance to descend in lift even with excessive D/T tip-up angles. For me, 3oz

airframes with 3oz rubber became the norm.

So what is new? FAI rubber made up to shorter motors at 12 strands than the earlier Pirelli and presented tensioning problems at 10 strands. The shorter motor tended to bunch up more in winding so the fuselage was widened slightly at nose and rear motor peg. The 12 strand motor also gave more power, especially at launch than 12 strand Pirelli so the prop grew somewhat. Rapid duplication and less losing remorse dictated the single blade folder.

A shorter motor run pattern was chosen to minimise those occasions when a model has climbed long and glided in lift and D/T'd at a height that puts it another mile downwind. On 650 turns this model climbs for about a minute, and gets out of the ground turbulence quickly. The 2½ min. max that we so often fly to now favours this approach although I don't think it an answer to anything. If everyone is going to be fly-off I would prefer that it be unlimited flight early in the day while the light is good, the wind often lighter, and retrieval prospects better. Winner would be the one

with the highest time who subsequently made three maxes. Should no-one max out then the unlimited flight could be ignored or made the subject of a special award.

I find this size model the biggest I can handle in wind and it has coped very well both will flying and landing in bad weather. I usually find it on its back in windy weather but the wings flex flat and it lies close to the ground rather than tumbles across it. The fins are rarely displaced, but in case they are I have a thread from the L.E. just inside the end plate to the fin trailing edge which allows the fin to detach and remain captive but also allows the fin to lie along the underside of the tailplane for packing.

### Fuselage

Should it be necessary to splice the longerons, the region of the motor peg sheeting is best and in this case a simple butt joint will suffice. Alternatively, a splice can be made at rear end of the parallel section which will then be reinforced by the wing mount at the top and short inner sub longerons which will serve as hand hold braces on the other three longerons.

Spacers are cut four at a time and all four dry-fitted at the appropriate station, then two glued in (two fuselage sides built at once, one on top of the other) and two retained. 24 spacers for the parallel section are cut at once and dry-fitted at one position to ensure subsequent accuracy. The diagonal spacers are cut to fit individually



and best fitted to the two flat sides before removing from the plan. I think of these as substitutes for thread braces which would do the job adequately but get tangled up in the rubber in an accident. For this reason they don't have to be very strong or superbly fitted but they do need to be stuck to the tissue. The quick way is to cut fractionally over-size with a square end and then lightly sand the corners to fit.

Two completed sides can be lifted from the plan and separated with a thin blade (see later). They are then erected vertically over the plan, aligned very carefully and the spacers fitted in the parallel section, diagonals also. When this is dry, draw in the nose and, with the aid of squares, fit the front spacers and likewise for the rear. It's a bit fiddly fitting spacers in what is now the lower side so fit all the "top" ones and only a few at the bottom, aided by strategically placed rectangles of scrap sheet. Fit the rest and the diagonals at ease after removing from the plan.

## Wing

The wing is also built between 'rails' spaced by a 5/16in spacer so that the panels line up with each other. I use a strip of 1/16in sheet for the trailing edge 'rail'. These also help to hold the plan flat. I build the outer panels separate from the inners and complete the sanding before joining up. Warps are built in after glueing in the ribs but before putting in spars and gussets. These panels require packing up at the water spray and doping stages. The wing can be left in one piece in which case ply dihedral braces will be required. Otherwise, tack cement the two wing panels together, hook the home-made hooks and eyes together and press into place on the underside of the L.E., and T.E. with the connection along the centre line.

Put both hooks on the same wing. Remove, and then glue both hooks in place followed by both eyes. Balsa cement, epoxy and cyano have all been used. I stitch the wires in place by making holes with a thin pin and a needle on the end of the thread used by pulling the end between finger and thumb with a drop of cement. Messy but effective. When all is dry the tack cementing is cut through and the wings folded down and apart. If in doubt try the system out on a couple of pieces of scrap 1/4in sheet.

Kenneth Attiwell introduced me to an ideal source of thin blades for these separating jobs, and for cutting small ribs, namely the blades from from throw-away razors. At the price you can afford to cut up new ones. Provided the tissue is well stuck down on the relevant areas this process can be done with the panels covered and even doped. Keep the hooks small or you will have to make compensating holes in the wing mount. A good alternative to the hooks is to use a 1/64in ply facing to the root rib. Make up two, tack cemented together and flat bottomed. Drill two holes front and rear to take approx 3/32 diameter bamboo dowels. While still tack cemented, glue all to one wing and, when dry, glue on the other wing taking care with alignment. Finally, cut the tack cement to separate. Short stub dowels are then glued into one wing and the holes in the other eased with a needle file so that the wing can flex downwards.

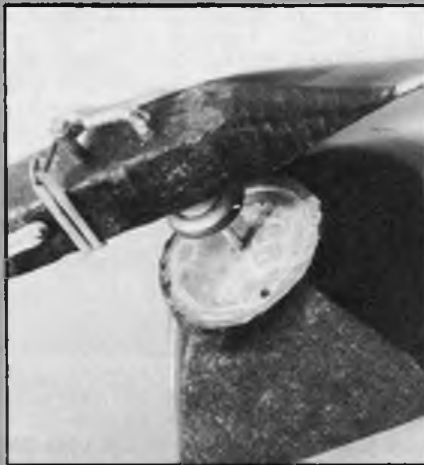
## Tailplane

Spar slots are best cut in the tailplane after the ribs have been fixed in place. Two

blocks of 1/2in. sq. pinned at the front of the spar line will help steady the straight edge for slot cutting. For the bottom spar I make a miniature T square to run along the L.E. and of a length to the front of the spar slot on a straight rib. This enables the front of the slot to be cut accurately and a piece of glass is used to mark the rear of the slot. The tailplane must be keyed in place and will need at least 1/16in. packing up to 1/8in. under the trailing edge.

## Propeller

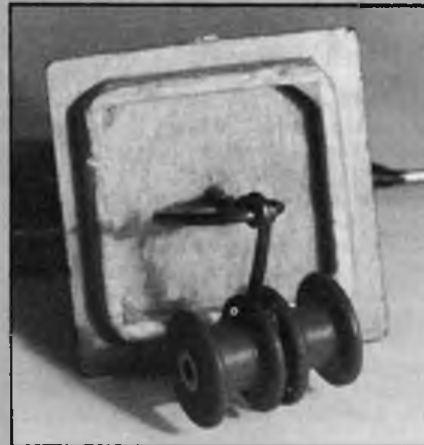
Prepare the prop hub with hinge plate lightly glued in place. This itself can be lightly glued to the prop block before carving. Put a wire through the shaft hole and make sure it is vertical to the base of the prop block and eyeball the hub to make sure it lies roughly along the centreline of the prop block. Carve the rear face and sand the mating edges of the hub and block. Now fit and cement the trailing edge hinge wire



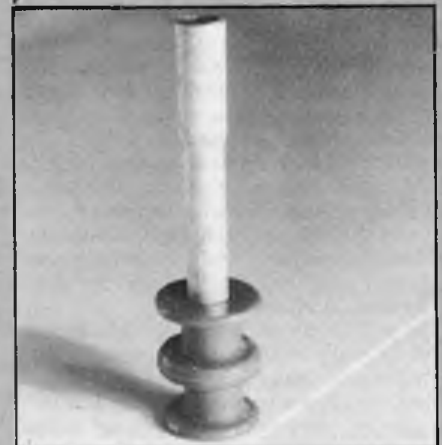
Above, 'Expendable' utilises a simple rubber band to ensure prop fold. Propeller assembly seen here in 'drive' position with the stop pin forward - held in place by 'L' shape at the end of the main drive shaft (with plenty of turns still left on motor).



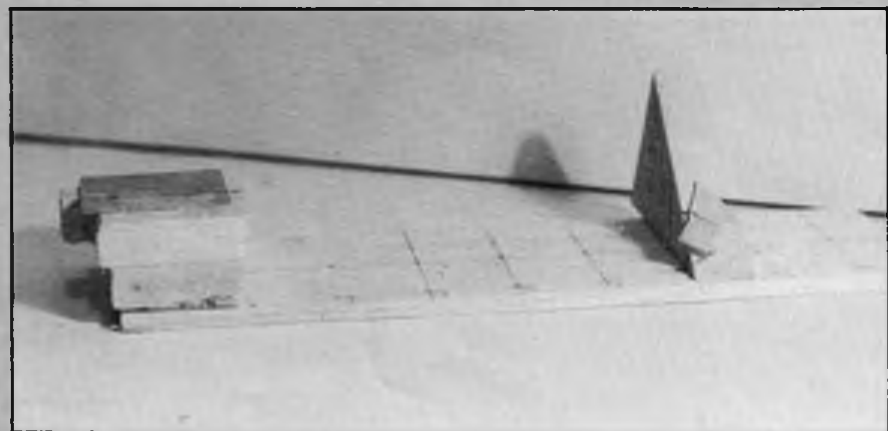
Above, propeller shaft in 'released' position - not sufficient turns left to force the 'L' bend against the stop pin. Stop pin itself now engaged in its hole in the nose block face plate, so determining the position of the folded propeller.



Above, rear view of nose block; the double bobbins are made from turned or sanded down Kell Kraft standard red plastic bobbins.



Above, John uses arrow shafts as rear motor pegs; these have wrappings of paper (well cemented) to act as bobbin centralisers.



Above, very simple jig used for assembling moulded or shaped propeller blades to the hub. Just visible is the hole in the block to the left to accept prop shaft - ensure this hole is drilled vertically!

followed by the front edge wire but not the washer. Cut the tacking between the blade and hub and gently fold back the blade. Assemble this to the nose block and fuselage and check that the blade block lies in the lines of the fuselage in the back flat position.

I do this on the port top side to favour a right glide turn and the other top side to favour a left glide turn. If the blade block appears to trail behind the line of the fuselage with the flattest fold, the forward skew angle on the hub needs increasing and vice versa. The lightly cemented parts will come apart easily. Trim the hub and reassemble, but do allow the glue to dry. It helps to have another job going at the same time. When the angles are right, epoxy the hinge plate in place, tack cement blade to hub again, leave out the wires and finish the top side of the blade. Blend the root and hub, cement or cyano the wires in place and bind these and the hinge plate. Add the washer on the forward side of the hinge wire and lightly solder. Hold the work above the iron to save soldering the wire to the tube. Finally, cut the tack cementing.

To make the balance weight I tightly wrap four or five layers of paper round a pencil and bind with thread. Then the pencil is withdrawn to leave a 3/4in. deep socket. This rig is then fixed in the vice, socket upwards. Then I melt up lead or solder in a tin can with a pouring spout bent in on a camping stove. For a handle I use a large 'G' clamp. Then, with one hand, I hold the balance wire central and vertical in the socket and pour the lead with the other. A piece of hardboard protects the floor below and allows recovery of spilt lead. It's a little easier to do this with the balance wire separate from the prop - in which case fix it lightly in place and check for balance. Initially aim for a weight that's too heavy and, if this isn't the case, repeat the process with a deeper socket. Then the wire can be secured, the blade finished and all fittings added before finally balancing with a file and a bit of judicious wire bending in the plane of the disc. In fact, for best balance, it's best to re-check with the whole prop shaft and noseblock finished and the shaft in the drive position.

The prop stop system shown uses a rubber band in place of the conventional spring; tightening the band causes the prop to fold earlier. As shown on the drawing, the stop pin releases the drive completely so tension

turns are required on the motor, about 50-60 turns on each half of a 12 strand 41 inch motor. By leaving the front of the stop pin longer, no motor release occurs and no tension turns are required though the tension of the stop pin band will need careful adjustment to get the motor knots even. It's easy enough to have one of each pin. By the way, the stop pin will ride over a close tolerance hole in the nose block so open it out till it goes in every time.

### Assembly and trimming

At this stage add the tailplane and fins then loosely band the wing on the mount so that the model balances about 3/4in. in front of the T.E. Make keys from 3/32in. sheet and fix under the leading edge. Make sure the wing isn't skewed and repeat at the T.E. Cut two lengths of carpet thread or similar and make a loop in one end. Engage one loop on the fuselage hook and thread the other through the tube in the wing. Draw taut using the template and fix with a blob of cement at the top of the tube. Repeat at the other side but don't pull out the dihedral. Cut the threads leaving 1/2in. proud and cement this along the line of the rib.

The model is now ready for trimming; 3/32in. side thrust is a good starting point. I normally try for a left glide but if the model inclines right from the hard glide then I stick to that. Packing out the T.E. of the fins can be used to tighten or open up the circle. A right-gliding model usually requires extra downthrust while a left-gliding model will, more likely, need extra side thrust.

### Extensions

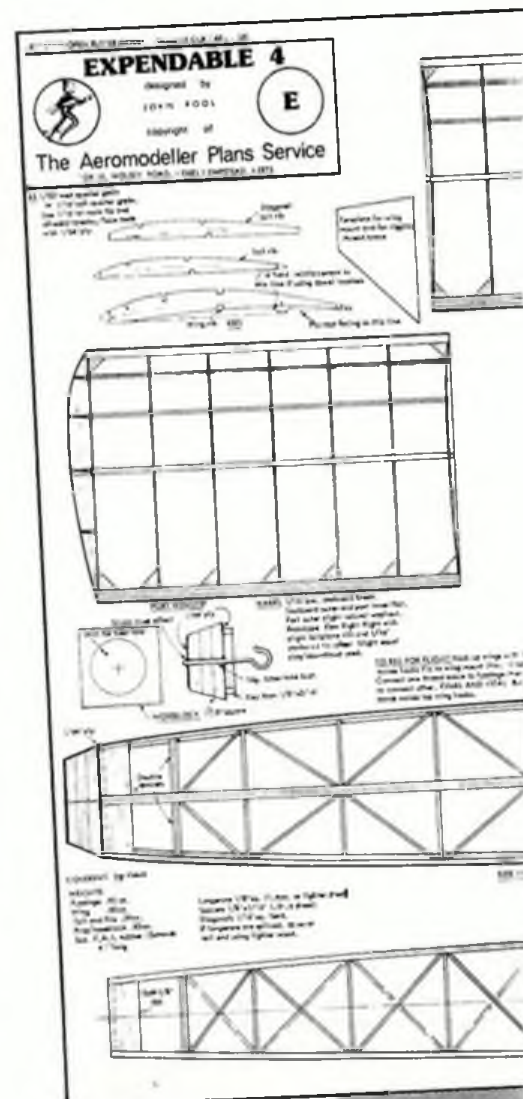
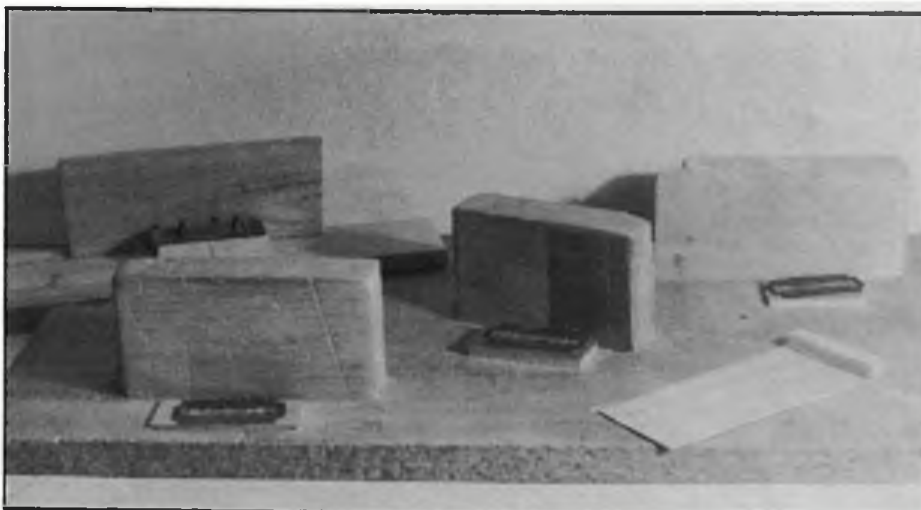
The design is Extendable. Version now flying has three extra bays built into the parallel part of the fuselage giving an approximately 37 in motor section to use 4oz or 4 1/2oz motors. This can be done on the plan. I suggest pinning two parallel 'rails' of something like 1/4in x 1/2" material coincident with the parallel section of the fuselage and extending at least another 6in to the front. Make sure these are parallel by using a 2 1/2in wide bit of scrap sheet as a spacer when pinning the second "rail" in place. Place the longerons as usual and build up the two sides from the nose back to the rear of the parallel section. Then slide the whole thing forward three bays and build up the rear. The parallel section will now be 12in rather

than 6in long.

Set up the finished sides to complete the whole centre section first then slide as required to complete the fuselage. The plan needs some anti-stick treatment first. I use candle wax. With this fuselage the wing TE falls about 20in back and this is the point to strengthen for hand hold. Intended for good weather, lighter wood was used and the fuselage with back peg came out at 0.85oz. Wing plan was extended two bays on each side to produce a straight dihedral 46in span wing. Each alternate rib was cut out behind the main spar and warren girder diagonals substituted. This wing scaled at 0.8oz. Model flies with similar, in fact originally the same tailplane and prop unit. An extra 15 inches added to the small wing will produce the wing that I use on my fly-off model. The fuselage for this requires four extra bays and cross section reducing to 2 1/4in. by putting 1/8in. packing inside each 'rail' and working to the fuselage tapers that then emerge. Tailplane span needs to be 24in. and fins lengthened by about 1in. My fly-off model uses a two blade prop identical to that on 'Never Forget' (*Aeromodeller*, March 1980) and 4 1/2oz 12 strand FAI rubber.

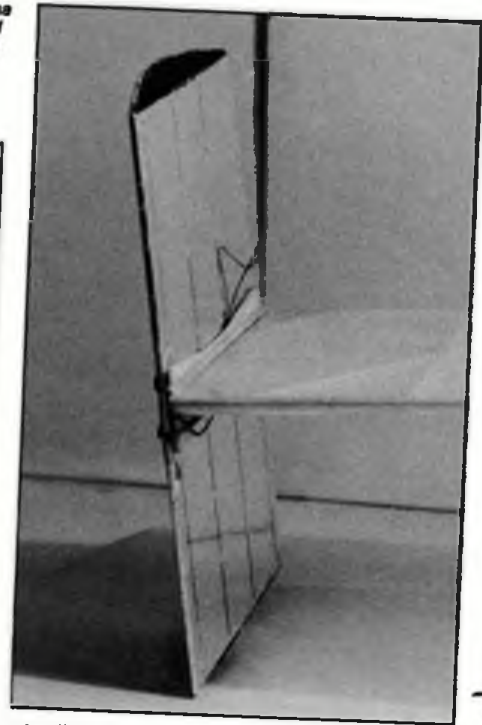
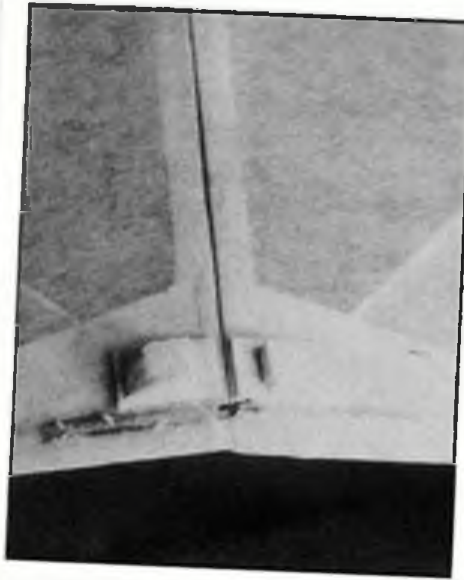
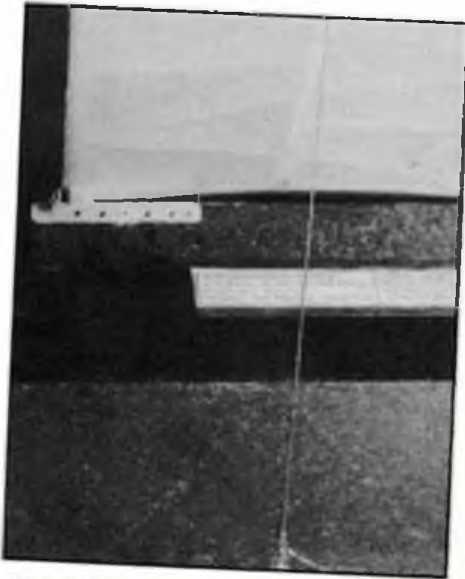
Kenneth Attiwell has polyhedral versions of the small and middle size model flying with 2 3/4in. square fuselage; I have a 44in. straight wing variant of the smaller model. I don't see any particular advantage in straight wings but they do pack more closely and adapt to the lightweight wing boards which I now prefer to anti-warp wing structures.

Below, a selection of useful strippers! John believes in having one for each size of wood strip needed. Blades are simply stuck to appropriate sizes of sheet with super glue or quick-set epoxy - saves pounds on your wood bill and also enables you to be more selective with your choice of timber.



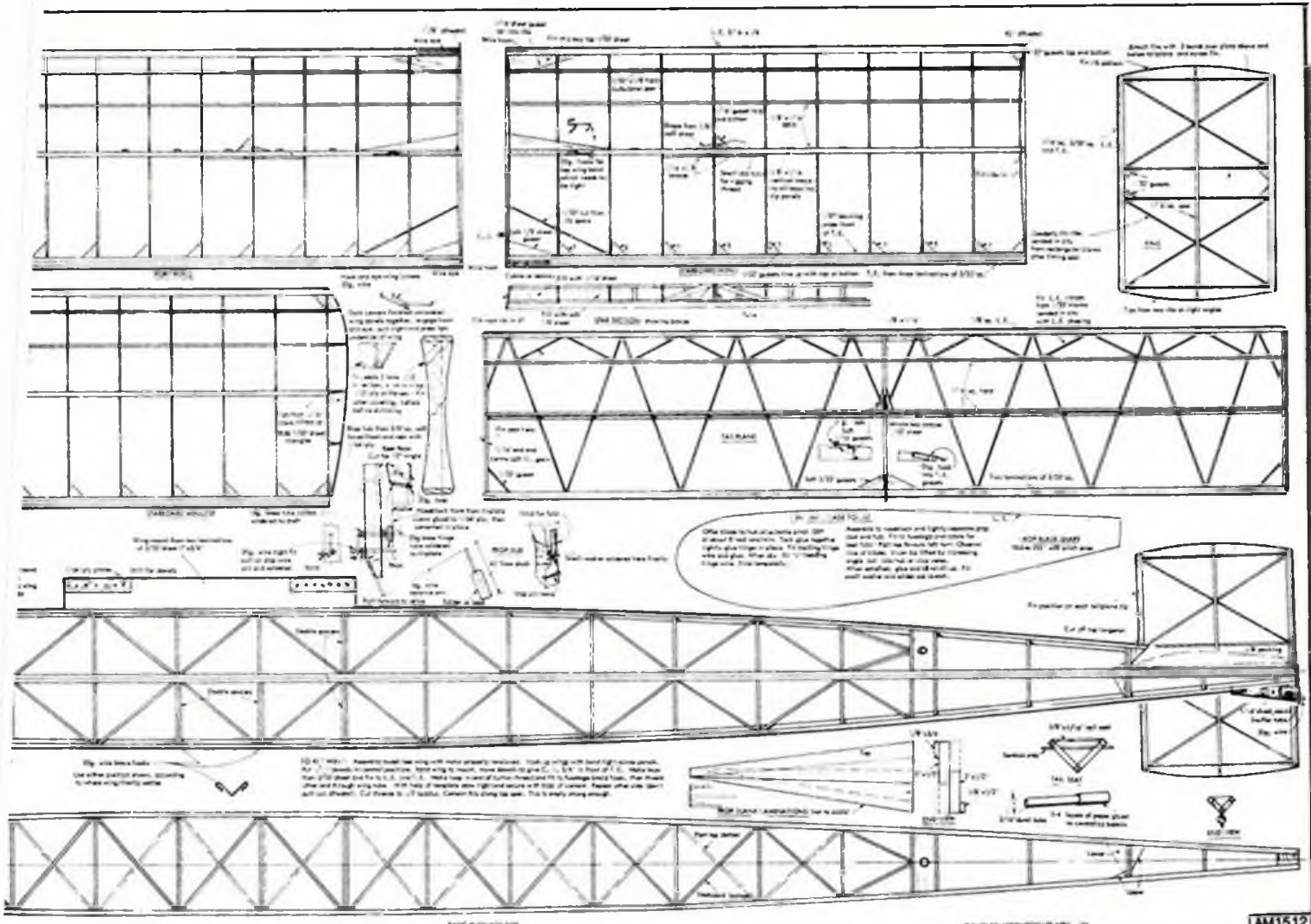
Below, wing fitted to pylon and wing braced by single thread line to fuselage. This does not seem much of a brace but you will be surprised at the gain...

Below, underside of wing trailing edge; note balsa 'keys' to ensure alignment of wings on pylon and small 'hook and eye' to hold the two wing halves together - all is repeated at the leading edge.



Above far right, tailplane end plate and fin fixing - note thread to retain fin in case of unlikely separation on landing.

Below, full-size copies of this 1/4 scale drawing may be obtained from Aeromodeller Plans Service P.O. Box 35 Wolsey House, Wolsey Road, Hemel Hempstead Herts HP2 4SS Price £3:00 plus 50p postage (overseas postage 90p). Please quote AM1512.

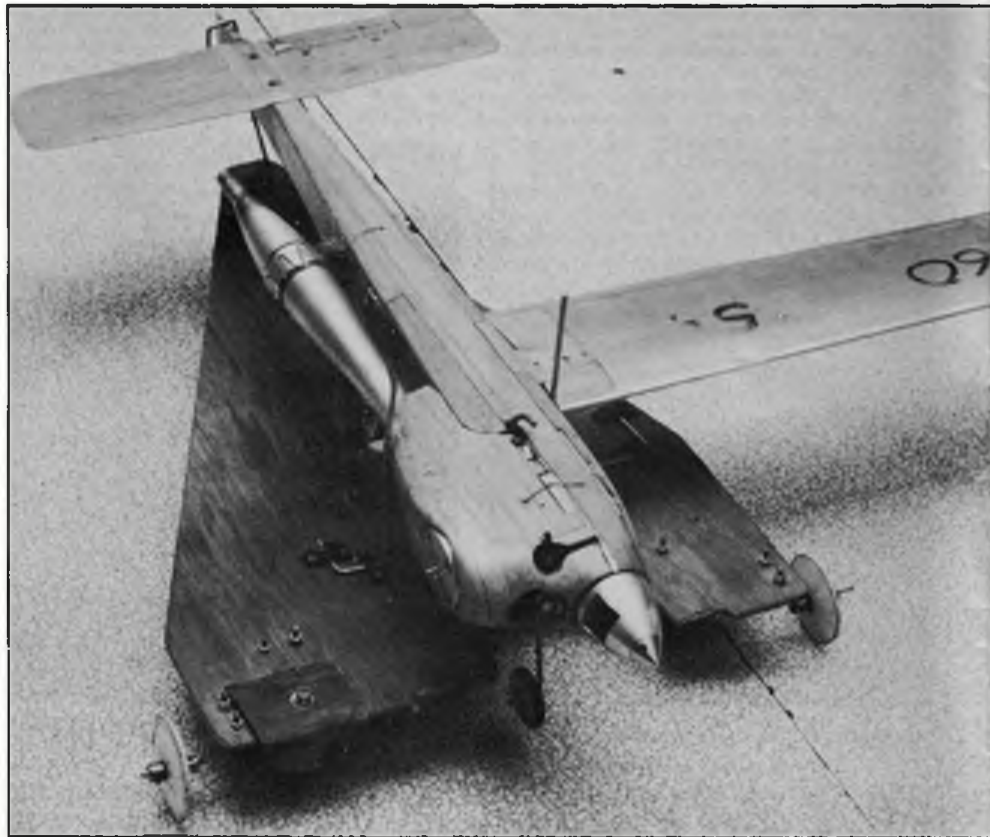


Often think that the prospect of having to build a dolly puts off more people from trying Speed flying than just about anything else. Looking like an overgrown Chinese wire puzzle on wheels, they can be downright malignant devices that defy all efforts to make them behave. A newcomer usually has all sorts of trouble and asking experienced flyers frequently doesn't help - many will freely admit that they don't know what makes a dolly work, and are content to rely on an old and battered example that has been tamed by trial and error over a period of years. This is an expensive and frustrating procedure and, in fact, satisfactory behaviour can be obtained by the application of a few simple measures, as follows:-

- 1) Get the CG right
- 2) Use non-gripping wheels
- 3) Support the model securely
- 4) Pre-flight checks

Starting with 1), the CG of the combined model and dolly will normally fall near the centre line/thrust line and some distance aft of the CG of the model on its own. When the wires are also attached, this aggregate CG shifts substantially inboard. The right place for the aggregate CG is outboard of the thrust line and in line with the flying wire

*Right, speed dollies often require complex wire bending and lots of soldering. Accurate alignment is difficult to achieve with such construction - Dick's dolly, built around a ply chassis, overcomes all these problems.*



# Hello Dolly!

**Speed dollies are often thought of as a 'black art' — Dick McGladdery shows you how to build a no-nonsense, reliable launch pad!**

leadouts and model CG. Arranged thus, the model/dolly will not snap into the circle on release - this is one of the commonest behaviour problems encountered with a high powered model; with the medium and low power, it's possible to counter the inswing tendency by pulling or whipping, but this demands a bit of experience before the trick can be performed reliably. With high power, the inswing is so rapid, nobody will catch it in time.

As regards 2), wheels are commonly seen as the principal means of guiding the dolly, but in fact force and mass are much more powerful. There also seems to be a hazy notion that a vehicle that is adjusted to track straight will somehow allow itself to be dragged into a tight circular path without generating prodigious drag and fighting with every erg of its adhesion to get back to a straight course. For this reason, the best solution is to select a wheel with as little adhesion as possible and nylon 'streamline' pattern wheels are ideal in this respect. Also, they are cheap. Some people do use balloon wheels, but these can cause disastrous problems, simply because they grip.

Model/motor setups that develop only low power in the take-off sequence can find it difficult to attain flying speed, and may

never make it in extreme cases. The marginal situation is most dangerous, with the model bouncing around on its supports, liable to flop out or get tangled up with the dolly and end up in a sprawled heap. At the opposite end of the scale I have seen many a powerful model accelerate like a rocket after release but the dolly dragged itself from under before flying speed was reached, dumping the model on the tarmac with the obvious consequences. So, my advice is to use nylon streamline wheels; they may not look as good as a natty set of balloon wheels, but you'll have none of the problems of unnecessary adhesion and unwanted drag.

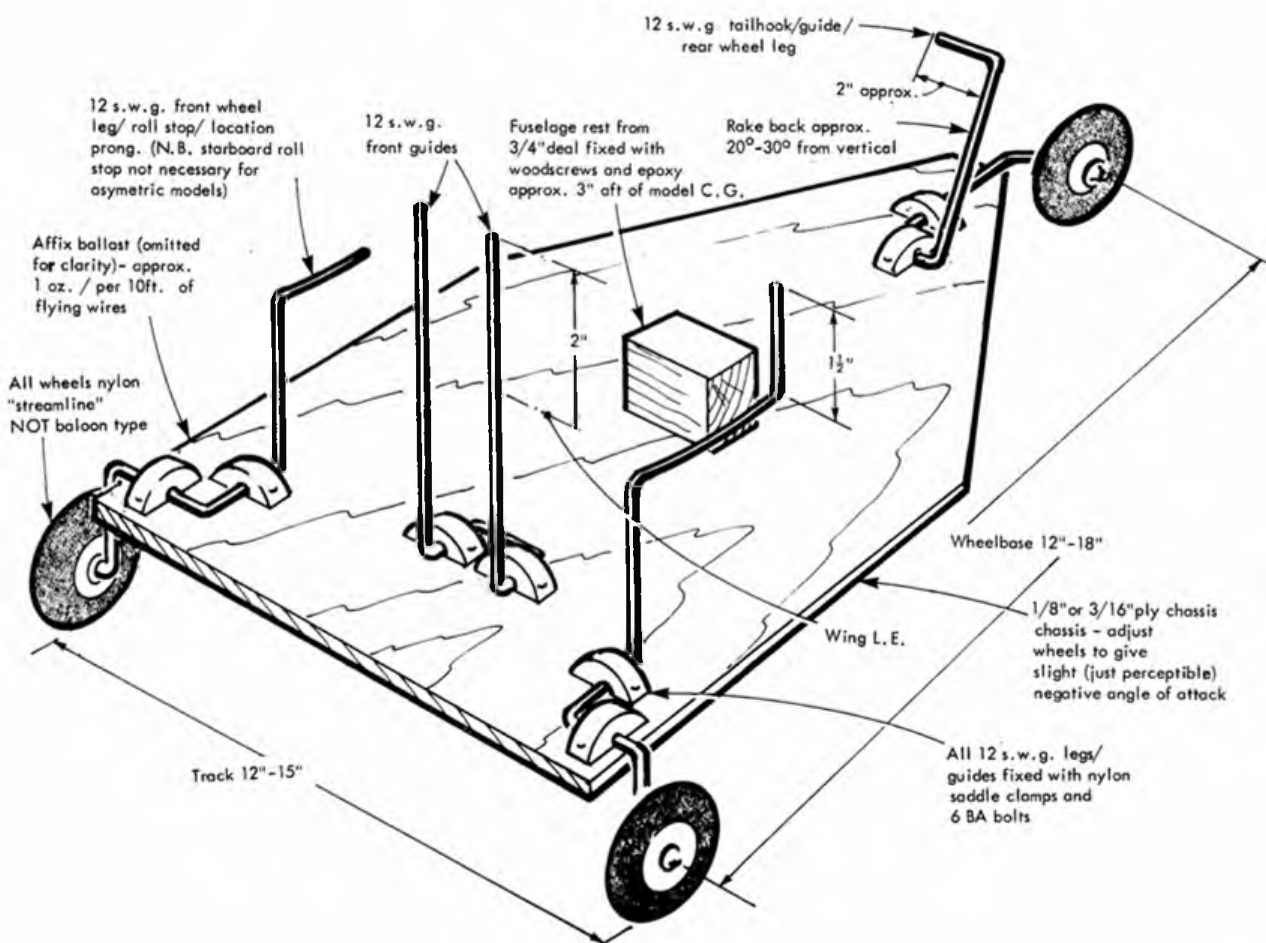
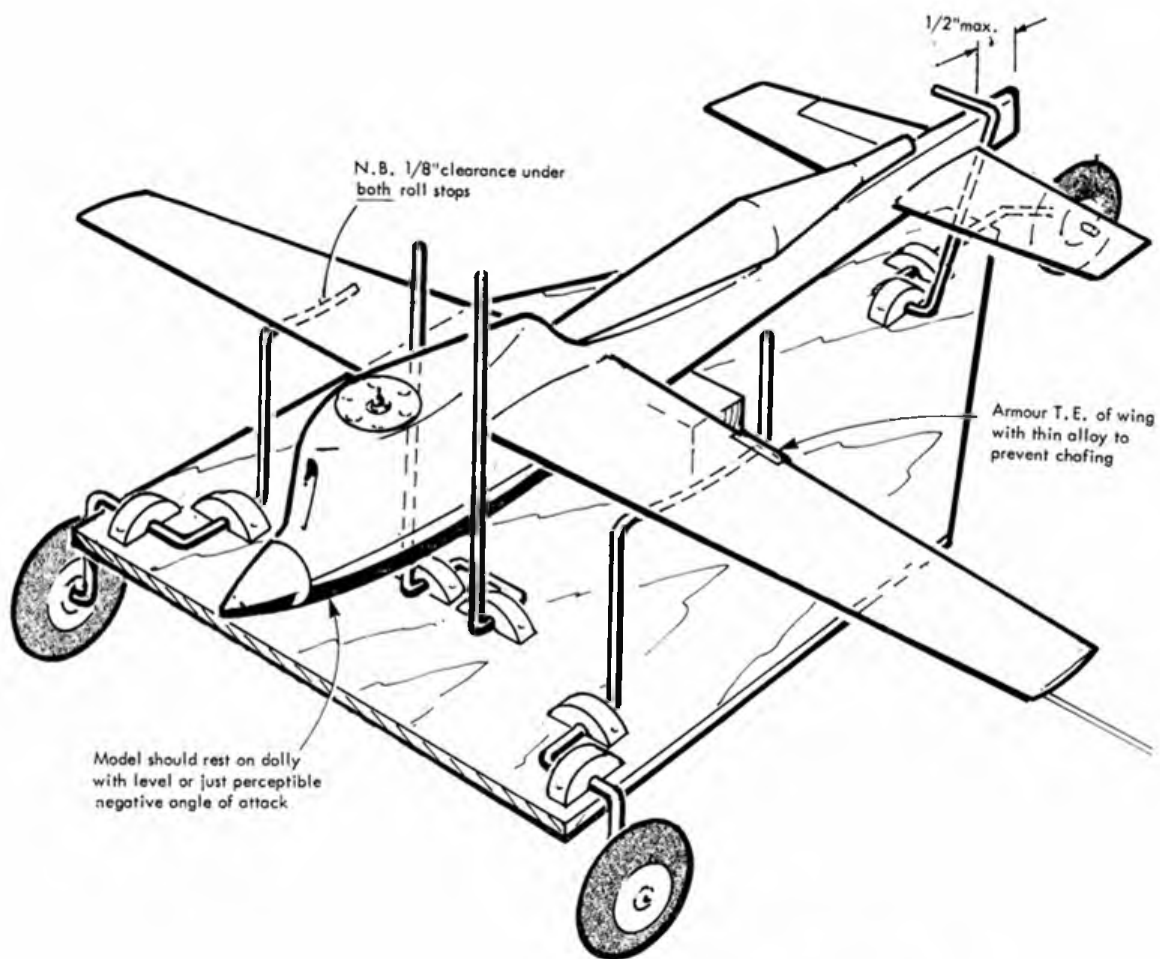
Moving on to the matter of supporting the model, by which I mean location in the roll, yaw and pitch planes as well as sitting it on something, what follows applies to 'lay in' type dollies. I dislike the 'ratrap' type for sundry reasons, the principal one being that I consider hurling a bundle of spiky wire at people to be anti-social, if not dangerous. The 'lay-in' type can work fine with proper arrangement, but I can't claim that it will work with a high powered snorter because I haven't tried my present system on such an animal.

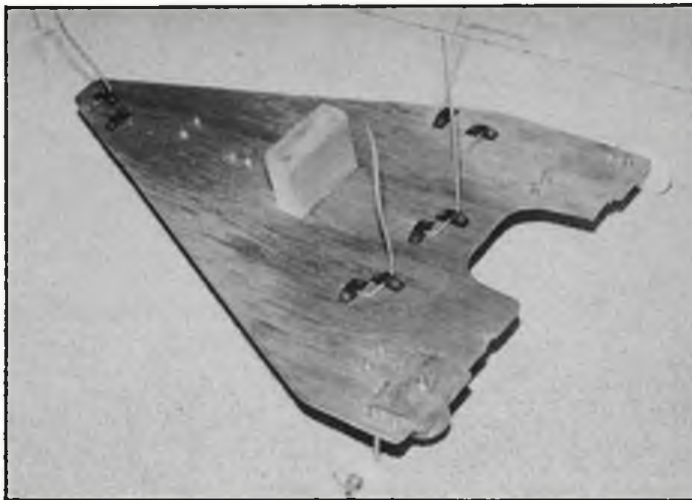
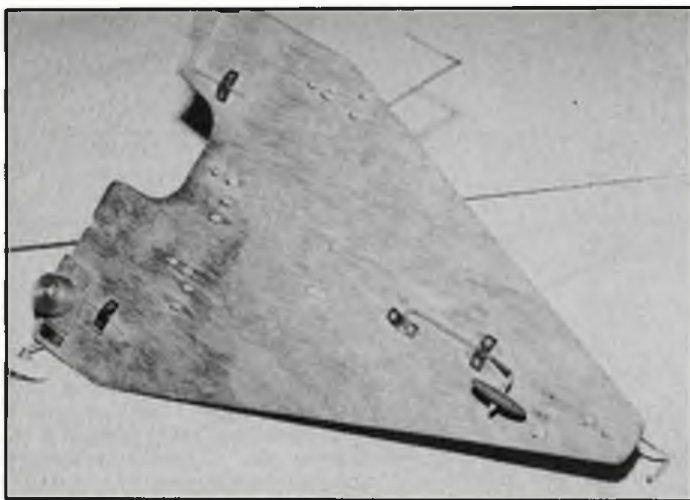
The common mistake with lay-in dollies is to provide too many supports and guides and often to put them in the wrong place.

Using things like the wing as a lever, the torque of the motor can wind the model out the dolly quick as a wink - the trick is to position the support points sufficiently far away from the powerplant that the leverage overcomes the torque effect. My current system employs as few vertical guides as possible to keep the model in line and in position on the dolly in the horizontal plane, then support the model with similar economy but in a 'cantilever' fashion.

The fuselage rests on a support block sited some distance behind the model CG., the natural tendency would be for the nose to pitch down, but this is prevented by a hook over the extreme end of the model, which turns it into a cantilever, with leverage pressing the model down onto the rest block. I have found that if the rest block is placed some 3 inches behind the model CG, it is sufficient to control a quite powerful model/motor, but for the snorter mentioned earlier I would not be surprised if I found it necessary to move the rest block further aft to increase the leverage effect.

Lastly, the model needs to be controlled in the roll plane. Due to both pull on the wires and the torque of the motor, only the inboard wing rest has any real work to do. With an asymmetric model, there's no outboard wing to support and, as the CG normally lies





Above, underside view of the dolly - some wire bending is needed but all bands are simple and easy to repeat if an error is made first time.

Above, topside view only emphasises the simplicity; note ballast weight fixed at outside front corner and use of nylon wheels - do not use balloon tyres!

an inch or so inboard of the thrustline, the model will lie quite happily in position, even without flying wires attached so no outboard support is needed. With a symmetrical model, at rest it may tend to drop its outboard wing if tipweight is installed but when the wires are attached and held taught the inboard wing will be pulled against its roll stop. If you must fit an outboard roll stop (and I strongly recommend you do not), make sure that the two roll stops together do not help support the weight of the model because this will destroy the benefit of the primary cantilever support system.

Laid in the dolly, there should be about  $\frac{1}{4}$  in. clearance under either wing when the other is resting on its roll stop. The consequences of locating supports and roll stops too close to the powerplant can occasion some really spectacular misbehaviour; again it's the higher powered models that exhibit these delinquent habits, typical of which are tendencies to flip-roll out of the dolly towards the circle centre and make a forlorn attempt at imitating a helicopter doing a wing over, or climb up the front guides and get tangled up with the dolly, ultimately trying the helicopter bit again or sprawling in an ignominious howling heap on the tarmac.

Last, you can save yourself much grief by performing some checks before trying a dolly for the first time. First, the model should lift out cleanly and easily without snagging on fuel needles, tank vents, tailskids and, most important, the tailhook; this must be positioned no more than  $\frac{1}{2}$  in. from the extreme end of the fuselage, otherwise it will not disengage quickly enough for satisfactory separation. Next, place the model in the dolly and, gripping lightly but firmly, twist it about in the

horizontal plane to discover whether the guides perform their job of keeping the dolly reasonably aligned with the model. Some displacement due to flexing of guides is permissible but it is vital that the tailhook stays engaged.

If too much flex, stiffen up guides with struts or braces. Then check that you have not forgotten to attach the ballast near the front outboard wheel; generally speaking you cannot have too much of this good thing, but don't go mad. For want of a better guide, I suggest 1 ounce per 10 feet of flying wire length located 6:9 in outboard of the thrustline/centre line. It would probably be possible to reduce this as experience is accumulated but very high powered models might want even more for completely foolproof handling.

Another important check is to see how the model/dolly tracks; I generally adjust for a straight roll path, in common with most other flyers. Lastly, test the security of the model in the dolly. With the engine running and set for take-off holding onto the dolly with one hand or tethering it somehow, and keeping the model pressed in with your other hand, gradually relax restraint with the latter, and watching carefully for any tendency climb out, completely release the model, but keep your hand close just in case. If all seems O.K., the only thing left is to try it for real.

For those still put off by the problems of accurately bending, cutting, binding and soldering all the piano wire together, the accompanying sketches show a much simpler method of construction well within any modeller's capabilities. This was devised to complement a speed trainer model for 15-21 motors which may be featured in a future *Aeromodeller* when I'm satisfied with it. Though not ultimately as

tough as a wire dolly, it has already served in dozens of take-offs without mishap and seems likely to last for years. The construction lends itself to easy adaptation to accommodate a variety or succession of different models, easy dismantling for transport if desired and does not require a degree in trigonometry to build it.

The layout is conventional 'reverse trike', roughly symmetrical with a track, in my case, of 12in. and wheelbase the same or longer. The tailwheel can be offset inboard or outboard of the centreline according to convenience or choice; it has nil influence on steering except at very low speed. No struts or braces are shown on the sketches, but the inboard front guide and roll stop/guide have heavy duty to perform and might need stiffening. The cantilever support system is illustrated and, provided the preceding advice is followed, success should be assured. Finally, some hints on operation might be helpful.

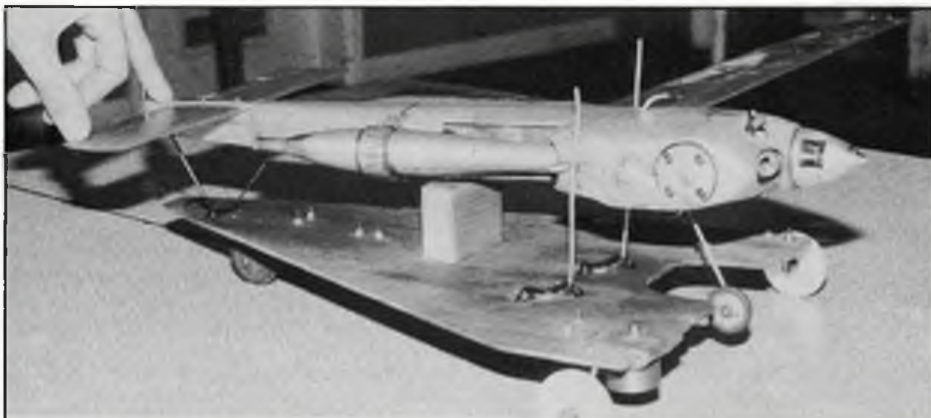
Pre-arrange a signal for release with your mechanic and don't give it until you are satisfied that the engine is running evenly. Hold the handle with your arm outstretched and body and legs turned ready to start walking around the pylon. Keep the lines taut but don't pull, and with slight 'down' elevator on, signal for release.

As the model starts to move lead it with your flying hand and start walking in a circle around the pylon (or circle centre) - if an inswing does occur it will be immediately after release, and if you are already moving, taking up the slack and pulling it straight will be much easier. Try not to yank it in panic, as this might result in a whiplash effect which could dislodge the model. Assuming you get past this critical moment, let the model gather some speed then, still walking, feed in some 'up' elevator and when it's ready the model will rotate from the slight negative to positive angle of attack and lift itself out.

With a rapidly accelerating model, start changing from 'down' to 'up' elevator almost immediately but do it deliberately and only increase the 'up' if unstick still hasn't happened after a quarter of a lap. Once clear of the dolly, level off as soon as possible consistent with smooth, deliberate control and your adrenalin level. Speed models do not like flying high, and it's very easy to get into a wingover if you come out of the dolly too steeply.

All you have to do now is find the pylon, help the model up to full whack and get your hand in the yoke. If there are any lingering doubts come along to any of the SMAE centralised or Speedcom Bicester meetings and get me or someone else to check things over - we'll be happy to help in any way we can.

Below, the model in position for a few pre-flight checks prior to the real moment of truth! The reason for the cut-out at the front of the ply plate is now apparent - this model also sports a mono-wheel undercarriage...



# FROM THE HANDLE

## CONTROL LINE NEWS

### Speed with Dick McGladdery

We have no fewer than ten Speed meetings arranged this year - surely enough to satisfy the most ardent contest flyer. These are: **April 20th Bicester\***; **May 11th Barkston\***; **June 8th Three Sisters\***; **June 22nd Bicester**; **June 28/29th Three Sisters**; **July 13th Bicester**; **July 27th Three Sisters**; **August 23-25th Barkston (NATS)**; **September 28th Bicester\***; and **October 12th Hullavington\***. (\*SMAE Centralised Meetings)

We hope this year to attract more than the usual dozen entries per meeting and it might help to foster interest if more people knew what goes on at a typical meeting and especially more exact details of the locations of the venues.

Bicester is a very popular venue. The site is actually 'The Old Army Parade Ground' on the North East outskirts of the village of Piddington (yes, really!) which is south of the A41 some 5 miles south of Bicester. Meetings here are strictly Speed only, due to the restricted area of tarmac and we prefer to try to avoid over-using the site, restricting meetings to four or five per year. So far there have been no noise complaints - and we don't want any.

Barkston Heath should be well-known as the usual site for the Nationals, but, briefly, it is an RAF 'drome to the North East of Grantham. The May event here is an SMAE Centralised one, so there's T/R, Combat and Aerobatics as well, and the usual access is via an unmanned pole on the road that flanks the east side of the 'drome, close to the area where the flying takes place.

Hullavington is similar, but security is much more stringent. Situated just north of the M4 at junction 17, entry is normally via the main station entrance only. All visitors must stop at the guardroom and produce their SMAE membership cards. A pass is issued which must be returned on departure. It is important to maintain good relations with the RAF, hence it is essential to co-operate fully with the duty staff and treat the place with the utmost consideration.

Three Sisters is one of the very few purpose built C/L sites in the country. It has two circles, one of which has a permanent chainlink cage and is big enough to comfortably accommodate the largest classes with their longer lines. The other circle is presently FAI size, with a grassed inner ring but plans are in hand to extend it and tarmac over the grass. There is a large car park, toilets with washing facilities and even a cafe. It is situated near Bryn, Cheshire on the east side of the M6, reached via junction 25 (northbound) or junction 24 (southbound).

A typical speed meeting starts around 11am and continues to 6pm with an hour for lunch (1-2pm). All competitors are required to do a share of the timekeeping, etc., duties and the normal procedure as regards flying is to maintain a flying list; an entrant may have his name down to fly only once at any time and can only re-enlist for a further attempt/flight when he has used a previously booked turn. The weather has a strong influence on flying activity because Speed models are rather more sensitive to wind, etc., than T/R models for instance, so flyers tend to play the waiting game in adverse conditions. There are some 12 classes of Speed models, including this year a new provisional 'Novice Midge' class, but all compete against each other on a handicap based on the prevailing National records; an entrant's speed is expressed as a percentage of the appropriate record with placings decided accordingly. The current class records are:-

- Class I Open 049 102.15 mph
- Class II Open 09 135.58 mph
- Class III Open 15 183.36 mph
- Class IV FAI 164.25 mph
- Class V Open 29 185.00 mph
- Class VI Open 40 187.20 mph
- Class VII Open 60 201.35 mph
- Class VIII Formula 40 172.74 mph
- Class IX Novice 21 153.43 mph
- Provisional Formula 21 167.94 mph
- Provisional Novice Midge 80.00 mph

The records for Classes V and VI are arbitrary records set by the speed committee when the rules had to be stiffened up for

safety reasons; the Novice Midge record is also arbitrary selected as something of a carrot to foster enthusiasm, but I suspect the punters may find the pylon prevents attainment of some of the higher speeds we heard about last year. Midge flyers should also note there is a 3 minute start rule and a 40G pull test; having seen a genuine Midge plan, I have my doubts about the ability of the bellcrank shown on the drawing to withstand the 15-20lbs pull that the test requires - hope you'll all have the sense to put something stronger in.

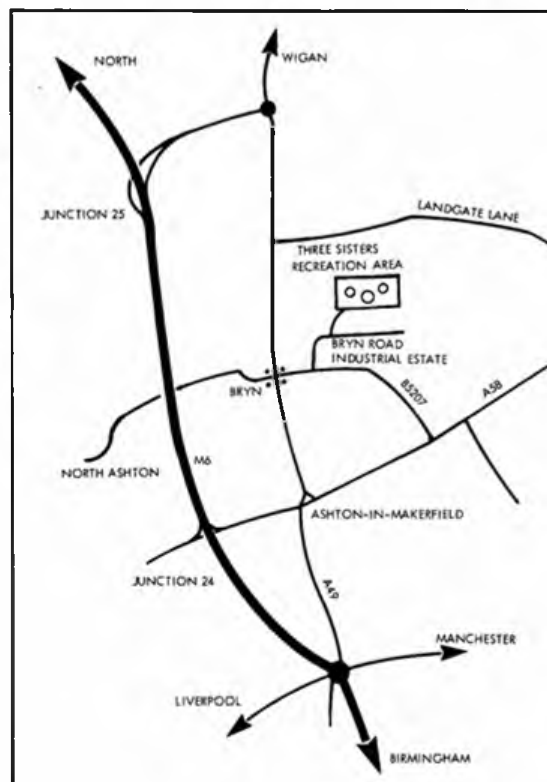
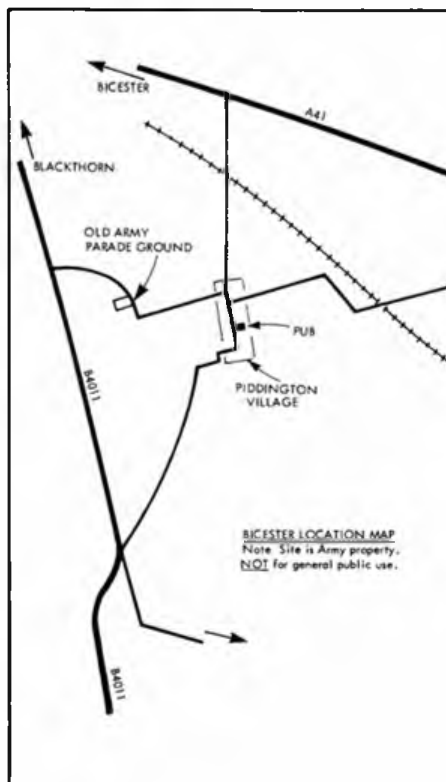
Fingers crossed for good weather and we hope to see positive swarms of eager young Speed flyers in '86.

### Combat with John James

One of the reasons people are not flying FAI Combat these days is because of the number of models they need to build and the time it can take to build them. One of the ways of curing the problem is to fly more combat and learn how to avoid crashes - well, some of the crashes anyway. Another way to make the exercise a little easier is by firstly building stronger models which will not be so easily damaged in a crash and secondly by making the model simpler and quicker to build so you can build more models in the same period of time.

Here is how to produce what I have found to be an extremely strong and yet simple centre rib. This is my version although credit must go to the Danes who produced the original version.

The main part of the rib consists of two lengths of 1/8 x 1/2 spruce separated by a piece of 1/2in balsa. I normally buy a 3in sheet of balsa and strip it across the grain in amounts of 7/8in. If you add together 7/8in



plus two amounts of 1/8in you will get 1 1/8in which is the bearer width for quite a few 2.5cc glows. The next job is to cut the front spar which is 1/16 ply, 9in long and 7/8in wide.

Using white PVA glue, glue the two spruce strips to the balsa, overhanging the spruce by 1/16in at the front, see **diagram 1**. I use the ply spar to measure the 1/16 overlap.

Check that the rib is flat before the glue dries. Once the glue is dry, join the back of the centre rib holding it with bulldog clips. Try and ensure that the back of the rib is straight, see **diagram 2**.

Next, drill the rib for the bellcrank mount. The simplest mount to use is a 6 B.A. bolt. If the holes are drilled 3/32in the bolt will be a tight fit and some epoxy around the head will stop it working loose. See **diagram 3** for the method of spacing the bellcrank. Do not forget that an FAI Combat model must have a wire connecting the motor to the bellcrank mount.

Now glue on the front spar ensuring it is at right angles to the centre rib. The overhanging spruce should be a snug fit on the spar. I always add the engine bearers at this stage although some people prefer to put them on when the model is finished. I feel you can be more accurate, and therefore stronger, adding the bearers now rather than leaving them until virtually the last job. My bearers are made from half inch by three eighths inch hardwood glued to a piece of 1/16 plywood with the grain on the plywood vertical rather than horizontal. See **diagram 4**. I use epoxy for the bearer construction and for gluing the pod to the centre rib. Now that you have the centre of a Combat model all you need is to add a set of wings and away you go.

The team for this year's World Championships has now been announced and Neil Gill of Peterborough, Mervyn Jones of Wharfedale and John James of Sheffield are the team members. This is Neil's fourth appearance in the team in the last five years which is quite a consistent performance considering the fierce competition for a team place.

## Racing with Jim Woodside

### Keep it clean

Windy and wet weather had kept me away from my local field, where I fly my R/C Vintage models. However, this last early December's Sunday was fine so off I went with the Junior 60 under my arm. The first two flights were plagued by erratic throttle response as my Saito 30 - normally a paragon of virtue as regards reliability. In true T.R. fashion both carb needles were removed and the carb flushed clean by forcing fuel through from the tank. With the needles set back to their usual position, everything was back to its usual happy state.

Now, we do not have the complications of throttles in T.R.; also the engine is set to suit the conditions at the time of the race. However, we all suffer from wrong settings even after apparently good practice

sessions. Often these can be traced to foreign bodies in the fuel system although it is my impression that this problem is less present as the season progresses. Are those little globules of hard castor which beset my Saito now flushed away?

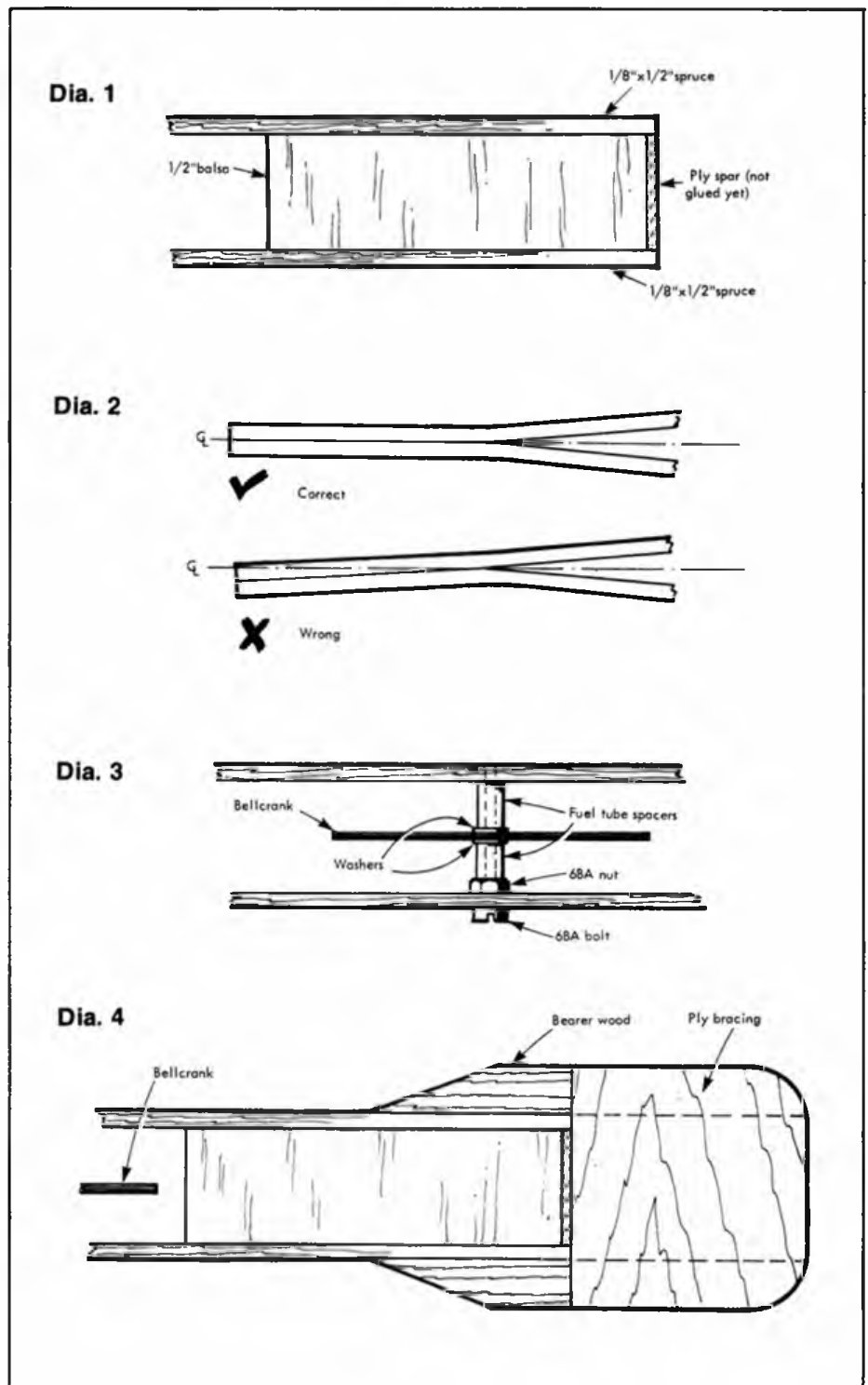
The message seems clear. Now is the time, before the season starts to clean out tanks with a solvent. Filler valves should be disassembled, cleaned in ether, oiled and re-assembled. The use of an automobile petrol filter in the line from your pressure bottle to finger valve is a wise move in that it cleans fuel at the last moment before reaching the model.

During the day it is good practice to keep

the model clean externally and kept away from the ingress of dust by wrapping the valve stem and exhaust slot in a clean rag. I habitually keep my models in their travelling case when not actually in use. The old adage has it that cleanliness is next to Godliness; perhaps overstating our case but clean equipment will pay you dividends in more trouble-free races.

### SMAE Open Class Goodyear — Rule changes for 1986

The SMAE is casting a very critical eye over all aspects of safety in the light of an alarming increase in insurance claims from





ALL branches of the hobby. Open G.Y. has witnessed a great increase in performance along with an increase in weight by those teams who use fuel tanks of over 100cc capacity in order to pursue the 'click and flick' race technique. A move to impose a small tank rule failed at Council, hence the introduction under the safety clause of heavier gauge lines.

4.7.4.2(l) change 0.3mm (0.0118) to 0.35mm (0.0138)

A further proposal is to be presented to Council to limit the maximum weight of open class models to 600 gms - again under the blanket safety rules. By the time you read this, the changes should be resolved so you are advised to check with the SMAE for confirmation. By the way, these rules apply only to open Goodyear and *not* the simpler Class II GY models.

## FAI Control Line Meetings in 1986

### Open International Meetings

June 14/15 Utrecht, Holland

August 15/16th Verviers, Belgium

September 14 Coppa d'Oro, Italy

September 20/21 Bochum, Germany

October 4/5 European Cup Utrecht, Holland.

World C/L Championships at Pecs, Hungary. 30th July - 4th August 1986.

## 1986 SMAE Contest Calendar

The C.L. Sub-Committee are offering a generous measure of competitions in 1986. Details of entry fees have yet to be finalised but are likely to be: Single event; pre-entry £4. Season ticket per head £12. Considering the abolition of the contentious competition licence both casual and regular competitor are onto a bargain price.

Date	Event	Location	Classes
April 6	1st Centralised	Three Sisters	F2C G.Y.
May 11	2nd Centralised	Barkaton Heath	F2C 1/2A, B
June 8	3rd Centralised	Three Sisters	F2C, 1/2A
July 27	4th Centralised	Three Sisters	F2C, G.Y.
August 23, 24, 25	Nationals	Barkaton Heath	All classes
September 28	5th Centralised	Three Sisters	F2C, mini GY.
October 12	6th Centralised	Hullavington	F2C, 1/2A,B,GY

## Vintage Racing Meeting

Dave Campbell of the Grantham Club has fixed the 4th May at Barkston Heath for the first SAM Vintage C.L. meeting. The events on offer will be 1958 rule classes "A" and "B" plus Midge Speed. Details from Dave on Hinckley (0455) 611724.

## Review of the 1985 racing season

Regular readers can hardly have failed to have noticed that the brief reports on 1985 contests all bemoaned the weather. Still, the season itself in some ways turned out to be a Vintage one. Some new records were set in our domestic classes and, best of all, Smith-Brown added the European crown to their World Championship.

As in the last couple of years I can only regretfully report that the slow but steady retirement of 'old hands' is slightly greater than the influx of 'new blood'. Seasoned campaigner Dick Wilson hung up his handle in favour of Club 20 Pylon, while, at

the same time, Malcolm Ross has again exited from F2C. However, the new grouping of Sladdin-Gardiner (Novos) should prove a competitive one as they already have a 3.33 to their credit.

In terms of model technology nothing really new came into view but a wide range of motors was to be seen in action. The flying wing is now almost universal in F2C with only Hill-Metcalf (SCLAMS) using conventional and pretty models to any effect. So far, though, no teams have translated the wing success into a 1/2A version. Not only have the models remained scale-like but some teams actually bother to paint and decorate as well! Don Haworth's high aspect ratio model has been requested by this magazine and so should appear some time this year.

Dave Clarkson and Ed Needham have worked on the fuel systems of their very competitive Open Goodyear models in order to pressure feed their 9mm carbs while still retaining quick restarts. The basis of their approach is a 100cc plus tank, which does not require re-filling in a heat race. Pit stops are thus only a re-opening of the shut-off and a flick of the prop. Over four ounces of fuel on board at speeds of over 100mph has, on occasions, strained the FAI size lines too much with the loss of the complete model to F.F. mode. The SMAE has thus called for heavier lines and maximum weights (see elsewhere in this column). I must admit that the performance of the Open Class G.Y. Models is impressive and a testament to the dedication of a few. Certainly, though, it is no introductory class.

The 'big three' of Rossi, Nelson and Cipolla were all well represented amongst the classes but with some interesting variations. In Goodyear the latest Rossi III seems to have come good when coupled with

Webra 'Speedy' conversions are still there but the class could use a powerful 1.5 diesel, commercially available, in order to keep up interest.

Class B is still managing to keep its head above water, but only just. Two regular competitions plus the venerable '1000' lap race were run in '85. Those who do fly say they would like the silencer/pipe rule rescinded in order to reduce both performance and weight. Perhaps the sub-committee could take a fresh look at Class B...

Near the end of the year Dave Campbell of the Grantham Club published his proposals for re-running the old SMAE class 'A' and 'B' events. If promises become actualities there could be as many as forty teams at his May meeting. Now I do have an Oliver Mk III and a 'Timetraveller' plan. Excuse me... Good luck in '86.

## John Horton's League Tables for 1985

### Goodyear T.R.

A total of thirty-six teams appeared in sixteen events. As Class II G.Y. was flown at most of these, this really represents 30+ events. A most convincing win for Clarkson-Needham.

1. Clarkson/Needham	Stockport	62
2. Andrews/Horwood	South Bristol	27
3. Pegg/Thorpe	Hamilton	24
4. Munroe/McInnes	Scotland	24
5. Schofield/Miller	Horehoe Pub	23

A word of thanks is due to Ron Thorpe and Alan Pegg for running so many events in Scotland and supporting the Scottish revival.

### 1/2A Team Race

Sixteen teams in seven contests again saw Clarkson/Needham on top but second place Horton/Haworth (Wharfedale) took record heat and final honours - well done.

1. Clarkson/Needham	Stockport	21
2. Horton/Haworth	Wharfedale	16
3. Heaton/Woodside	Three Sisters	15
4. Fitzgerald/Thomason	SCLAMS	9
5. Sladdin/Ross	Novos	5

### Class B Team Race

Twelve teams featured in the three events and all of them won points. Of those who chose the classic 5cc glow route, Dave Campbell had very slick technique while Gordon Yeldham had the 'honking horse power'. Still the hairy chested event if you can afford the nitro...

1. Sladdin/Campbell	Novos/Grantham	10
2. Fitzgerald/Thomason	Wharfedale	9 1/2
3. Needham/Snowdowne	Stockport	6
4. Gordon Yeldham	Elliott	5
5. Horton/Haworth	Wharfedale	4 1/2

### FAI (F2C) Teamrace

Twenty-four teams contested the twelve domestic competitions. Both the first and second teams picked up or lost points by having regroupings in the season. Don Haworth stood in for Jim Woodside when the latter lacerated his left hand on a radio model(!) and Martin Sladdin stepped into Dick Wilson's shoes.

Smith/Brown won the European Champs with Heaton/Woodside in second place to add some external lustre to a keenly-fought competition.

1. Heaton/Woodside	Three Sisters	32
2. Wilson/Gardiner	Novos	31
3. Smith/Brown	Feltham	27
4. Hill/Metcalf	SCLAMS	19½
5. Langworth/Broadhead	Wharfedale	18

**Best all rounders based on four classes.**

1. Clarkson/Needham	Stockport	90
2. Heaton/Woodside	Three Sisters	50
3. Wilson/Gardner	Novos	33
4. Smith/Brown	Feltham	30
5. Horton/Haworth	Wharfedale	28

**Best Clubs**

1. Stockport	141	(½A, GY)
2. Wharfedale	67	(B)
3. Novos	62	(FAI)
4. Three Sisters	53	
5. Feltham	45	

**All time greats**

**½A T.R.**

1. Horton/Haworth	Wharfedale	166½
2. Langworth/Broadhead	Wharfedale	91½
3. O'Neill/Bollen	Elliotts	80
4. Hill/Metcalf	SCLAMS	78
5. Nixon/Campbell	Grantham	58

**FAI T.R.**

1. Smith/Brown	Feltham	266
2. Wilson/Gardner	Novos	247
3. Langworth/Broadhead	Wharfedale	184
4. Heaton/Ross	Norwest	165
5. Horton/Haworth	Wharfedale	125

**Goodyear T.R.**

1. Catlow/Jephcott	Loughborough	192
2. Horton/Haworth	Wharfedale	183
3. Jarvis/Needham	Norwest	162½
4. Clarkson/Daly	Norwest	160
5. Clarkson/Needham	Stockport	131

**Class 'B' T.R.**

1. Wilson/Gardner	Novos	162
2. Nixon/Campbell	Hunters	84
3. Horton/Haworth	Wharfedale	74½
4. Heaton/Ross	Norwest	74
5. Smith/Hudson	Tynemouth	54

Our usual but sincere thanks to John Horton for the yeoman work in collecting the statistics.

**British Racing Records at 1st January 1986**

**½A T.R.**

Heat: Horton/Haworth	Wharfedale	3.27.3
Final: Horton/Haworth	Wharfedale	7.04

**Goodyear T.R.**

Open Class		
Heat: Alcock/Myska	Bilston	3.40.8
Final: Clarkson/Needham	Stockport	7.54

**Class II**

Heat: Clarkson/Needham	Stockport	4.18 (80 laps)
Final: Clarkson/Needham	Stockport	8.26 (160 laps)

**FAI T.R.**

Heat: Heaton/Woodside	Three Sisters	3.28.9
Final: Smith/Brown	Feltham	7.10.3

**Class 'B'**

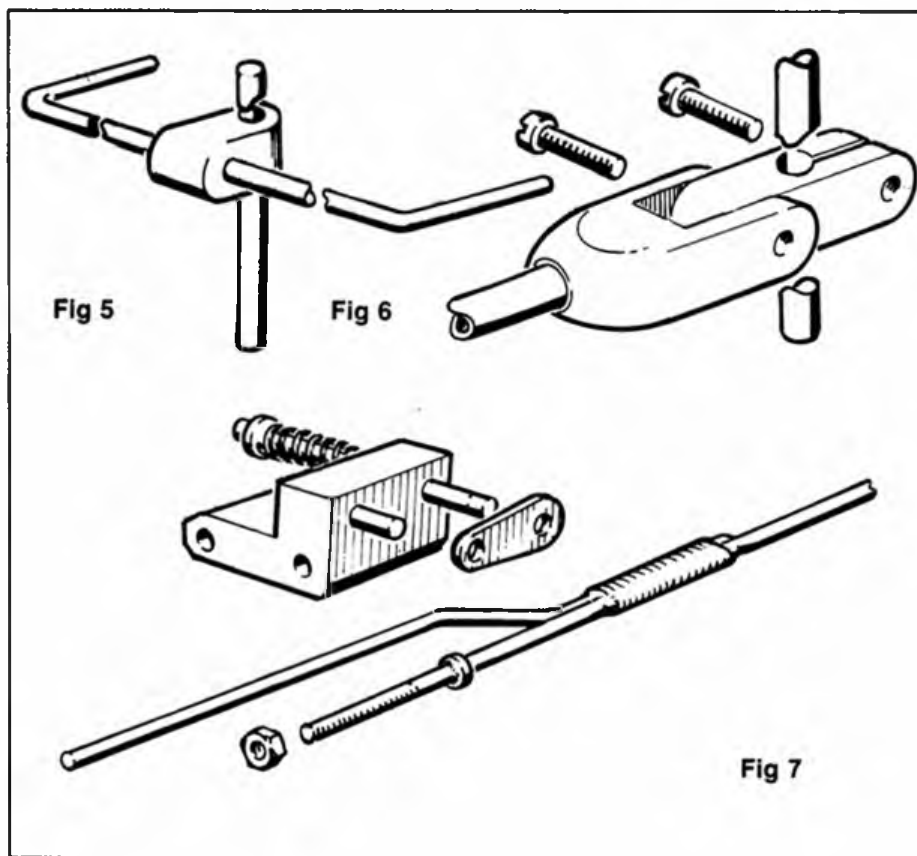
Heat: Tribe/Yeldham	Elliotts	3.16.5
Final: Wilson/Gardner	Novos	6.56.8

The above are official records set in SMAE comps in races where three teams started the race.

**Stunt with Claus Maikis**

**Hi-tec milestone**

While we stunt fliers are not rewarded for the workmanship of our aeroplanes, we are building the most beautiful models in the world (by the way, I'm in favour of this



situation but I'm a strong opponent of appearance points!) Not to take the easiest of routes is a form of personal expression. I feel that the mentality of stunt fliers doesn't stop at the surface, but rather continues to the 'intrinsic values' of their creations. I'm a great admirer of this way of thinking and I can never resist praising (or presenting) that kind of work.

Recently I received a couple of negatives from Yves Fernandez. Yves should be well known not only for his fantastic models and superb craftsmanship, but for his neat technical solutions, too. His Miles - one of his latest aeroplanes - is one of the kind which draws a crowd at any contest. It's not only the sheer sight of this aircraft, it's also the technical features which fascinate.

Built around the Super Tigre ST 60, the model spans 156 cm; to retain a scale like appearance, it has a bulky fuselage. The wing is detachable and, since low wingers are not suitable for stunt flying, it has considerable dihedral which brings the leadouts up to the (vertical) CG location. This enhances the looks too. Besides all those helpful trimming devices such as adjustable lead outs, adjustable rudder and tip weight box, Yves has installed a spring action undercarriage, a system similar to that which Al Rabe has used in his models. On the rough grass fields on which we usually fly, it's amazing to see the undercarriage work with the wheels hopping up and down, but the airframe moving smoothly at launch and landing.

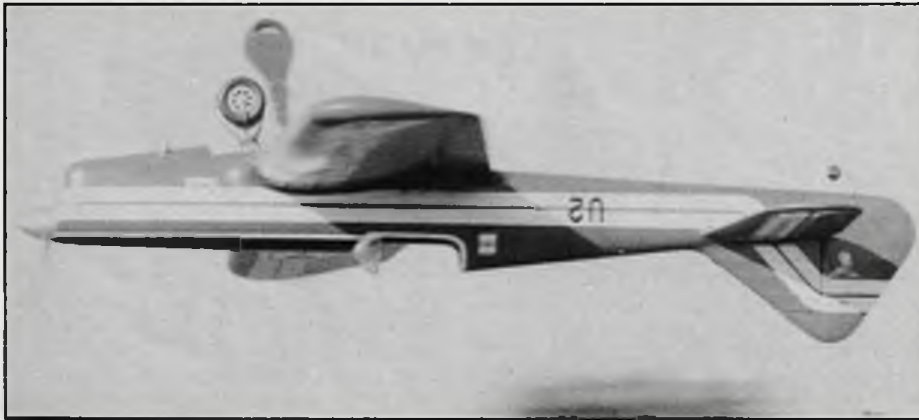
When it is taken apart, you're fascinated by the control system. Apart from the excellent workmanship, it's fully adjustable - and easily and quickly, at that! I've tried to draw several parts to show their functional nature; the sketches are not to scale, the shapes and proportions are not correct - but

they will give you an idea of what I am talking about.

The horns are made from piano wire, connected and soldered together with tiny brass blocks as shown in figure 5. To connect to the push-rod, Yves uses special connecting clamps (fig 6). They are made from aluminium and can be set on the horn to change the moment arm gradually (without steps); the clamps are connected to a fork which is fixed to the aluminium tube pushrod.

The most intriguing part is the connecting block on the wing pushrod. This is actually a two wire fork to prevent the block from rotating. Of course, the block can be adjusted lengthwise. The elevator pushrod is held by a small pin and, to keep the pushrod in place, a little plate stops sideways movement (fig 7). This plate is actuated by another spring action pin. To





connect or disconnect the elevator pushrod, Yves simply pushed the spring pin. With the lengthwise setting of the block the elevator can be adjusted. The flap horn is driven by the other fork wire and can be adjusted separately, both in setting and deflection rate. Of course!

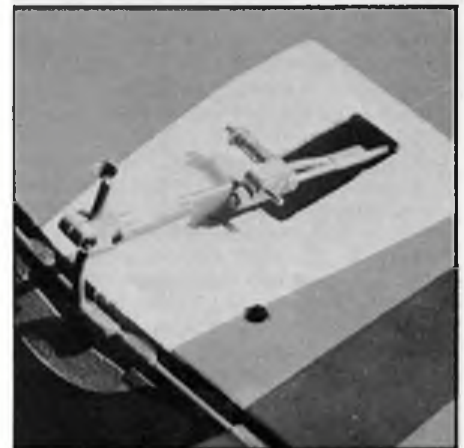
There may be simpler ways of doing things. Obviously, Yves has taken a pride in doing it his way, thereby producing a mechanical gem. After all, isn't this a big part of the satisfaction we get out of modelling?

### Zawanda's Laser 200

Those who were at the European Championships at 'Three Sisters' this year,

may have seen the new stunter of Piotr Zawanda of Poland. Since several German stunt flyers are presently involved in 'Laser' construction, I was especially interested in getting detailed information on Piotr's ship. He sent me a long letter and explained, in much improved (over recent letters) English, the technical details and his latest flying experience with his new aircraft.

As can be seen in the photographs, the wing is detachable from the top of the fuselage; a separate fuselage top cover can be removed to give access to the flap horn. The wing is held down with four bolts through 3mm plywood tongues - it's made of foam covered with 1mm balsa. Flaps and tailplane are built up from 1.5mm balsa,



*Above, upside down with nothing on the clock! Yves Fernandez Super Tigre ST60 powered 'Miles' with close-up of sprung undercarriage arrangement and flap horn connector at top right. At left and below, the sparkling Laser 200 of Polish stunt maestro Piotr Zawanda. Cowling and wheel pants are home-moulded from glass fibre (see text) and model is Super Tigre 46 powered with cut down Rev-Up three blade prop.*

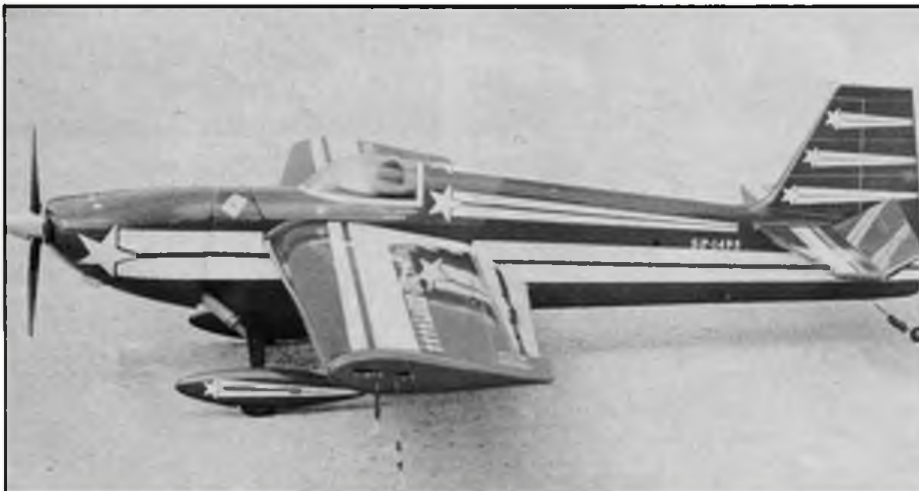
then covered with 1mm sheet.

The fuselage nose is very interesting and obviously there's some R/C influence. Basically a ply box, it also serves as tank compartment and supports the engine bearers. At the very front, a ply ring is used to align the cowling. This and the wheel pants are fibre glass products made by Piotr himself. First he makes a pattern from hard foam with many coats of dope, mixed with talcum. From this pattern he makes negative two-part moulds (left and right side) in which the final product is formed. The engine cowl weighs 80 gram, the wheel pants are about 15 gram. The landing gear is made from 3mm duralumin.

For his Super Tigre 46, Piotr has made his own muffler to which a long silicone tube of 10mm inner diameter is connected. He was especially happy when I sent him some Graupner blue celluloid sheet which he used to form the canopy.

The first colour coat is white all over. In his letter Piotr used the word 'brushed', but in his pictures spraying equipment can be seen. He cuts stripes and stars from self-adhesive tape; these are placed on the model then it's covered metallic blue. Final coats are two part epoxy lacquer which are wet sanded and polished with auto polish paste. Wingspan of the model is 148cm, weight is 1600 gram. Wing area is about 40 dm<sup>2</sup> at an aspect ratio of 1:5.5.

Piotr has tried many propellers. While on his more conventional *Voyager* aircraft he uses a narrow 12.5 x 6 two blade prop, on his *Laser* he prefers an 11 x 6 three blade prop made from a Rev Up 12 x 6. This propeller seemed superior to all other props tried, including three blade Rev Up 11 x 6 and 11 x 5, and two blade Rev Up 12 x 6 and Zinger 12 x 6 (all three bladers home made, of course).



# VINTAGE CORNER

WITH ALEX IMRIE

## Model Engineer Exhibition

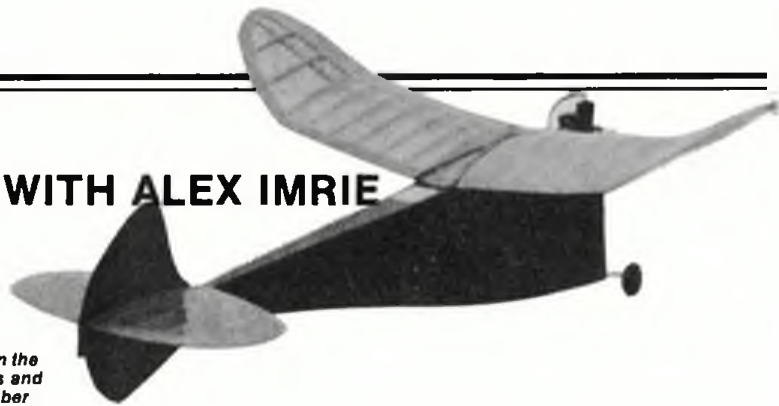
There was a good showing of models at the 55th Model Engineer Exhibition held at the Wembley Conference Centre in January. The SMAE stand provided samples of most types and the aircraft entries in the D Classes were reasonably concentrated which makes them easier to find in the show. On the other hand, the concentration means that models of all types are exhibited in close proximity to each other, and I always feel that this has an effect on the judging, the small scale models tending to be trodden under foot. The judges at such shows have a difficult job and this is not made any easier by the various scales that models seem to come in nowadays.

While agreeing that the excellent Vickers Victoria Mk IIIA by A. Clark of Hitchin which won the Gold Medal and the Scale Models Cup was a worthy victor in its class, I am sure that the detailed step-by-step history of this model's construction tended to give it an edge during preliminary judging. The equally excellent (to my mind) Albatros DVa entered by P. May from Stockholm marked with the striking Indian Head insignia was a fine entry, but did not have supporting documentation, so how could the judges, for example, know that there were thirteen parts in the control column alone? Another absolutely excellent model was the DH Moth Minor by A. Woollett of Wokingham.

The Victoria was 1/36th scale and being larger than the others was more eye-catching, we have all seen a Moth and Albatros before, so perhaps the run-of-the-mill types do suffer from being commonplace. This is borne out when one thinks of previous scale model winners; when there is nothing to choose between the standard of modelling, detail and finish, I am sure that the rarer type, especially if built in a larger scale, will sway the balance.

Excellent models were also seen in the flying section; it was pure delight to feast one's eyes on David Vaughan's radio flying scale models - we have seen most of them before

*Mika Beach's 'Wadgy' after take-off at Chobham Common in March 1966, powered by an Ohlsson 19 spark ignition engine. 'Wadgy' won Class A at in the 1940 American Nationals and was described in November 1940 Model Airplane News.*



over the years in the magazines, but here they were in the flesh so to speak. I thought it sad that the state-of-the-art is such that a Vintage Style model had crept into the exhibition; it was well made, but just being there seemed to me out of place. Being Vintage minded I liked Vic Dubery's Arrow Model F fitted with floats, and Mick Staples' Avro Avian Monoplane...you see I am doing it myself...the rare types made the most impression even on my simple mind!

Must mention the layout again, with small models put away out or reach (and sight!) I really needed a telescope to examine that Albatros DVa, then with difficulty I read the card on the Handley Page Heyford model which I think was by J. Nash of Watford, as a Hampden! One would have thought that this sort of thing couldn't happen in this day and age... but it does.

Over 100 assorted models were to be seen on the SAM 35 stand, many of them old friends seen on the flying fields over the last few years, like Les Hoy's 'Big Stuff' and Sid Sutherland's 'Megows Soaring Eagle', but there were newcomers, too, like the fine 'Fillon's Champion' sailplane loaned by the R/C Model Centre at Harlington and Don Knight's small CEB designed high wing model from *Practical Mechanics* of 1959 and that (unusual type again!) red 'Bunch Scorpion' on floats powered by a four-stroke, the handiwork of Sid Sutherland.

*C.E. Bowden with his original 'Blue Dragon' at Fairey's Great West Aerodrome (now lost under London Airport's concrete) on 26 August 1934 before flying in the Sir John Shelley Cup competition, which he won with this model. Below, a general view of the SAM 35 stand at the ME Exhibition; 'Tetsu Fly' and 'Coplant Streamliner' at top centre - Halifax at lower right (see text).*

Pete Wright's 'Gook' was on show; this control-line model fitted with a pre-production ED 2.46 converted to glow was flown for the first time in July 1951 not far removed from where the model was on show! It established two World Records, and looked a real projectile with its aluminium wings and tail. There were also a number of Earl Stahl models including Magister, Me 109, Hurricane, Skyfarer and Rearwin Speedster, last named by Don Knight who advises that his best duration on the



Rearwin is now 1 minute 40 seconds. Another unusual rubber design was the twin engined Lockheed Saturn described in Dec. 1947 *Model Airplane News* by Sidney Struhl.

"Some" rubber model was the unfinished Halifax by George Hollingdale, this model designed by W.R. Jones first appeared in *Aeromodeller* May 1943, and, although built with balsa substitute like obechi, is said to have flown on several occasions for durations over 30 seconds. With today's know-how and balsa construction George should be able to better this, and we look forward in keen anticipation to seeing the model in flight.

Other models seen included the rubber-powered 'New Yorker IV', 'Co-Axial', 'Coplant Streamliner' and 'Tetsu Fly'. A clutch of control-line models included 'Speedee', 'Wrangler' and the Dooling 29 powered 'Honeyglo'; then there were the big power driven machines like 'MS Privateer II', 'Miss America', 'Brooks Bipe' and Don





Nice study of Tony Penhall's replica 'Blue Dragon' taken by John Kemp. Undercarriage leg fairings are slats of wood 1/4 inches wide wrapped with silk; note that Tony has lost the fairing on the port leg during trimming flights. The engine is a 1938 Brown Junior Model D with the simple needle valve at the extreme end of the intake tube.

Read's eight foot span 'Privateer' designed by Thracy Petrides and described in September 1938 *Model Airplane News*. Altogether a good showing, and during the whole exhibition a number of SAM 35 members worked away diligently on model building, as if to emphasise to the onlookers that we made them ourselves! On the day of my visit Don Knight was furiously carving propellers from jelutong and Vic Dubery was cutting out ribs for the Mick Farthing Lightweight. An industrious display that hopefully netted even more members to the thriving UK Chapter of the Society of Antique Modellers.

## Blue Dragon

This was a famous historical petrol-powered model aeroplane. Designed and built by Captain (as he then was) C.E. Bowden, it was a high-wing monoplane of 8 feet span, had a chord at the wing root of 16 inches and weighed 6½lbs thus giving a wing loading of 10 ounces per square foot. It was initially powered with a Westbury Atom Minor two-stroke of 14.2cc fitted with a carburettor which had been developed by the hydroplane racing enthusiast A.D. Rankine from Ayr. The model won the 1934 Sir John Shelly Cup with a flight of 12 minutes 48 seconds OOS. This was a new power-driven model record and was the time taken from a stationary position on Fairey's Great West Aerodrome (now London Airport), however, the model was followed by car and actually timed for 19 minutes 19 seconds when it was lost to view at a height of approximately 2000 feet after it had glided down from an altitude estimated to have been 4000 feet.

As can be imagined, this model was "news"; it was exhibited at the 1934 Model Engineer Exhibition and was described in December of that year in *Model Engineer*. Full-size working drawings were not available at this time but by following the description and referring to the small scale drawings in *Model Engineer* reasonable copies of the 'Blue Dragon' were possible. Builders were not bugged with authenticity thoughts at that time; the information in the magazine was used as a basis and this resulted in a variety of models that more or

less resembled the original. Later, blueprints were sold for the 'Blue Dragon' by Kanga Aero Models of Birmingham but as far as the writer has been able to find out none of these plans have surfaced in recent years. By the time the drawings appeared, the original model was being flown with a Brown Junior and appears to have under-

courtesy of Phil Smith during the administration of the Bowden estate, an accurate drawing of the original fuselage resulted, which highlighted errors that Tony had long suspected in his creation. He has written a detailed account of what then happened...

"...I was determined to build a second model strictly in the tradition of its ancestor: I started to construct the new fuselage during the spring of 1985. The sides were built using rather "fat" oversize 1/8th square spruce, not quite 3/16 square, which was exactly as per the original! Spruce uprights were then added from nose to tail, a space at the end being provided for a solid balsa tail-piece. An angle of 5 degrees was arrived at during construction, where the fuselage longerons are swept upwards to form an angle of incidence for the wing.

The top longerons are slightly curved and are not straight as indicated on the *Model Engineer* drawing. The tailplane seat is parallel to the datum line and the fuselage is tapered to 3½ inches square at the nose; this former is 3/16th ply, and 1/16th ply formers fretted out to retain 1/2 inch borders are placed at various points subject to stress. Thin plywood skinning is then glued in place from the nose to the upright immediately under the position occupied by the wing trailing edge.

The top and bottom of the fuselage are covered in similar fashion and apertures cut out for windscreen and the three cabin



Above, yet another 'Blue Dragon' was present at Aeromodeller Vintage Day at Old Warden on 20th August 1978, but we have mislaid the builder's name, can anyone help? Below, CEB's original 'Blue Dragon' in flight. The model is now powered by a Brown Junior, but note the excessive amount of downthrust applied. The "bump" on the top of the fuselage aft of the wing is the Kodak camera timer used to cut the ignition after a pre-determined time interval.

gone slight modifications in the interim.

Some years ago, Tony Penhall of Little Paxton, Cambridgeshire made a 'Blue Dragon' replica from the *Model Engineer* description; this model fitted with a Brown Junior flew a great deal and used two channel radio control for rudder and elevator. He used to fly until the tank was empty which meant a four minute power run, then flew the model down dead stick. Tony was, however, not entirely satisfied with the model, and when certain factors concerning the original model came to light



windows on each side. The bottom of the fuselage is additionally strengthened by 1/8th sheet balsa inserted between the cross spacers, required in order to support the "crossbars" of the undercarriage which sit flush against the bottom and are sewn and glued into position. This results in a very strong forward fuselage section that will stand up to the heaviest of landings.

The undercarriage is made from 3/16 steel wire and has spring loops for shock absorption, 4 1/4 inch diameter wheels were made from 1/8th plywood discs faired each side with balsa, and the tailwheel situated immediately under the leading edge of the tailplane is a simple ply and balsa affair of 2 inches diameter.

The wing is built in two halves, leading edges and trailing edges are 1/8 by 1/4 spruce, the trailing edge being stiffened by means of a strip of 1 inch wide 1/16 sheet glued underneath, a Bowden practice that was continued in many later models including his 'Contest'. Ribs and riblets are from hardish 1/8th balsa sheet, while the wing tip from the last rib to the outline is filled with soft balsa block sanded to shape. The tips themselves are made from 16 swg wire bound and glued to leading and trailing edges. The whole top and bottom of the centre section is covered in 1mm plywood, this comprises 4 3/4 inches on each wing root. Spars top and bottom are 1/8 by 1/4 spruce and from the root to the fifth rib outboard 1/8th balsa webs are glued between the spars.

Wire hooks are glued and bound at each wing root to leading and trailing edges and at both spar locations, and, when the wings are joined, thread or strong rubber bands are used to pull the wing halves together. Additional wire hooks are fitted at leading and trailing edges for the wing anchorage rubbers around the fuselage. While no dowels are necessary for free-flight, from experience I advise to fit them for radio controlled use. The wing section is a thick, high lift one with undercamber and it is necessary



'Blue Dragon' (see text) at the Golden Era meeting on 19th May 1985 at Old Warden; left to right, Tony Penhall (the builder), your columnist and John Kemp.

to stitch silk or nylon covering to the rib undersides, otherwise the pull of the dope will detach the material from the rib contour. Dihedral is 15 degrees on each side, not the 11 degrees that some sources claim.

The fin is a wire outline fitted with five streamlined 1/8th sheet balsa ribs bound and glued to the wire outline, and is attached to the fuselage by means of rubber-banded wire saddles fore and aft. A similar arrangement keeps the large tailplane in place; this has parallel chord and rounded wire tips like the wing, and all spars, leading and trailing edges are the usual 1/8 by 1/4 inch spruce, while the centre-section is planked top and bottom with 1/16th sheet balsa. The tailplane rib section is of the lifting type and has slight undercamber. I used Solartex translucent white material to cover all components, this is easier to handle and is cheaper than silk. After doping, the fuselage and wheels were given a coat of light blue paint to finish.

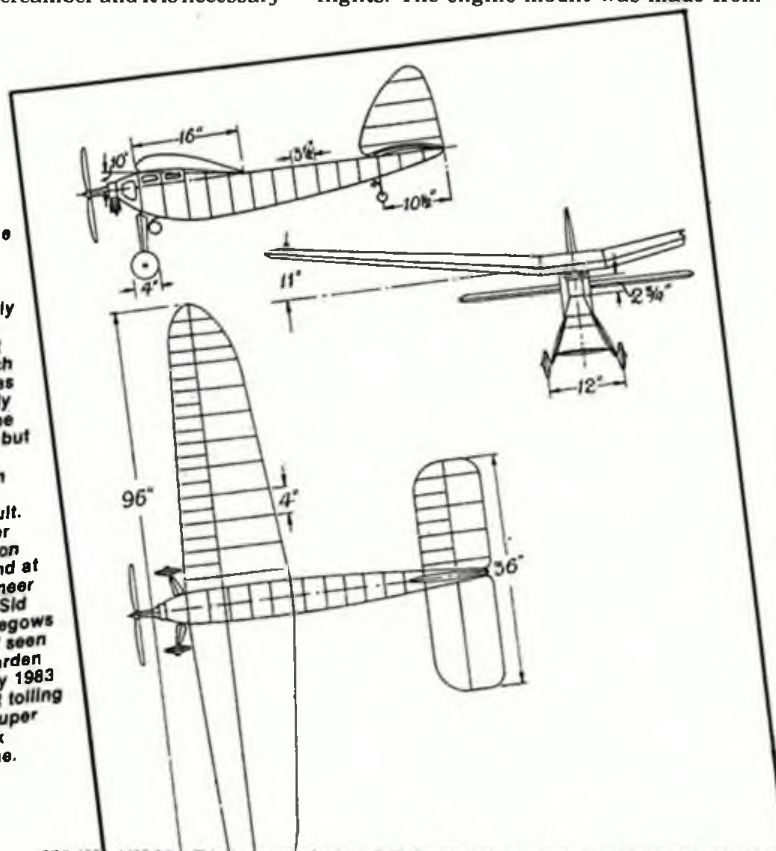
The arrangement of the power plant is very important to ensure as little damage to the model as possible during trimming flights. The engine mount was made from

1/16th mild steel sheet held in place into the recessed bulkhead by elastic bands on hooks. The downthrust on my model is 10 degrees with the centre of gravity at 40% chord, anything less resulted in power stalling! Also I needed left thrust for a left turn on power, which is a most unusual trim for a power model! You will need a Brown Junior to fly this machine in order to retain its authenticity (or better, an Atom Minor of 14.2cc capacity!).

If this has whetted your appetite and you want to build one, I can supply full-size working drawings for the 'Blue Dragon', thanks to the permission granted me by Phil Smith, and I would also like to acknowledge his kind assistance in researching details of this important historic British power-driven model aeroplane."

As mentioned above, Tony can supply

Right, general outline drawing of 'Blue Dragon' from the Model Engineer article that gave only sketchy detail including incorrect outlines; using such information replicas are understandably "different" from the prototype model, but photographic interpretation can considerably enhance the result. Far right, another model that was on the SAM 35 stand at the Model Engineer Exhibition was Sid Sutherland's Megows 'Soaring Eagle' seen here at Old Warden on Vintage Day 1983 with Sid at left toiling on the 10cc Super Cyclone spark ignition engine.





Above, talking of Wakefields, a nice study of H.W. Revell of Northampton with his 'Jaguar' which obtained second place in the Gulleridge event at the Midland Area Rally at Worcester on 2nd May 1948.

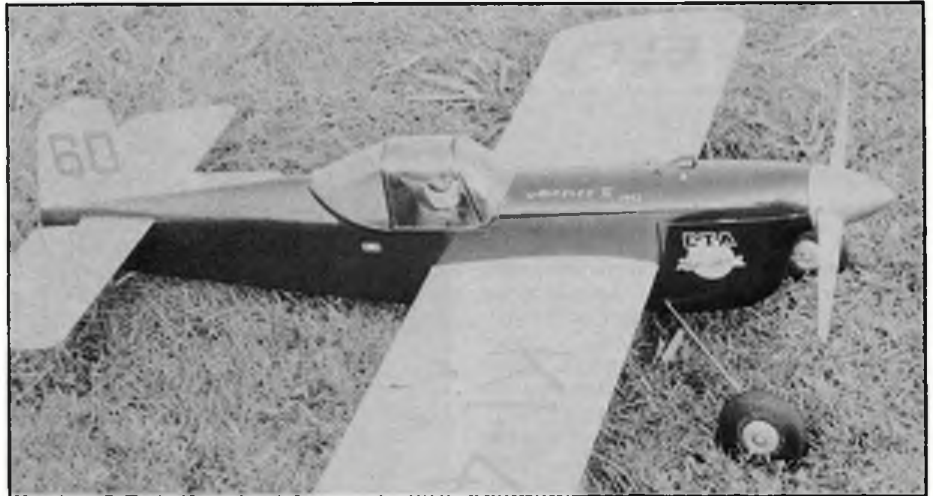
plans, and interested readers should write him direct at "Brigadoon", 62 Gordon Road, Little Paxton, Cambs.; the two-sheet set for the 'Blue Dragon' costs £8.50 postage paid, and it is worthwhile getting Tony's latest brochure which contains details of other CEB designed models, plans for which he has drawn-up and is making available to vintage enthusiasts through the good offices of Phil Smith who has been authorised by Mrs Grace Bowden, late proprietress of Kanga Aero Models and BM Models of Bournemouth.

### Wakefield or not?

The January issue was hardly off the presses when Mike Kemp, the SAM 35 *Speaks* Rubber Columnist responded with the following:-

"That old question of Wakefield tailplane areas rears its head yet again. I went into the vintage rules in my early SAM 35 Rubber Columns and repeated them again in a short summary in March last year.

The point that your Aussie correspondent has missed is that the tailplane area for vintage Wakefields was not defined until the 1938 event, when it was set at 33% of the wing area. The 1937 event even had a German tandem wing layout with almost equal wing and tail areas (Paul Armes' model). In view of the details given in the Rubber Columns and your known attitude to authenticity and rules, how did you not spot this mistake prior to publication? By publishing this letter without correct comment it looks as if you (and SAM 35!) don't know the rules (which is not true, I am sure) and also you worried the likes of Dave Hiperson and Peter Michel who fly the Lanzo Wakefield. They have contacted me but I have re-assured them that their models meet



Above, Pete Wright's 'Wrangler V', although creeping out of the so-called Vintage period with its date of 1952, was seen during last year at Old Warden, and is shown here representing a model from the SAM 35 stand at the Model Engineer Exhibition.

the rules and it is your Column that is wrong and not mine! So, to paraphrase your article ending, "Alex et al stand corrected!"

One could almost have added "So there!"... The purpose of publishing readers' letters is to bring their content to other readers' attention, if the editor tampers with the contents too much they cease to be readers' letters... so I elected to publish the letter as submitted.

I asked SAM 35 for comments and certainly got them! When I received Mike's letter I immediately referred to his early Rubber Columns in SAM 35 *Speaks* for the "details" that he mentions; however, I found his tabulated rules in mid-1982 to include so many incorrect statements, that I hurriedly looked up the repeat summary from March 1985 that he draws attention to. Here, surely, would be the answer, but no, this discourse related to 4 ounce models and the tailplane area was not mentioned. I then undertook to work through the Rubber Columns and found that Mike had eventually got his house in order via letters of assistance from several keen SAM 35 Wakefield enthusiasts... but as far as I am aware, his Rubber Column has not yet given a complete listing of correct Wakefield rules from 1928 to 1950 including all variations

and rule changes. So if our Australian correspondent relied on Mike's quoted writings, you could hardly blame him for "missing the point"!

Mike is, nevertheless, correct in stating that the tailplane area for Wakefield competition was defined as 33% of the total wing area from 1938... However, the machine in question was the Lanzo 1936 Class D model, and although the fuselage met the cross-sectional area rule, and the wing area also met the Wakefield requirements, this model when built, since its weight was below the 4 ounce minimum, was not a Wakefield and was not designed as such: so our Australian friend, Arthur Butler, is not entirely wrong either!

Since the rule changes are reflected in the model's characteristics, is the "ballasting" of non-Wakefield designs to get them into the 4 ounce bracket really "on"? Or when is a Wakefield not a Wakefield? Because the power unit was not defined as rubber only and the wing area also not laid down to 200 square inches plus or minus 10 square inches until 1934, can I enter my genuine 1932 gas model design with original engine in the next vintage Wakefield competition? It will meet the laid down pre-1934 rules criteria!

Johnny Mayes, long a vintage pillar of strength in the West Bristol Club with his Eflin 1.8cc diesel powered 42 inch span 'Thorobred', a Gussie Gunther design that was described in the April 1949 edition of Model Aircraft.



# SCALE MATTERS

## Free flight with Bill Dennis

### Indoor Nationals

I have now received some more details about the Indoor Scale Nationals, to be held at the Alumwell Sports Centre, Walsall on Sunday April 27th. Firstly, there will be extra practice time available between 8 and 10pm on Saturday April 26th, open to anyone with a scale model. This should prove really useful to anyone living locally or staying overnight and is an excellent idea. There will be a small additional charge to help cover the cost.

Secondly, as I mentioned before, in addition to a static exhibition of scale models, there will be three short informal talks given around the middle of the day. Precise timings have not yet been fixed, but they will presumably be at a time when no contest flying is taking place. However, the subject and speakers have been confirmed and they will be well worth listening to. Firstly, Paul Briggs will describe his techniques for building models from carved blue polystyrene foam, followed by Mike Hetherington talking about his use of paper as a constructional medium. Those of you who have seen Paul's Kittyhawk or Mike's Stosser and Mitsubishi Claude will know how much these alternative methods have to offer when building models of stressed-skin aircraft.

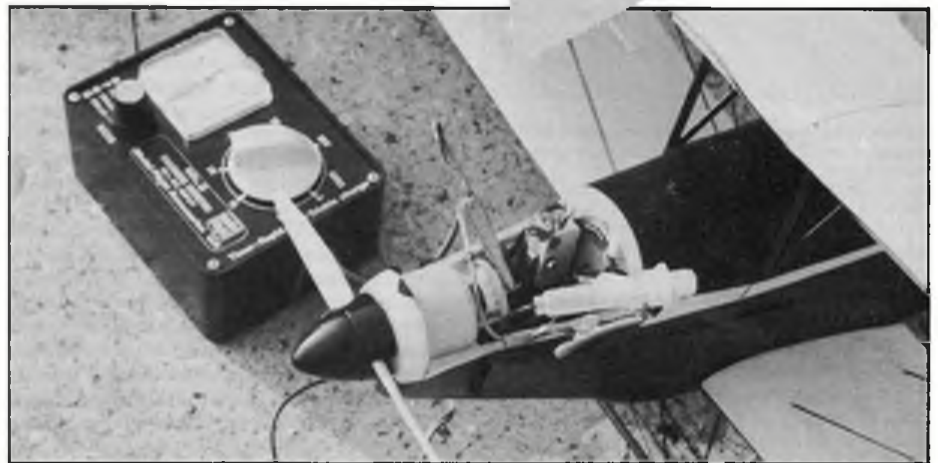
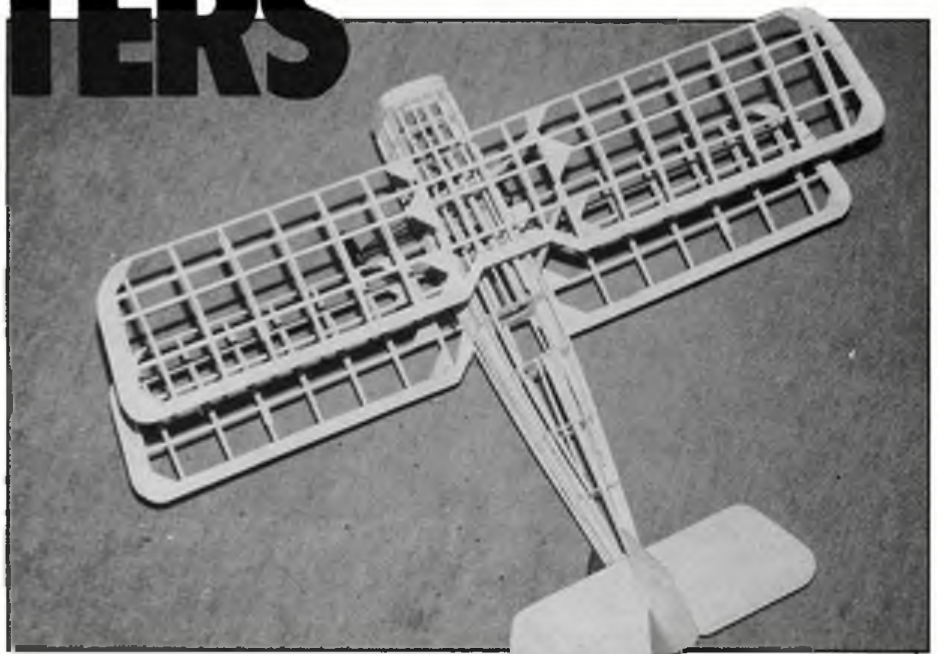
Finally, that expert on airbrushing, Ian Peacock, will be giving a talk specifically on decorating indoor scale models, and there is a rumour that the audience will be able to have a go as well...

Details and entry forms from Doug Shepherd at 13 Luckington Road, Monks Park, Bristol. BS7 0UT. Don't miss what has become the premier scale event on the calendar.

I have just received the late information that *Aeroplane Monthly* magazine will be donating a Trophy to be awarded at the Indoor Nationals. Called the 'Aeroplane Monthly Award', it will take the form of a framed painting of one of the Lympne meetings, by Keith Woodcock. It will be awarded to the highest placed model in any class of an aircraft covered in *Aeroplane's* 'British pre-war ultra lights' series. A little short-notice, perhaps, but well worth trying for!

### Applying decals

Since the article on the Avro Avian monoplane was published in the February issue, Charlie Newman has told me of a much better way of lining up registration letters, etc., than drawing lines on your model. Take some Frisk Film masking film, obtainable from art suppliers, and cut a straight edge with a knife and rule. Place the piece of film over the model plan and mark the position of the bottom of each letter, then remove the backing sheet and stick the film to the model where the lower edge of the letters will be. Since the film is thicker than the decal, it is a simple matter to butt each



Top, the Modelhob SE 5a (see text) appears to be a little over-engineered but his means easier construction for the less than expert. Gussets around wing centre section are Bill's additions to improve a potentially weak area. Above, Mike Smith's electric conversion of his 'Currie Jet Wot'; the object at rear of engine bay is a micro-switch with pendulum to cut off motor on landing.

letter against the film, resulting in perfect alignment. This technique is even more useful when applying thin lines from decal which are very difficult to keep perfectly straight when done 'free hand'.

### Kit review - Modelhob SE5a

This is a rubber powered model of approximately 24in. span from a Spanish manufacturer producing a wide range of kits of all types. In addition to the SE, the rubber selection includes the obligatory Spitfire and FW 190, and a much more interesting Bèbè Nieuport 11. Unfortunately, the latter was temporarily unavailable so I was given the rather over-done but probably more flyable SE5a!

The box features a photo of the finished model which gives a realistic impression of what can be achieved, rather than some well-known kits I could mention. Apart from being painted in a rather agricultural shade of brown, the overall effect is quite good, although for some reason the upper wing is set at zero incidence, which looks a little odd; more on that later.

The plan is very clear and printed on good quality paper. The instructions are in 3

languages and, although the translation to English is amusing in places, they are mostly perfectly understandable. Unfortunately they are printed on the back of the plan, so unless you do not mind having to keep unpinning the structure to see what comes next I suggest you make notes as you see fit. Having said that, only an absolute beginner would need to refer to the instructions.

There are no less than eight die-cut sheets. The parts are not numbered, but there is a key on the plan and I strongly recommend that all parts are marked before removing them. Of the stripwood, that for the wings is of good quality, but the fuselage stringers are very soft and weak. The hardware includes plastic wheels of accurate style, pre-bent u/c parts, a peculiar little propeller with 10° sweepback on one blade, and a quantity of what is universally known in aeromodelling circles as 'knicker elastic'. Finally, there is a sheet of tissue and a sheet of matt decals.

The constructional methods used in this kit are surprising to say the least. The fuselage is built on the half-shell keel-and-formers system, with eleven formers and 20



stringers. Quite why any designer would choose such an inappropriate structure for a basic square box fuselage eludes me. The only reason I can think of is ease of construction for a beginner and, to be sure, the fuselage goes together very easily, and quickly. Nevertheless, one is left with a very heavy structure in which extra stringers will be visible through the covering.

### The wings

The structure of the wings is conventional if beefy, and needs little comment. However, since this is a one-piece model, I added numerous gussets at the dihedral joint.

The centre section struts were of soft balsa so these were replaced. I have already referred to the fact that, for some reason, the upper wing is set at zero incidence, with the lower at +3°. This puzzles me and I have never come across it before. At one time it was fairly common practice to set the lower ring at 0° in order to raise the centre of lift and add stability; doing it the other way round is tantamount to producing a low-wing monoplane, aerodynamically speaking. Anyway, I lengthened the front struts!

The lower wing has to be glued in place before the u/c is added and this is a major weak-spot. The u/c is supplied in port and starboard halves, and the front legs are bound to the unsupported, soft, 3/32in. square stringers. Clearly some reinforcement is essential here, but there is still precious little resistance to sideways loads.

Well, at this stage I am sure you are desperate to hear how the covering and flying went. Unfortunately at this moment, close to deadline, I have been struck down by flu, and the thought of opening a dope tin appears not at all. More next month...

### Odiham Spring Gala

The date for this event has had to be put

back to April 27. This clashes with the Indoor Scale Nationals and so the SMAE Scale Committee has decided to cancel the F/F Scale Contests.

## Control Line with Vic Wilson

After a season of rather subdued CL scale activity in 1985, it was encouraging to see the class well represented at the Model Engineer Exhibition this year. The flying model content of the Exhibition is always comparatively small and in recent years has been mainly radio control orientated, but this year three CL scale models of widely differing subjects were on view.

Glen Allison, best known for CL aerobic flying, had his stunt/scale Pace Spirit on display in its distinctive white, blue and red livery. The full-size aircraft will be long-remembered for the many spectacular displays given by its regular pilot Richard Goods, but I understand that it was eventually 'written off' after engine failure. I trust that Glen's model will not meet the same fate! This is a model designed for aerobatics as the first consideration and scale appearance as a secondary influence, however the result is very attractive and I look forward to seeing it airborne.

Close by at the exhibition was another model new to me, this being an Avro Lancaster built by C Hollowood of Nantwich, Cheshire. With a span of around 52in. I would guess that it was built from the APS plan by H J Towner (CL 1081). The model only appeared to have two line control, but nevertheless was an impressive effort and it would be nice to see it perform at some of this season's events.

However, the most impressive of the control line models, for me, was the Avro Avian monoplane built by Mick Staples.

What with the free-flight rubber powered model of Bill Dennis (with a CO<sub>2</sub> powered version promised) and a radio control version being built by Eric Coates, the Avian Monoplane has come from obscurity to be 'flavour of the month' in a quite extraordinary way.

But back to Mick's model; it is built to 1/8 scale giving a wing span of 45in. and, true to Mick's very light building techniques, it weighs in at a very creditable 2lbs 14oz. ready to fly. This makes the power requirements quite modest and an OS 20 four stroke has been chosen in this case. This is one of the first (if not THE first) CL scale models in this country to be powered by a four stroke engine and its performance will be carefully monitored.

Four strokes have become very popular with scale radio flyers and, after some initial teething troubles, seem to have achieved a similar degree of reliability (or unreliability) as comparable two strokes engines. The advantage of a quieter 'different' engine note may be even more significant to the realism of CL scale models, with their circular flight path, than it is with radio control models - we shall see.

The construction of the Avian leans more towards Free Flight methods than traditional CL practice. The fuselage has sheet sides and basic structure with stringers overlaid and the flying surfaces are conventional open framework with scale rib and spar spacing.

Although a one-piece model - in fact the wings are plugged onto the fuselage using the wire dowel into brass tubing method - each wing is held in position by the flying and landing wires which are anchored to the fuselage and undercarriage structure. The outer ends of the wires are soldered into tubes which pass through the wing structure at about two thirds span. This means that, if for any reason it is necessary to remove the wings, it is merely a question

*Below, Mick Staples with his beautifully finished, control line scale Avro 'Avian'. Model was admired by all who saw it at the Model Engineer Exhibition last January. Scale is 1/8 with wingspan of 45 inches; weight is less than 3lbs. Powerplant is interesting as Mick is using an O.S. fourstroke. Detail pictures on the right show just how much has gone into this model - we must now wait and see just how well it performs in the air.*



of unsoldering four wires at the top and five below each wing to enable the panel to be slid off the fuselage dowels.

The most impressive aspect of the model, however, is the covering, which uses the 'Eric Coates' silk over tissue method described in the September 1971 *Aeromodeller*. This method of covering although described by Eric, is attributed to John Simmance and passed on during an impromptu discussion in a hut at Linton on Ouse during the 1960s whilst judging the Selby Trophy event.

### Covering the Coates way

For those not familiar with the method and not possessing the required back issue of *Aeromodeller*, the procedure is as follows:-

- 1) Preferably cover the airframe in as many separate pieces as possible and assemble afterwards.

- 2) Brush on two coats of dope, thinned 50%, to the entire airframe, sanding after each coat to swell the grain. Extensive areas of sheet balsa should be given a third coat.

- 3) Cover the entire model with lightweight tissue, preferably using dope as the adhesive. Stick the tissue to each piece of structure, in particular undercambered wing ribs. Cover all sheeted areas as well as the open structure for added strength. Lap all edges of tissue over. Cover complex curves on rounded fuselages and wing tips with several small pieces to avoid wrinkles.
- 4) Dope the entire model with 75% strength dope (with good quality dope at high strength, water shrinking is unnecessary). If the structure has been designed to be 'anti-warped' there will be no need for the chore of pinning down.

- 5) Give the fuselage a second coat of dope at 50% strength.

- 6) Lightly sand the entire airframe.

- 7) If parts of the fuselage are sheeted and are to be painted without any form of overlay covering such as litho plate, then these should be filled at this stage before applying the silk to the rest of the fuselage. A couple of coats of grey cellulose primer surfacer will do the job better than 'sanding sealer' which tends to be greasy and gives a poor key for the colour coats.

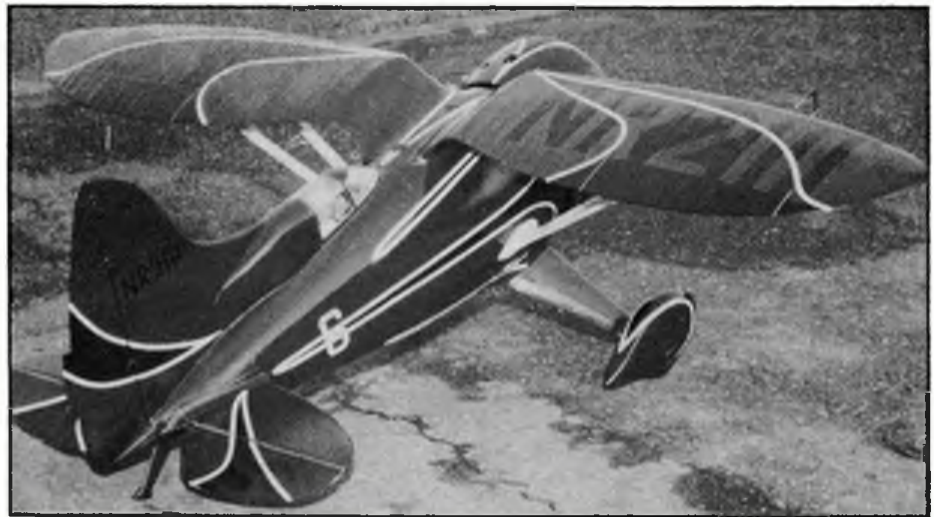
- 8) Next apply the silk. Silk is much more flexible than tissue and will cover more compound curves without wrinkling.

- 9) If the subject aircraft is a WWI machine, it does not want a perfectly smooth texture to the covering and therefore a further coat of 25% strength dope will be sufficient. The edges of the surface should be sanded and then given a coat of 50% strength dope to obviate the hairy look. If the subject is of a later vintage with a better fabric finish then two coats of 50% strength dope should be applied all over.

### Hall Racer

The Avro Avian monoplane was constructed for the 1930 Kings Cup Air Race and the next model I will describe is also a 'racer' of the same period. However, this aircraft shows the very different approach on the other side of the Atlantic. The Hall Racer (Springfield Bulldog) was a 1932 design by Robert Hall, who had previously been associated with the famous Gee Bee racers, and was flown into 6th place in the 1932 Thompson Trophy Race piloted by the designer. High hopes has been placed on this unusual Wasp Junior powered design,

*Right, built in the same era as the Avro 'Avian', the 'Hall Racer' shows the very different approach used in America! Bernard Sexton's model is 1/8 scale with a wingspan of 39 inches and an all-up weight of 4lbs. Power is an OS 50 R/C with a Roberts bellcrank system providing the third line throttle control.*



but the top speed of 215mph was far below that of the winning Gee Bee flown by Jimmy Doolittle.

Like its full size prototype, this model has a much higher wing loading than the Avro Avian. Scale is 1 1/2 in to 1 ft giving a span of 39 in and the ready-to-fly weight is 4 lbs. The model is powered by an OS 50 R/C two stroke and a Roberts bellcrank is used to give third line control for the throttle. A Mick Reeves exhaust stub and silencer complete the hardware. The distinctive colour scheme has been very neatly applied using car aerosol spray cans for the red, and the black areas are hand painted with white cheat lines setting off the intricate pattern.

This sort of model would not be complete without a dummy engine, and the builder, Bernard Sexton, has made a fine job of this using as a basis, the excellent Williams plastic engine cylinders and making a suitable dummy crankcase to fit round the OS. The result really does make the effort worthwhile and when the scale prop is fitted the effect will be complete.

### Prentice Defiant under way

News now of an incomplete model. This is a Boulton Paul Defiant Mk I, turret fighter, being built by Ron Prentice from Taunton, Somerset. Ron is, perhaps, best known for his vintage control line activities with SAM 35, but has made a fine job of the airframe construction and is looking forward to some

scale flying this season.

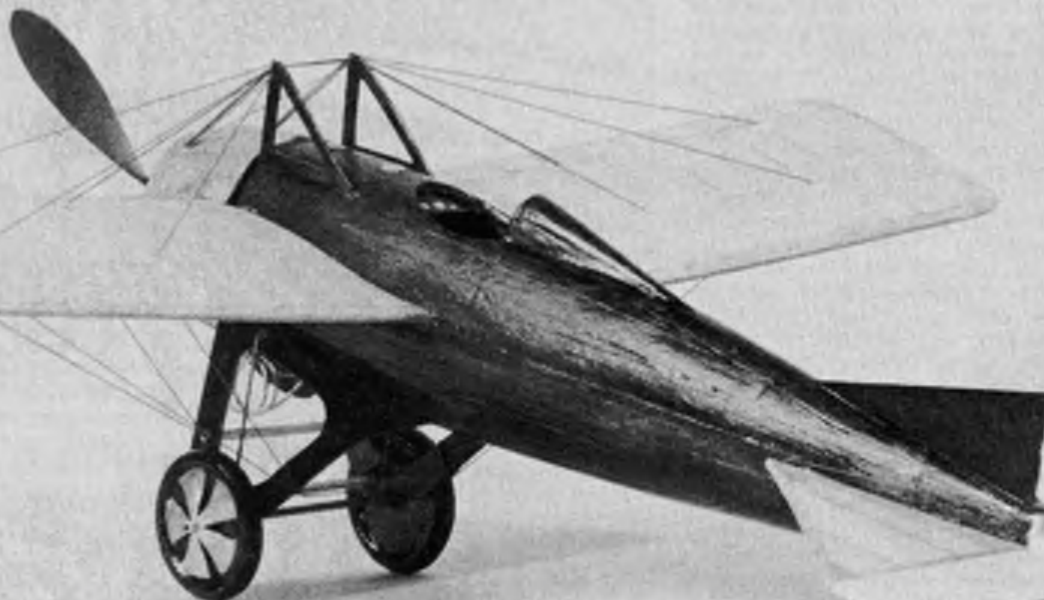
The model is built from a two-sheet plan, originally available from Complete-a-Pac and advertised some years ago, however the company has changed ownership several times in recent years and this plan (together with possibly a Douglas Skyraider) and suitable mouldings i.e. cowling, canopy and gun turret, will be available from Mike Curtis, Higher Barn, Capton, Williton, Somerset in the near future.

The model is 36 in span and all sheet covered, so wood selection is important to avoid an excessively high wing loading and a rearwards centre of gravity (especially with that turret!) Ron's model is powered by an Enya 29 and should be receiving its first coats of camouflage green and dark earth by the time you read this.

### Jerzy Ostrowski

Finally, to end on a sad note. Through the grapevine comes news of the death of Jerzy Ostrowski who represented Poland at every CL Scale World Championship and was World Champion in 1972 flying his DH Hornet. Anyone who had the pleasure of seeing his models, especially the Lockheed Lightning, will realise that the scale fraternity has lost one of the all time masters of the art. He will be sadly missed at any future international CL Scale event.

# DEPERDUSSIN



## A diminutive flying scale model for CO<sub>2</sub> Power by Richard Halfpenny

This type of "Dep", as it was affectionately known, was one of a series of high-powered racing monoplanes, developed during 1912-13 by the Deperdussin Company, which had branches in England and France. One of these aircraft won the Gordon Bennett Trophy at Rheims in 1913, when it averaged 127 mph on a lap of a closed circuit. Maximum speed was believed to be at least 135 mph, making this, almost certainly, the fastest aeroplane in the world at the time: its only possible rivals were a Ponnier monoplane of equal power, and, amazingly enough, the Royal Aircraft Factory S.E.4. biplane.

The aircraft was described, in its time, as a "racing monocoque", because its fuselage was of advanced moulded plywood construction. Power was by a huge 14 cylinder, double row Gnome rotary engine of 160 hp, and, as the machine had a wingspan of only 22 feet, it must, with the powerful torque from its engine, have been a considerable handful for the pilot. In fact, the wings of the record breaking aircraft were "clipped", to less than 20 feet span, to further increase its speed. Beautifully streamlined, and a credit to Deperdussin, who were renowned for the attractive appearance of their aircraft, this monoplane was years ahead of its time, apart from the retrograde feature of having wings that warped for control. Paradoxically, these had to be lightly constructed for flexibility, and thus had to be extensively wire braced. It was to be many years before cantilever wings for monoplanes became practical.

Unfortunately, the Deperdussin Company became insolvent in 1913, but eventually was combined with the French S.P.A.D. concern, builders of famous fighter aircraft during the Great War. The only surviving Deperdussin known to the writer is an earlier one, of much lower power, belonging to the Shuttleworth Collection.

### Model construction - fuselage

The model is small, even by CO<sub>2</sub> standards, being to 1/20th scale. But, it has very broad wings, and can be built lightly. The planked fuselage itself need weigh no more than half an ounce.

Cut the fuselage keel and formers from soft, light balsa, and mark their centre lines with a biro. Assemble with balsa cement, and lay the first plank, of 1/4 by 1/16 soft light balsa, along the centre line, cementing to the formers. It will act as a reference later. Holding with pins, or rubber bands where needed, plank the whole fuselage, tapering where necessary, and making the joints as close as possible. Sand well for lightness, and cut out the cockpit where shown. Remove the keel below it, almost to the bottom, with a fine saw blade. Build up headrest as shown, planking with narrow, tapered 1/16th strips. When this is sanded, apply wood stain to the whole (my own is mahogany), and when dry, coat with cellulose based sanding sealer, or banana oil. Sand smooth when dry, and apply more coats as needed. A good finish can be worked up, with very little added weight.

The firewall is of millimetre ply, with captive nuts for the CO<sub>2</sub> motor, looped with fuse wire, and super glued to its back. The engine mounting should be arranged so that, with about 4 degrees downthrust, and about 2 degrees right sidethrust, the airscrew boss comes about central. Small washers are used for thrust packing, and the firewall, which may be left oversize, and trimmed later, should be glued in place with PVA. Cut a 1/2 square hole in the bottom of the fuselage, behind the firewall, and one side of the keel, and glue the plywood plate for the filler nozzle opposite it, as shown. Make a slot through the keel to it, so that, when the gas tank is pushed up into place, the CO<sub>2</sub> tube, bent downwards, guides the nozzle into position.

The undercarriage fairings, also of millimetre ply, are cut out with scissors and a sharp blade. Pierce the holes for the cross pieces to be a tight fit for 3/32in diameter. A rat tail file is probably best for this. Using as a reference the centre line of the fuselage, which may be lightly marked on the first plank if you wish, cut the slots for the u/c, going into the fuselage at the correct angle. It will be found that the rear slots have to be angled somewhat, due to the curvature of the fuselage, and that the fairings tend to converge here. Probably the full-size Deperdussins gained a little extra dynamic lift from this feature. Glue with PVA, stain and seal, and fit the cross pieces of 3/32in o.d. hard plastic tubing.

The upper one, on which the axle assembly pivots, also passes through the fuselage. Cement is best for these joints, and a length of 18 swg piano wire is inserted in the lower tube, to strengthen it for axle loading. The axle, which is bungee sprung, as full-size, but moves backward, rather than upward, as is best in model use, is self-explanatory. Join it to the radius rods with thin fuse wire and super glue. Note that, although these rods are pivoted OUTSIDE the u/c fairing, they pass INSIDE it to meet the axle rod. Wheels are vintage pattern, my own being of sheet balsa, plastic tubing, and card. Loop miniature rubber bands from outer ends of axle; over the plywood fairing; round the lower cross piece; and over the axle ends again. Retain wheels with small lengths of plastic tubing, super glued in place.

### Wings

The wing ribs are cut, using the simple stripping device shown, which is best made of thin aluminium sheet. Align the notches at the ends with lines drawn on fairly soft, light balsa sheet. Strip each rib, with a sharp blade, and trim off bottom along line.

This type of Deperdussin had a curious, reflex wing section. Pin out the wings, in the usual way, over the plan and greaseproof paper, assembling with cement. The leading edge may be of harder balsa, and the inboard extension of this, a strange feature of certain "Deps", should be cemented on after lifting from plan, because they are angled downward to match the camber. Likewise, the soft, light balsa wingtips, carved and sanded to rounded section, after cementing on in rough form. Cover with white lightweight tissue, remembering to paste to the undercamber. Water shrink and clear dope, using two well thinned coats. Keep the wings pinned out while the top surface is drying.

Using the fuselage centre line, or the u/c fairing, as a reference, pierce holes for the spars and trailing edge. Cut and try where needed, and arrange for the 1/e extensions to lie against the firewall, cutting just enough off their ends to clear the motor crankcase. When the wings fit square and true, fix them with PVA. A straight piece of wood is laid across the top of the fuselage, and each wingtip held to this by a spring clothes peg. Make sure each tip is the same height, with the model standing on a level surface. Dihedral is a little more than full-size, to improve stability. Leave to dry thoroughly.

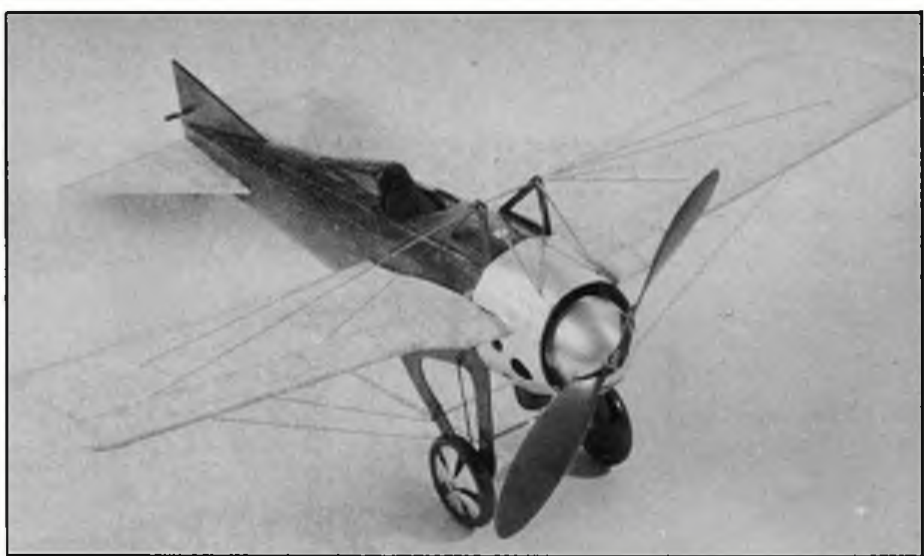
### Tail feathers

Tailplane and elevators are assembled with cement on a sheet of glass, over the plan, and prised up with a razor blade when dry. After sanding, the dummy ribs, or gumstrip, can be added to the elevators before covering and finishing. Dope tissue well to the sheet balsa. Exactly the same applies to the rudder. The effect of the dummy ribs, and the grainy appearance of the sheet balsa can be toned down by a single coat of off white emulsion paint. The fin is cut from sheet, not covered, but stained and sealed to match the fuselage. Then it is joined to the rudder with thick PVA, to make a bendable joint. Cut a slot along the centre line of the fuselage, up to the last former, to take the tailplane. PVA glue the tailplane into this, making sure it aligns with the wings from rear view. Then glue on the fin and rudder.

### Finishing touches

Returning to the front end, draw the cowling to pattern on thin card, with the "grain" going crosswise, and glue aluminium foil, with its dull surface outward, to the back of it with epoxy or strong PVA. When dry, cut out; but the wise modeller will experiment with a plain cardboard mock-up first. Bend carefully to shape, and join with a strip of balsa as shown, pulling the "vee" at the top together and cementing. A slight step should be cut and sanded in the top of the fuselage, so that the cowling lies flush here. When the cowling fits correctly, spot in a few places with cement, so it can be easily removed. The motor should already be installed.

The typical Deperdussin cabane is made in two parts, from millimetre ply. These are spaced 1 1/8 in apart, and slotted and glued into the top of the fuselage, just touching the cowling. Stain and seal. Cement two balsa strips inside top of cowling, to align by eye with the cabane struts. Make nicks, with a razor blade, into these, 1/4 in back from front of cowling. Rigging is done with grey button



Designed for realism rather than duration, this tiny Deperdussin has good penetration and surprised its builder by its performance... Photos: Gordon Bray.

thread. The lift wires are threaded through the middle cross tube of the u/c with a long needle or fuse wire, and taken once round the wing ribs where shown. Lower warp wires pass once around each fairing, behind the wheels, being spotted with PVA here.

When all the wires have been taken through the wings, their long top ends are passed over the notches in the cabane struts, and pulled into the cowling nicks. One wire from each side is passed across to the opposite strut, and led back to the nick on its own side, forming the cross-bracing shown. The other wires are simply taken forward into the nick on their own side, where they simulate a front cabane strut on the full-size "Dep", and all can be tightened with tweezers. Leave ends long, and spot with thick paste where they pass through the wings, and inside the cowling. This allows for adjustment when needed.

A great feature of these aeroplanes was the large, domed spinner, which really formed part of the engine cowling. Note how the airscrew is slotted into the FRONT, rather than the back of this. There is photographic evidence of this on the full-size. My own spinner was turned from aluminium, on a lathe, but here is shown a simple design for a balsa and plywood one. If a Telco is used, the spinner must be removed for tuning, but my own model has a Shark.

Remaining details are two dummy petrol and oil caps on fuselage; a dashboard of card or thick paper; a seat of balsa and thick paper cemented to the top of the t/e inside the fuselage (where it further strengthens it); a tailskid of hard plastic tubing, flattened and bent at the end with heat, and cemented into the fuselage; and a dummy rudder yoke with cotton or fuse wire, the latter being pulled into nicks in the joint at the 1/e of the tailplane. Racing numbers can be added if you wish, the custom at that time being to have large numerals above and below each wing, and at least one of these machines had the motif of what appears to be an Ace of Diamonds playing card on each side of its rudder.

### Flying

Point of balance should be about one third of wing chord back from 1/e. My slightly heavy spinner ensures this, but a small piece of lead could be glued inside the front of the cowling if needed. This is the sort of model that, if flown over reasonable grass, need fear nothing apart from pulled rigging wires. Test glides are of little value, and short power runs may be tried from the start. My own model seemed nose heavy to

begin with, and the slightly heavy aluminium spinner was removed. Then, it seemed TAIL heavy but the real trouble was that the full size "Dep", like most racing aeroplanes, had very little longitudinal dihedral. So, the spinner was replaced, and the elevators were warped slightly up, over a LOW heat, and held until cold. The tough, but flexible PVA joint of the rudder allowed it to be adjusted for quite straight flight, which seems to suit the model. It has good stability, and looks very realistic in the air.

There was nearly a sad sequel. On its last flight, the "Dep", surpassing expectations, was lost on nearby Exmoor, having flown away from the field, and lodged in the top of a gigantic hedge. Darkness fell before it was found, but, fortunately, the weather was mild, and it was discovered, undamaged, the next morning.

### Sources of reference:-

Three view scale drawing *Deperdussin Racer 1913*, probably by the late P.L. Gray. Percival Marshall. Originally appeared in *Model Aircraft 1950s*. Model based almost entirely on this, as it shows dihedralled wings, and cross sections of fuselage. Some slight alterations made for structural advantage, and model flying performance.

Three view scale drawing "160 hp Deperdussin Racing Monocoque", by Norman Kearly. Originally published in *Flight* in 1913 or 1914, but found in a later book. No dihedral shown; no cross sections, and no tail ribs. Above drawing probably based on it, however. (These machines were all largely experimental, and were sometimes rigged with dihedral, and sometimes not).

*Pioneer Aircraft 1903-14*, By Kenneth Munson. Blandford Press 1969. Good two-view drawing of a rather different version of this machine, in colour, but no scale shown. No cross sections, and no dihedral shown. Very informative feature on Deperdussin monoplanes.

*History of Aviation Aircraft Identification Guide*, by J.W.R. Taylor and Kenneth Munson. New English Library about 1980. Small drawing similar to last, but three-view this time. Good photograph of full-size "Dep", showing slotted spinner, but, once again, a different version! It seems most likely there were three basically similar "Deps", all differing in some details.

There is also a rather exciting artist's impression of this last version by Geoffrey Watson in *The Aeroplane Speaks*, by Capt. H. Barber R.F.C., published by McBride, in 1918.



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## Build Dave

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## Clarkson's race-

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## proven 1/2A Team

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## Racer, a rugged

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## dependable model

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## that has winning

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## potential

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Those of you who have read my reports on 1/2A Team Race at the Nationals in this magazine over the last few years will have detected my liking and regard for this class. The reasons are easy to understand, for 1/2A is the smallest and nicest of the SMAE control-line racing events, in fact 'nice' is the word that says it all.

Because it is not an event using 2.5cc motors (it uses 1.5cc motors) there is a dearth of commercially available motors that are useable in standard form and so 1/2A team race is 'the' event for motor men - more special motors are used in this class than in any other class in the UK. It is this reason that attracted Ed Needham, my team-mate, and me to 1/2A for, whilst both of us had flown it (Ed with Dave Banks and me with Jim Woodside) before we teamed up, neither of us had actually built a 1/2A model or prepared a 1.5cc for racing use. A nice challenge which we took up late in 1983 for by then our models and motors for Goodyear were well sorted and we needed a new challenge.

1984 turned out to be quite a season for Ed's Sesqui based special motor and my 'Witblitz' for we finished the season the most successful team in 1/2A team racing. According to John Horton's League Table we had finished in 2nd place at the Nationals and had set the present SMAE final record in a season where records fell by quite dramatic margins. If Goodyear

'animals' like Ed and I can do it, then there is hope for us all. The purpose of this article is to show just how we did it in the hope that others will take up the challenge and discover how satisfying this nice little class can be.

### Forward planning

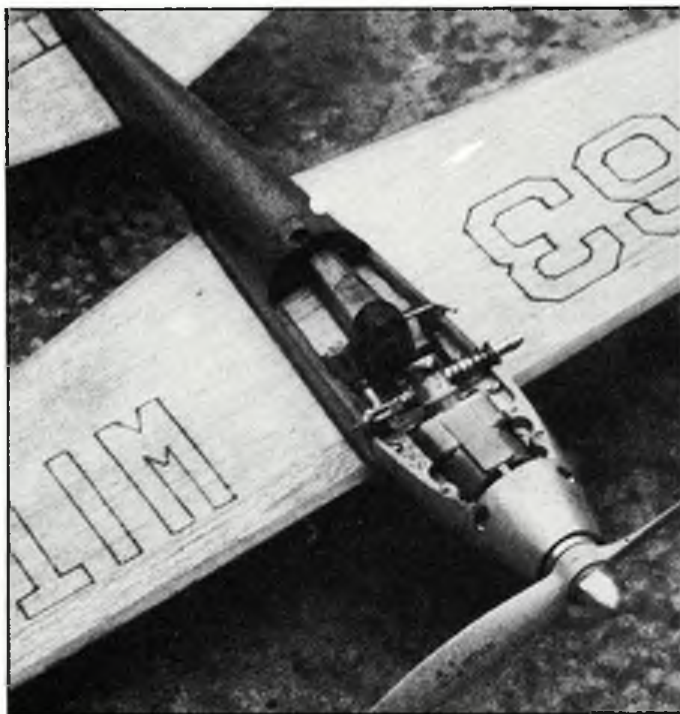
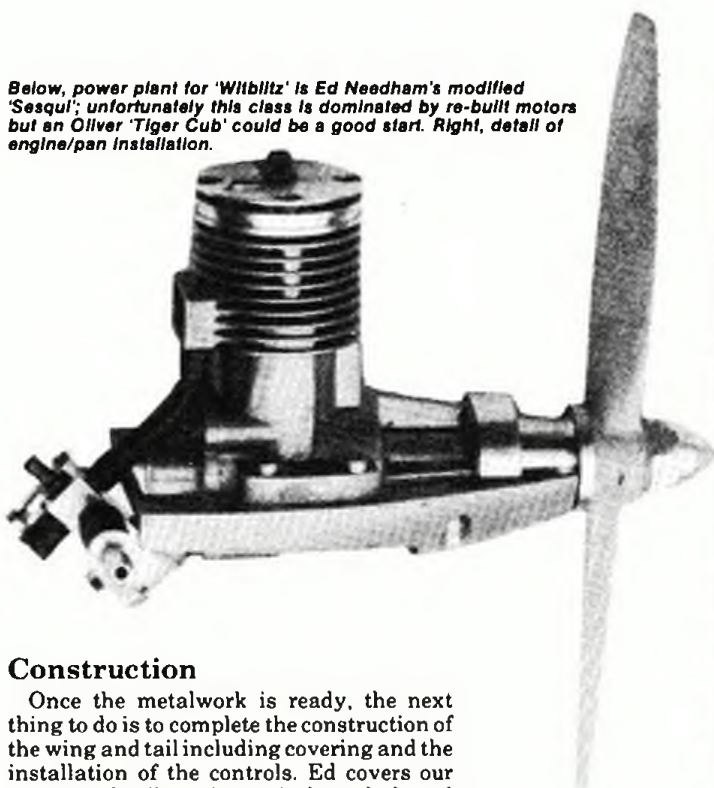
Since the whole thing was to be an experiment for us, the first decision we made was that the model should be a simple, quickly-built affair using design and construction features already familiar to us. We did not know then that the motor as originally conceived would work and so we needed a model that could be chopped and changed, or even scrapped, without much pain. Equally, if the motor did turn out to be good we wanted a model that would match its capabilities. The result was 'Witblitz' and it turned out just as we had hoped - cheaply and easily built, compact and light with excellent flying qualities: there is no feature of the design or construction that we would wish to change now. The plan shows it all but it must be remembered that the front-end is designed to take a Sesqui based motor. If you plan to use a Webra 'Speedy', Enya X-11BB or Oliver 'Cub' based motor, then front end revisions may be necessary. The answer is to prepare your motor, and its associated tank, fuelling and mounting items first and then to revise the plan to fit for to do things the other way around is a no-no.

*Rugged it may be but 'Witblitz' has smooth, aerodynamically clean lines - no excess drag on this racer...*



# WITBLITZ

Below, power plant for 'Witblitz' is Ed Needham's modified 'Sesqui'; unfortunately this class is dominated by re-built motors but an Oliver 'Tiger Cub' could be a good start. Right, detail of engine/pan installation.



## Construction

Once the metalwork is ready, the next thing to do is to complete the construction of the wing and tail including covering and the installation of the controls. Ed covers our wings and tails in 30gm/2 glass cloth and epoxy resin using a wing press. Pressing wings and tails undoubtedly gives the best results in terms of weight, stiffness and durability as well as assuring straight, warp-free flying surfaces.

If you cannot press or have someone press for you, the Tufcote method previously described many times in this magazine is an acceptable substitute. At the same time, the fuselage crutch and nose block (including the undercart) can be assembled. Locate the pan hold-down slugs in the crutch by using the pan as a drilling jig. Once the slugs have been epoxied in, bolt on the pan to act as a pattern whilst you profile the inside of the crutch front end so that the motor fits correctly.

With the crutch in finished form, relieve it at the wing and tail locations so that these fit neatly at 0-0 incidence (up to +1mm of incidence on the wing is no bad thing, though) and epoxy these in place. Now install the pushrod and shut-off trip-wire, and the pan with the motor bolted in position. The motor acts as the positioner whilst you glue the nose block in position. The inside of the nose block should be prepared prior to this so that it uniformly clears the motor fins by 1-2mm and will leave a similar clearance between the motor head and the model floor.

The next step is to glue on the fuselage formers, the fin and the top and bottom spines. Now the cooling air exit duct can be installed and covered in glass cloth using Tufcote whilst the fuselage sides are being wet moulded. These are from soft, bendy 1.5mm balsa and wet moulded by soaking in hot water for a few minutes prior to being formed around a spaghetti jar (or some other smooth, uniform 70 to 100mm dia cylinder). 24 hours of drying in a warm, dry place will result in uniformly curved sides which can then be trimmed to shape and fit correctly.

Glue the sides in place, assemble the top cover and spot-glue this in place, and glue on the fuselage floor and fin covering sheets, and it all looks like a model. Careful work with a balsa knife and a sanding block will give the final exterior form which should be as smooth and streamlined as you can make it without reducing the fuselage side sheet

thicknesses significantly. Looks nice (there's that word again) doesn't it!

The final stages are to remove the top cover and hollow it out prior to installing its hold-downs and the window. Now cover the top cover, fin and fuselage in glass cloth using Tufcote and, if you like (I do) mask off the window, wing, tail and undercart, and spray on a couple of light coats of a bright, light colour using a spray can of car paint followed by a final coat of Tufcote making sure that the exposed inside surfaces are well saturated. That's it for the model, so now to the important subject, the motor.

## Power department

For reasons already explained, the majority of the successful motors in 1/2A Team Race over the years have been partially or totally home-made. Only the Oliver 'Cub' has been the exception to this rule and only the occasional 'Cub' has worked well enough to win. Against this background, Ed and I decided that we had to have a special too. Not wishing to go totally home-made at first try, we looked around for a suitable basis for our efforts and found the Australian Sesqui for, if ever there was a 1.5cc Nelson, the Sesqui is it.

The Sesqui we acquired had lovely everything else so into the bin went all but the crankcase and backplate castings, the front ballrace and the induction drum. Ed made an 8mm main journal dia. crankshaft from a HT steel bolt to fit the crankcase with its original front ballrace but now with a Rossi 15RV rear ballrace. Right at the fourth attempt, so the shaft crankweb was drilled for and fitted with a pressed-in bearing roller as a crankpin. Ed also shrunk a steel ring around the front ballrace correctly.

Now the bottom end was OK so Donald Haworth was prevailed upon to make a brass cylinder liner and have it chrome-plated. He then reduced the OD of a 'small inside' Nelson piston and fitted this to the honed and chromed liner. Finally, Donald made us a new connecting rod. Piston/liner O.K. now, so Ed finished the job by making a two-part aluminium brass head, a prop-

driver and sleeved prop-nut and a 3.2mm I.D. venturi and a Goerghiadis type multi-function valve. Altogether a lot of time and effort but it all worked well as our results have shown and only one thing about this conversion has been shown to be wrong.

On a Visionregal 6 x 6 glass fibre/epoxy propeller at 142mm dia and 150mm max pitch and on Nelson fuel (79 oil content) we now get about 19 sec/10 laps airspeed (103mph) for about 55 laps. Only Donald Haworth himself has been better than this and he holds the SMAE heat record. However, unlike Donald, we have hot re-start problems and no amount of experimentation with the direction and quantity of the exhaust prime has overcome the problem. Our conclusion is that our brass liner and Nelson piston have mis-matched expansion coefficients - great in the air but horrible on the ground. Ah well! You live and learn.

A new piston made from a lower silicone content aluminium alloy may well be the answer but it would not surprise me if our range is considerably reduced as a result. What we have learnt, however, is that the skills and knowledge exist in this country for major replacement work of this nature and that the cost is quite acceptable. Thanks to Gordon Burford in Australia, suitable castings do exist as used on the Sesqui for 1/2A team race motors and, as publicised in this magazine, for both AI and RV 2.5cc motors. These, plus the services from people like Donald Haworth in this country, make the special motor for 1/2A and FAI team race, for Goodyear and FAI Power, and even FAI combat and speed, perfectly practical and at acceptable cost. Maybe soon such motors will become more widely available; all it will take is committed demand.

That is the story of our 'Witblitz' model and not a Sesqui motor. For Ed and me it has been a very educational and most rewarding exercise. I hope that it will inspire some of you to have a go, too. In case the name 'Witblitz' intrigues, in Afrikaans it means 'white lightning' - in other words, powerful home-brew. Not a bad name for a project like this...

# ADVERSE YAW!

## A regular, irregular view on the world of aviation from Ron Moulton...

There's nothing to compare with a spell of enforced inactivity for scrambling the mind and churning all those good resolutions into disorder. I guess we all do it. Set aside piles of plans, hordes of kits, stacks of National Geographics just waiting for a broken limb or a lay-off from work. Then wait till it happens. I'll lay odds you'll not know where to start. Time flies in a mist of reminiscence as the golden store is sifted and the cupboards and the attic release a shower of temptation in the shape of rediscovered treasures.

At least, that's my recent experience. In less than 24 hours my priorities switched through half a dozen waiting projects. Plans scanning may be therapeutic, but it gets nothing built and when the drawings range from rubber-scale to old time with R/C assist, the brain behaves like Jiminy Cricket, making lots of noise and getting nowhere fast. The cap doesn't even leave the glue bottle...

So, as the order was not to exert or excite, I thought it best to relieve the manifold pressure and settle for a browse through the bookshelves. If you're a book collector you'll

appreciate what I mean when I say I can become totally immersed in any book that reflects dedicated research, especially when backed by good illustrations. There are hundreds of titles on aviation that deserve a place on any aeromodeller's shelves - and thousands more pot-boilers that don't. Setting aside the better literature, and settling for the technical which can stand page flicking until a gem sparkles for attention, I took a selection of "plan books" to the easy chair and found my Nirvana. At the risk of creating havoc at the bookshops, I'll tell you what they were, and why they gave me so much pleasure and relaxation in their study.

### Reich warbirds

Heaviest, thickest (at 672 pages) and when it first appeared fifteen years ago from Macdonald & Jane's, quite pricey at all of £12.50, is Bill Green's "The Warplanes of the Third Reich". Never was there a better example of investing in a really good reference work. Such a mass of data, drawings, photographs, cutaways and precise description could not be assembled

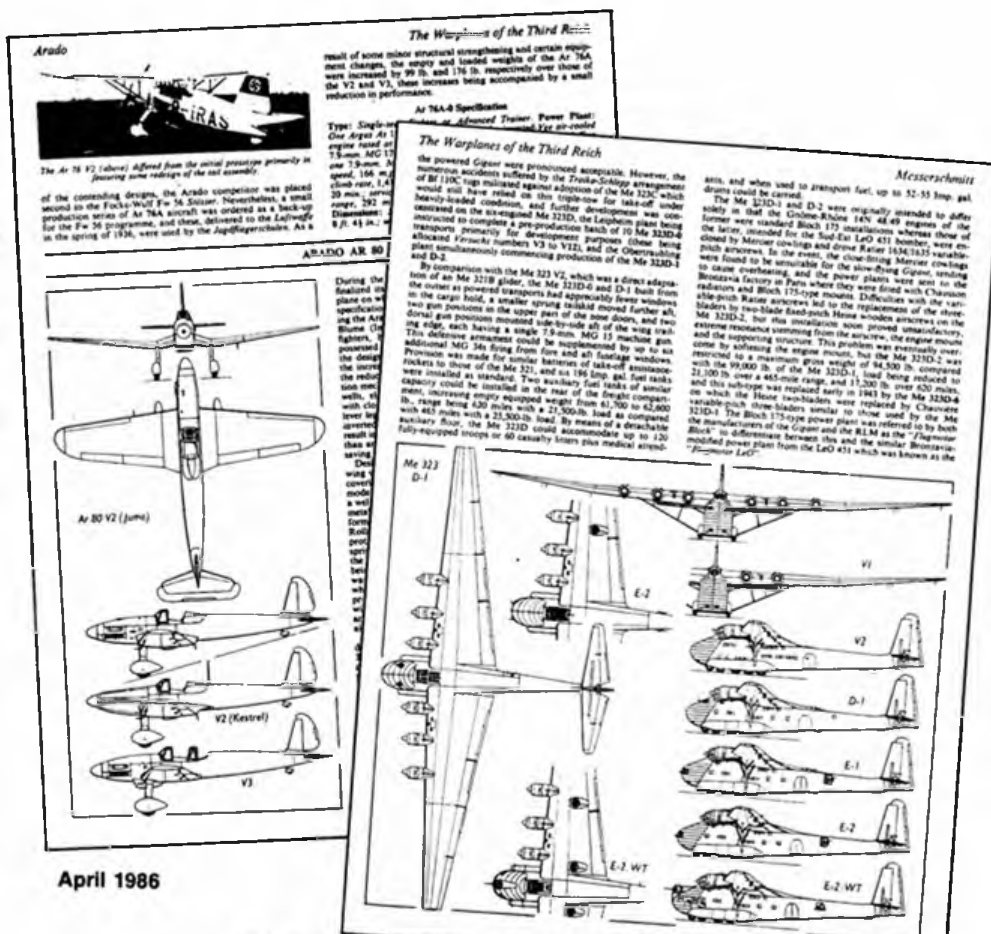
today for less than three or maybe four times the price. With his magazine background from "Flying Review" to "Air International" and an enviable photo file, Bill's task extended from a target of two years to almost twenty as his probing investigation led to dozens of contradictions and a fund of new revelations. Taking heed of Ernst Heinkel's personal advice "not to neglect those types which fell by the wayside, and to relate the accomplishments and failures to the background against which they were designed and committed to battle," Bill Green starts with the Arado A65 and concludes 644 packed pages later with the Siebel Si 201. Never heard of 'em? I'd be surprised if you had: but here they are among 132 aircraft types drawn in 3-view by Dennis Punnett, many with sub-type profiles, and all with photos that just wouldn't be found between one set of covers anywhere else. For the flying scale fan it's like opening Pandora's box of delights. How about the ideally proportioned, open cockpit Ar 80 fighter, or the incredibly futuristic Ju 287 swept forward wing jet bomber which went to Russia with its designer and was last seen at a Moscow airport in 1948. These rare birds emerge as gold dust among the fact-filled pages on the Junkers Ju 88, Messerschmitt Me 109, 262, etc.

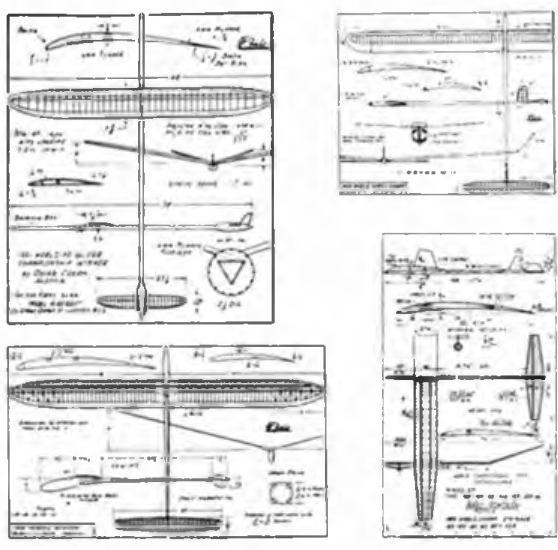
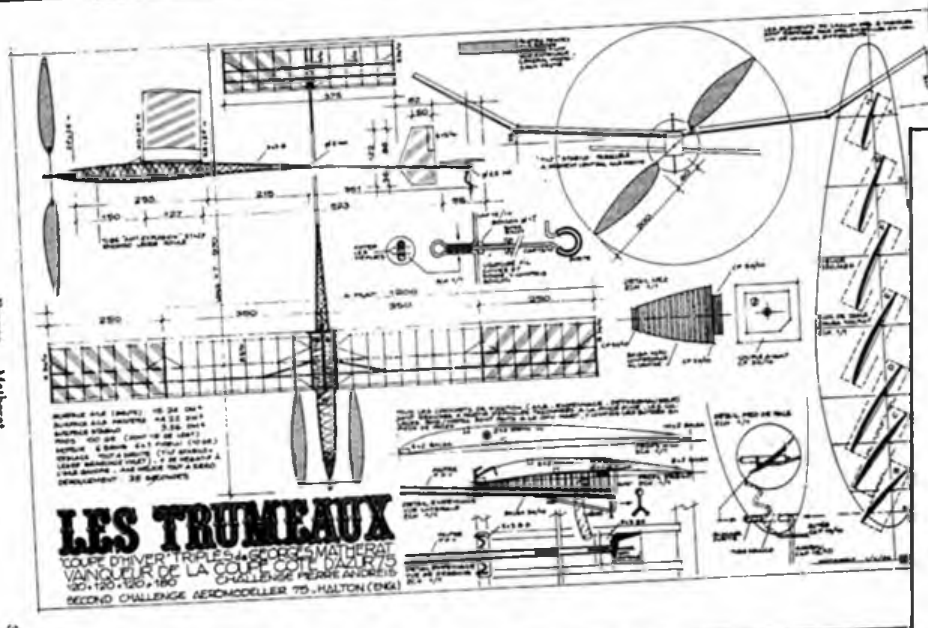
It may be news to younger readers (say, less than 50!), to learn that, like the Hurricane/Spitfire rivalry, the Me 109 had an early competitor in the Heinkel He 112. I'll not spoil the story of wing clipping, prop, engine and cockpit changes on the prototypes before production versions of the He 112 went to Japan, Spain, Rumania and Hungary. As Michael Caine would say, "Not a lot of people know that" and very few model designers have latched onto the curvaceous Heinkel with its choice of colour schemes. Search the reference library to get a taste of this masterpiece, and then try to get your own copy if you can.

### The magic of Free Flight

Nearly as heavy, but totally different, was my second selection of Bill Hartill's *World Free Flight Review* which, although dated in terms of International contest design technology (it covers 1975-1977 with a back flip to 1955), will never lose its fascinating attraction. Bill's an Internationalist, photographer, traveller, raconteur who can relate his keen observation of the World Championship merry-go-round into flowing account and excellent photography. To most aeromodelling mortals, the comparative few who dedicate themselves to traversing airfields at least five times each way in the chase for free flight duration are just plain nuts. Their models are indisputably, gramme for gramme, the most expensive, most sophisticated. In a way they've become so elitist, there's an element of unreality about today's F.A.I. standards with use of composites, thermal sensors, supersonic power props and electronic flight timers. Such is progress. Yet the magic of free flight never really wanes. 34 Nations sent teams to last year's finals and many of the names in Bill's book which

*The Warplanes of the Third Reich - a mass of data, well illustrated and revealing. Full of inspiration for flying scale.*





Above, Bill Hartill's Free Flight Review includes 109 designs, among them Matherat's Cd'H "Les Trumeaux" drawn in inimitable French style for Schandel's "Vol Libre" newsletter. At right, development of the classic "Nordic" glider into the sophisticated FAI Class F3A through the 1950s is part of Bill Hartill's coverage.

dates back nearly a decade could still be found active around Livno. Better than that, all of the 109 designs which Bill culled from the model press and specialist newsletters are still highly competitive and recorded for the time, say in 30 years, when they become vintage ripe.

Ambitiously marked Volume 1, this risk venture into self-publication painted a personal view that possibly never earned a bean for its author and with its inevitable price of \$30 in 1978, probably failed to acquire support even from those who shared the same experiences, like Frank Zaic, on whose teachings, the Review was modelled. Bill Hartill and his team-mate printer Doug Galbreath have probably been overwhelmed by disillusion at the rate of sales. All I'd add is that this is a classic record that'll never fail to entertain.

### Indoor delights

As we're on free flight, I picked up another labour of true love next in Ron Williams' "Building and Flying Indoor Model

Airplanes" which appeared from Simon & Schuster of New York and John Murray in London in '81. It's a large format paperback of 272 pages and I was so impressed at its quality I had it hardbound immediately so it could be safely preserved intact with sewn pages. There never has been anything to rival gifted standards of illustration or the finely honed text of this title which leaves absolutely nothing more to say about indoor models. From the ultra simple delta Dart through EZB, Pennyplanes, Manhattan, Scale and Glider to Microfilm and F.A.I. World Championship class; the pages glow with feeling for the ultralights that fly sheltered from the elements. Few artists have the ability to translate the intricacies of model techniques into perfect perspective and, among them, even fewer have the ability to express instruction in flowing language. Ron Williams has the gift. The marvel is that he saw his first indoor models at Lakehurst in 1974 when he took shelter from the storm that interrupted the World Scale Champs. "Never rains but it shines" - that old adage came true with this one.

### Small is irresistible!

Of course, when it comes to fun flying indoors there's one name that is synonymous with the unorthodox and Peanut scale - Bill Hannan. So "Models and Musings" and Volume 2 "Scrapbook of Scale" fell naturally into my selection, the first for its intriguing variety of tiddlers we used to call 'parlour fliers' and the second for its plan and 3-views of oddball aeroplanes. If you've just one evening in which to make something for the club room 'M & M' provides the menu. There are only two designs in the book with shaped wing ribs! The rest are centred on Bill's inexhaustible supply of one-sixteenth square strip, and 1/4" by 1/8" motor sticks. As if designed for clumsy thumbs, the plans are full-size with easy joints 'For the Tenderfoot' as the series was known in one publication. In case the flat plate surfaces cause concern, Bill reveals his clever adaptation from Microfilm methods. Tissue is pre-doped on a frame, allowed to shrink, then the flat wings, tail and fin are attached with

Ron Williams' sketch work conveys the techniques of indoor model construction to perfection - from basic Delta Dart to Microfilm and even the carrying box.

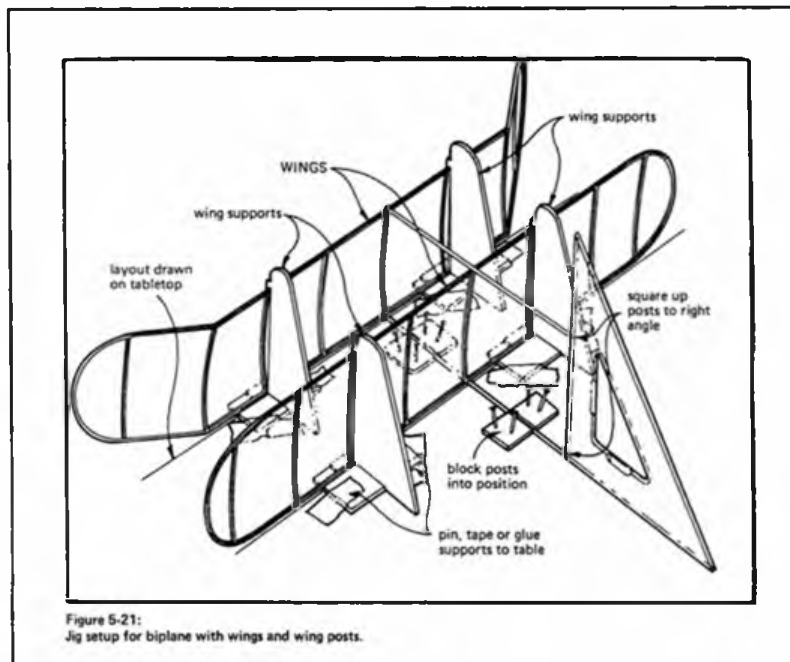


Figure 5-21: Jig setup for biplane with wings and wing posts.

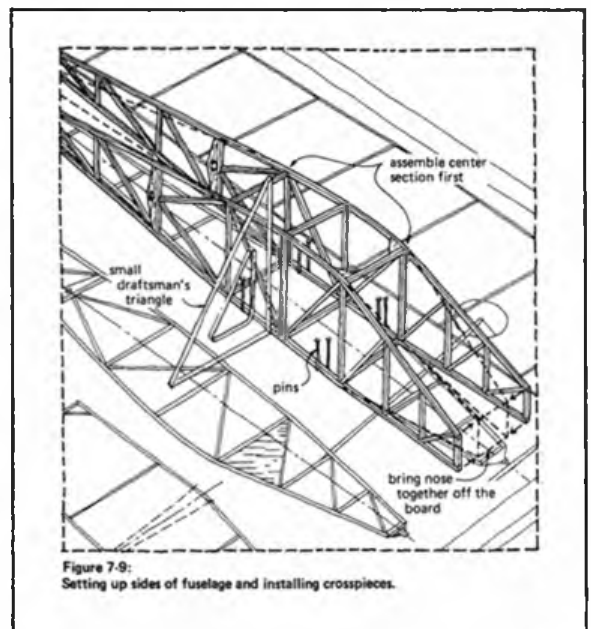


Figure 7-9: Setting up sides of fuselage and installing crosspieces.



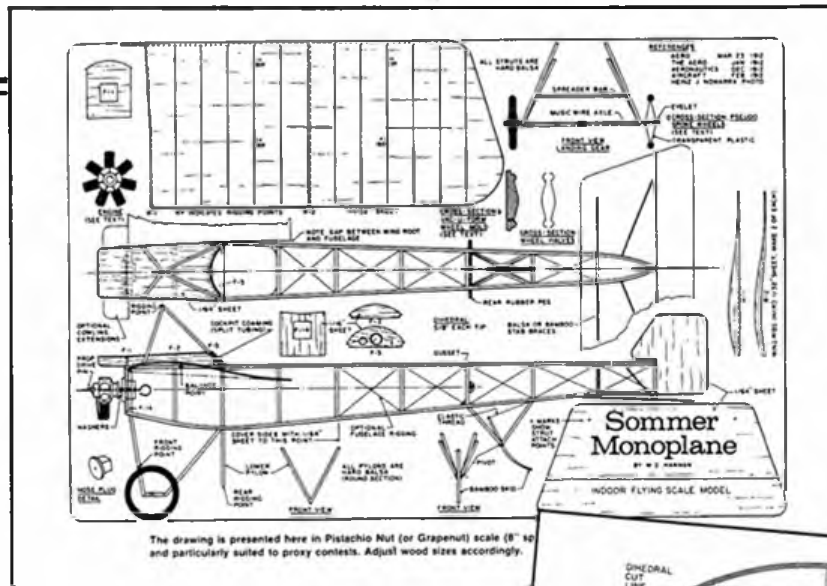
thinners painted onto the structure and finally trimmed away from the frame as pre-stressed, warp free components. Neat! "Scrapbook of Scale" is two grades up the construction table but Bill's disdain for rib cutting shows through as they're all plans for curved one-thirty second sheet wings on types that ooze nostalgia. Ideal for a browse; better for a few hours of breadboard building with minimal fuss and effort - I'll always have a Bill Hannan book around.

### Californian collection

But the book of actual size plans that always comes first, is possibly the least appreciated publication ever to emerge out of California. Produced by Bill Northrop of "Model Builder" for a dedicated (and philanthropic) flying scale enthusiast, Ed Coleman *Flying Scale Models of W.W.II* compiled a dozen actual size plans of famous fighters to 1/24th scale in 128 pages of sheer delight for all rubber drive fans. Ed himself produced his favourite P 47D Thunderbolt. He recruited Doug McHard for the Spitfire, Hurricane, Tomahawk and Me 109; Bob Peck for the Zero, Bill Hannan for the Hellcat, Clarence Mather's Mustang and Airacobra, Hal Cover the Ta-152, Harry Bagley the Wildcat and Frank Scott a Corsair. All traced to perfection by Paul Plecan and supported by three of the best expressed chapters on building, covering and flying. Compact one-piece models like these may have limited appeal but I'll confess to being one of the minority with a penchant for their stringered fuselages and performance within the park. At its original price of £3 only ten years back this book is a bargain.

### Plans, plans and more plans!

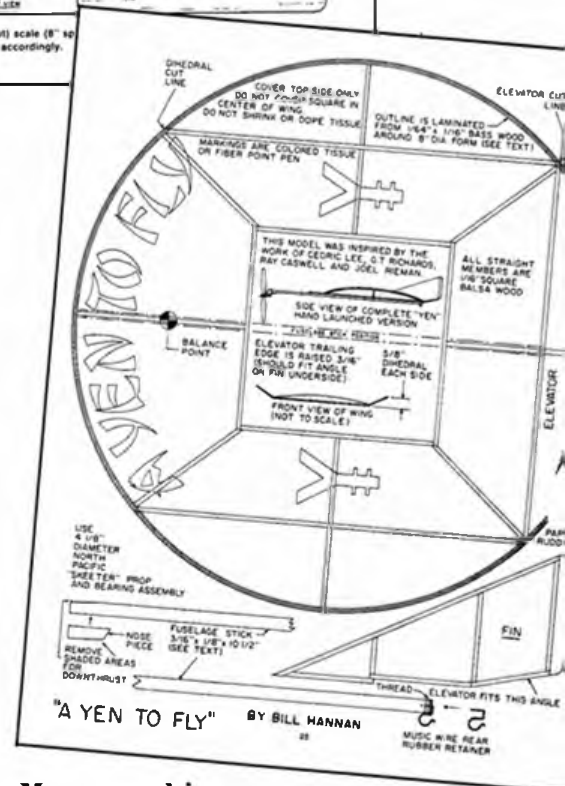
Plans books with fine detail, not necessarily for modelling, more for



The drawing is presented here in Pistachio Nut (or Grapenut) scale (8" = 1' and particularly suited to proxy contests. Adjust wood sizes accordingly.

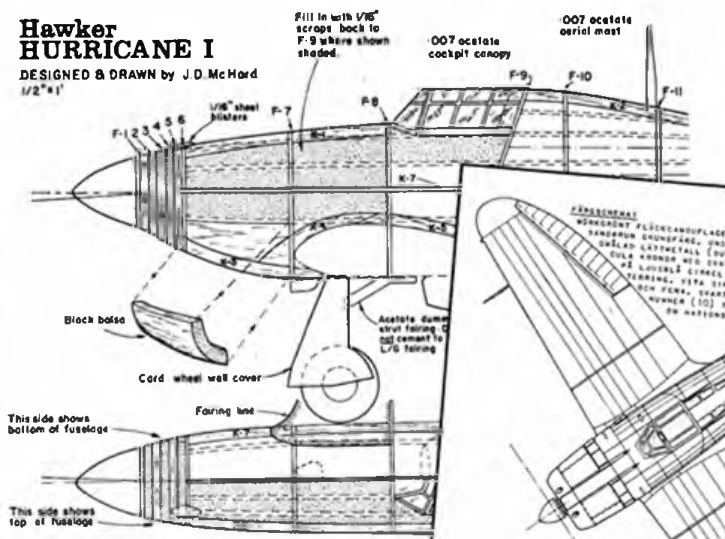
"Flying Yen" by Bill Hannan (right) from *Musing - and the little known Sommer Mono* out of his *Scrapbook of Scale - two of many plans to build in the armchair, right out of the page.*

browsing, can keep me quiet for ages. Bjorn Karlstrom has produced two volumes from his enormous output of inimitably styled scale drawings. They cover the Swedish Air Force from earliest to 1984. My choice was Volume 2 of "Swedish Fighters" which includes 25 types from Phoenix to Viggen. It's an international mixture, among them the Bulldog, Gladiator, Mustang, Mosquito and Vampire with rarer shapes in the Re 2000 Falco, Seversky EP.1 and Fiat CR42. Sweden's own SAAB J21, J22, J29, Lanser, Draken and Viggen are there, of course, and the colour plates bring out a wild variety of schemes sufficient to make those who want to be really different, spoiled for choice. An all-red J22 with white lightning flash would be my selection. This fascinating but little publicised fighter would make an ideal flying model. I wonder why it hasn't hit the model scene?

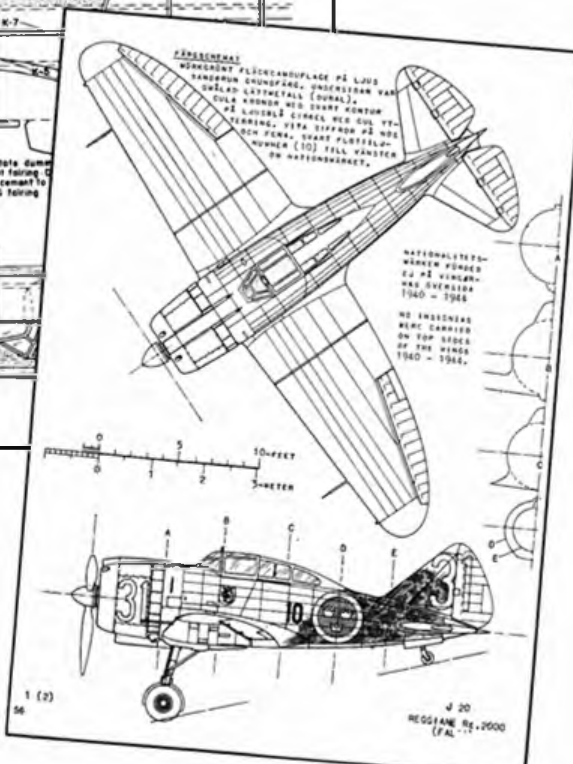


### Hawker HURRICANE I

DESIGNED & DRAWN by J.D. McHard 1/2" = 1'

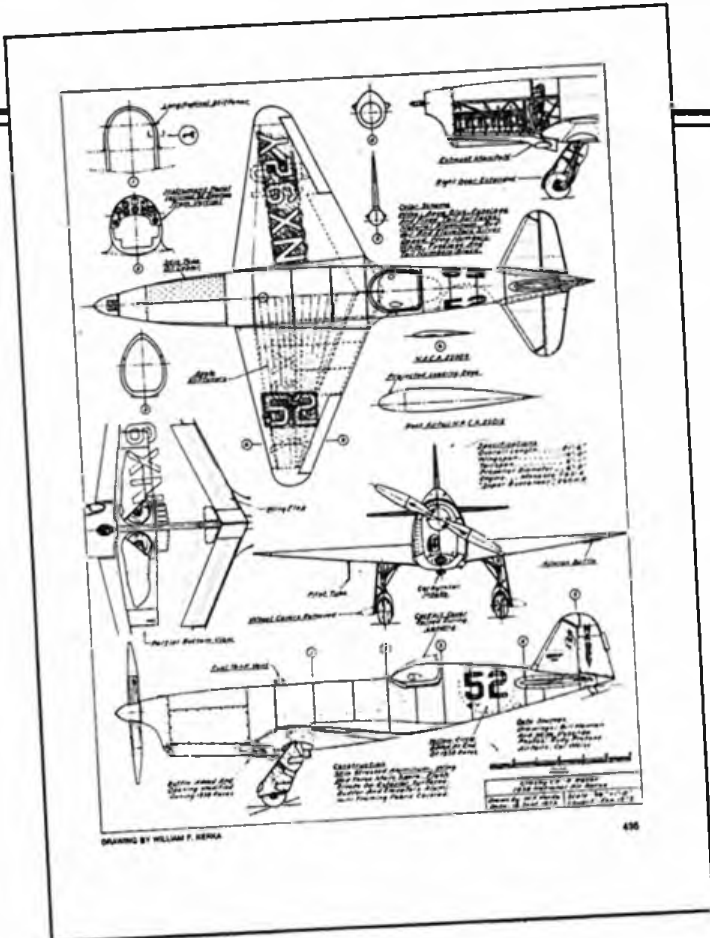


About half the 128 pages in *Flying Scale Models of WWII* are like this Hurricane, with actual size plans. Supported by the best of photography and excellent tips, this was an exceptional publication. At right, Bjorn Karlstrom's style is immediately recognisable in his scale drawings. This, from his Volume 2 on Swedish Fighters shows the Italian Re 2000 which served through WW2 years.



### Mean machines

For the really way-out shapes though there's absolutely nothing to compare with the American racers of the thirties. In a decade of enterprise and bravado, private endeavour produced a flock of sharp winged hot rods that outpaced the Air Force and inspired a whole generation into airmindedness. We all know the Gee Bee, Wittman, Chester, Howard and Brown racers but in Wes Schmid & Truman Weavers' "The Golden Age of Air Racing pre 1940" the also-rans get their showing. Produced by the EAA Aviation Foundation, it totals no less than 554 pages, packed with reprints of original accounts supplemented by innumerable photos and drawings by Hirsch, Matt, Kerka and Wilson. If you think you've seen taper wings, then you haven't viewed the Crosby CR 4, spreading all of 16ft of which the outer bits were little more than model chords, or for sheer curvaceousness, the Hughes H-1 which Howard of the same name flew across the USA non-stop at 327mph in 1937, and for elegance (and ugliness), the Folkerts (and the Wittmann Chief). This massive compilation is split into two volumes. My choice is Vol. 2 which sells at \$15 and runs from page 274 to 554. It would be hard to find a better encapsulation of yankee get-up-and-go within one set of covers.



A diamond wing? One of many eye-popping racer shapes in *The Golden Age of Air Racing*, the Crosby illustrates an era of eyeball engineered designs which produced some incredible performances. Below left, Northrop's giant, a 6 jet banker which, with the B-35 series, might have produced as many as 270 such aircraft; in the event 15 airframes were made and 6 flew. Centre, one of the Hortens, the HIV, stands out as a "trademark" of the marque and has few rivals for sheer elegance. Right, just two of many frustrated projects in the Lippisch biography which covers a wide range, all of them tailless and fascinating for modelling interest.

### Tales of notails

I'll wind up with a trio of titles that always intrigue through their revelation of adventure and experiment in the search for efficiency. Throw away the tail surfaces, and the airframe must profit by reduction of drag. Go for delta or extended flying wing and surely all the old bogies disappear. Alas it was never that simple and even though we've just celebrated the first ten years of Concorde, and the Mirage family has out-marketed all except the MiGs we are still a long way from the ideal. Three names come to mind when the tailless aeroplane is mentioned. Lippisch, Horten and Northrop.

Happily, each is well recorded and these were my final choice of subject.

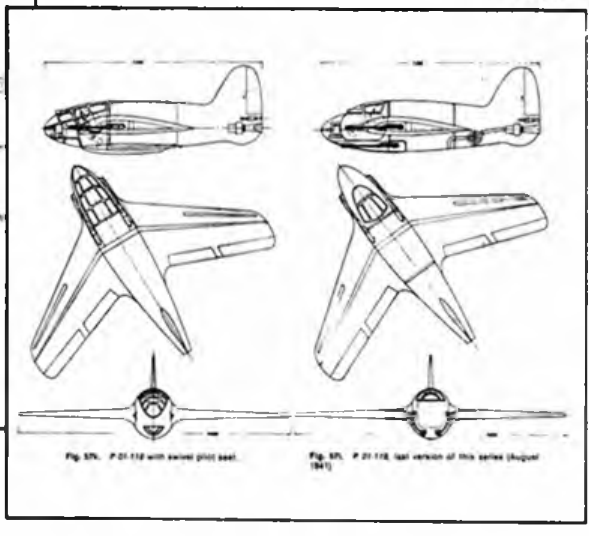
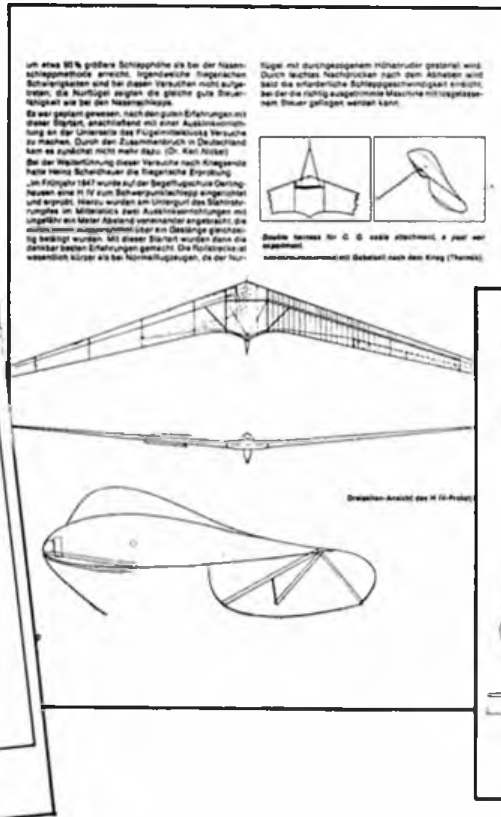
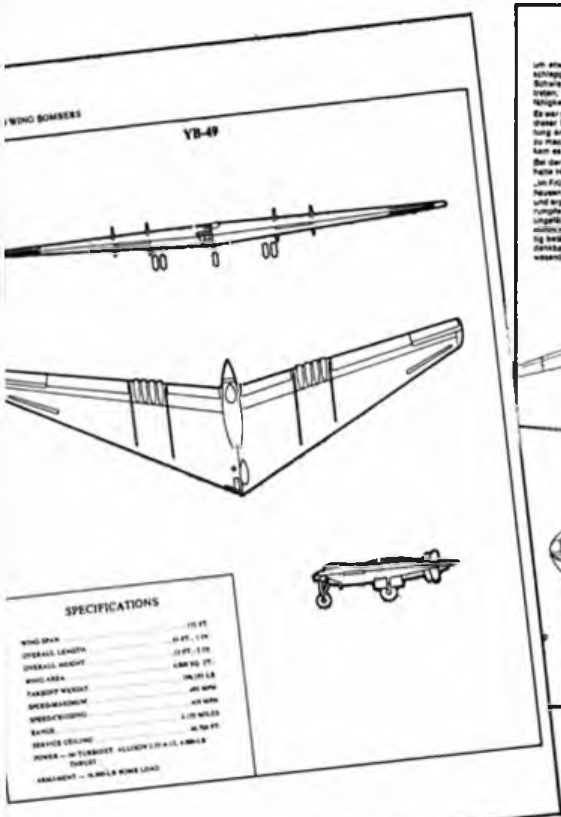
Of several Northrop accounts, my preference is a commemorative produced by Fred Anderson in 1976 for the Company simply titled "*Northrop - an aeronautical history*". It opens with his first Avion Corporation wing of '28. Northrop had designed the Vega for Lockheed and left to develop his own ideas. The wing was his centrepiece and it showed when he had his own Company and produced the Alpha, Beta, Gamma and Delta. But the pure flying wing was his conviction and from the N-M of 1940 to the gigantic YB-49 six jet bomber of 1949, the Northrop story is one that grips

any aero fan with unique fascination. Fox, interspersed within the flying wings, is a variety of types quite unlike that of any other manufacturer. The N-3PB floatplane, Black Widow, N-23 Pioneer (or "Raider"), the Scorpion through to the T-38 Talon, F-5 Freedom Fighter and now the F-18 and F-20 Tigershark. This heavy hardware compares with the Horten series of wings from 1933 - 1960 which were so well described by Reimer Horten and Peter Selinger in "*Nurflugel*", a book produced in Austria so it is in original German though each section and all captions are wisely summarised in English.

There's a similarity of purpose in the Horten H Vc and the Northrop N 9 in that each is a high aspect ratio twin pusher but there it ends. All else from Horten was unmistakably original and this magnificently researched account covers two dozen delights from the delta shape H1 of 1933 to the very high aspect "Colonia" thirty years later. Surprises come as pearls of discovery; the moving wing tip and folding propeller in the H11 (surely the first to fly with VW power?); the HVII which might have been powered by pulse jet; the HIX Jet, frustrated along with a six jet project by the end of the war. Experiment in perpetuity, carried on into the Argentine but still cut short by political indecision.

There never has been a rival to the HIV as a perfect example of the extended tailless sailplane and this book honours the Horten elegance admirably. And so to Lippisch. Modeller, designer, patron of the delta and so many other vital influences on progress. Thankfully his story has been translated and published in English by the Iowa State University Press, and it embraces the early gliders, the first 'Delta' family, the wartime interceptors of which the Me 163 was the best known, and the innumerable projects through to his aerofoil boat for flight within ground effect over flat areas. "*The Delta Wing*" is the easiest to read among text books, and an excellent tribute to a visionary who lived for flight. I settled back after that one with the thought that they don't seem to breed 'em like those pioneers any more do they?

On reflection through this browse I seem to have been not a little unpatriotic! Only one British publication, and most centred on designs and data from overseas. Tough! Must do something about this. Jane's AW has no competition at all, especially when it comes to cost. Maybe we need a UK compilation to match my selection? Any thoughts out there would be welcome.



# FAST PHRED

Build this round-the-pole fast flyer for Cox 010 or 020 motors. Guaranteed to liven up the duller moments in club meetings or even the back garden! Speeds in the high eighties dictates a fairly firm fixing for the pole . . . Plan and suggested rules come with safety warnings from Jim Woodside.

Here is a little design especially for those of you who suffer badly from racing withdrawal symptoms when the weather is inclement.

The original model was built by Geoff Lowe some twenty plus years ago when the Warrington M.F.C. held a series of indoor speed events. 'Fast Phred' turned in the best performance with speeds in the high eighties. This little model has no controls as it is intended to circulate a revolving pivot such as a cycle hub in which the spindle has been attached to a firm, heavy base.

A single steel wire of .010 (.25mm) dia. and about ten feet in length is fixed to the starboard tip by a wire loop. The wire loop is

capable of being trimmed forward or backward until the model will "groove" unaided. The natural precession effect of an anti-clockwise rotating prop provides line tension during the take off. The model, of course, rotates in a clockwise direction. It was found that the Cox 020 'Pee Wee' provided ample power, although some 'Tee Dee' 010's and 020's were also used. I can offer no advice regarding what to do about castor oil waste on the walls!

**Suggested rules:**

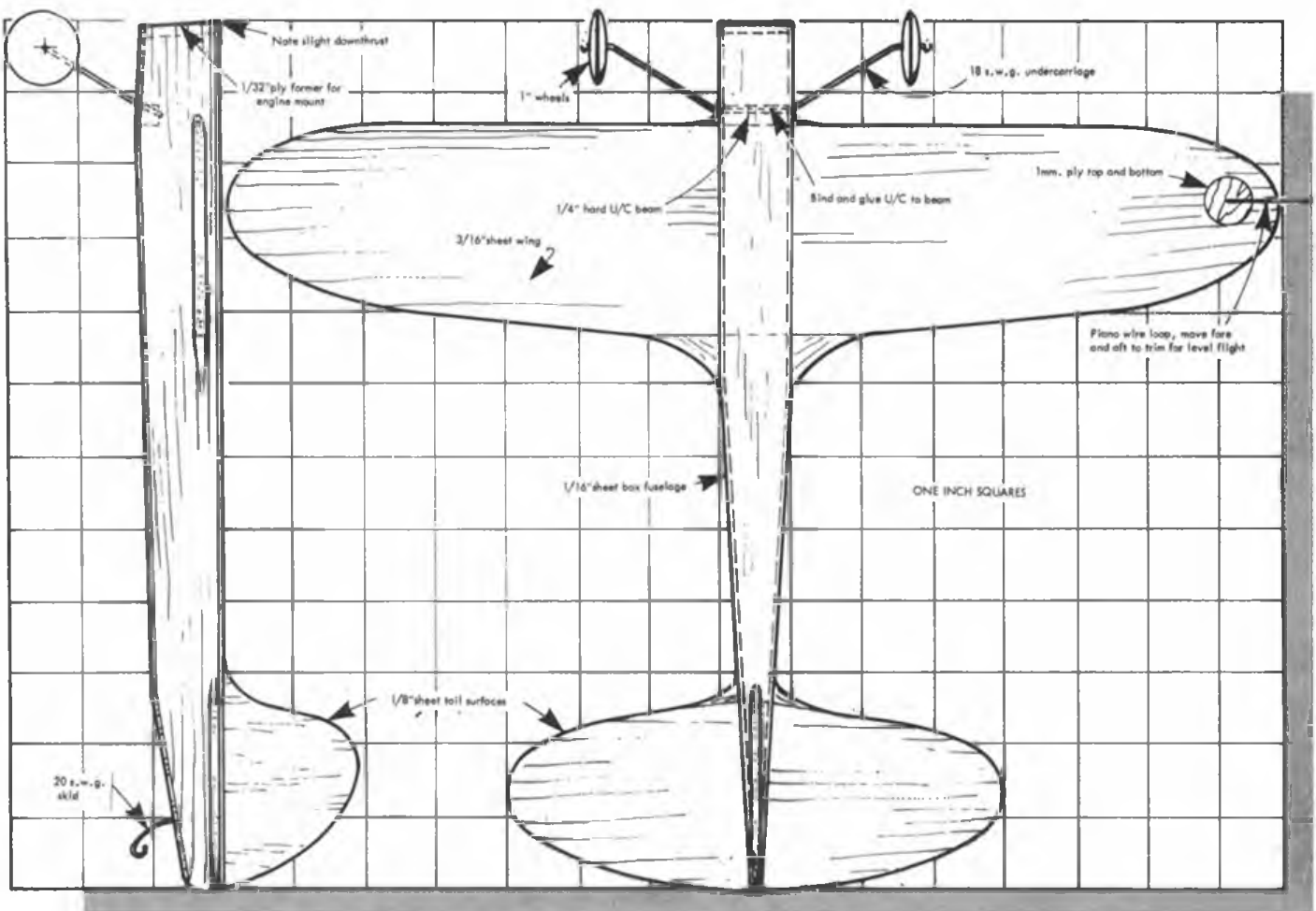
- Models must have two wheel undercarriages and r.o.g.
- Engine to be Cox 'Pee Wee'.
- All models to pass 20g. pull test.
- Winner to be the fastest ten laps timed between laps 5 to 15.
- All entrants to use same fuel - provided by

the organisers.

If any group undertake this I would be interested to know the outcome.

'Fast Phred' is a perfectly workable model but anything that weighs over a few ounces and travels at 80 mph plus on 10ft lines has to be treated with respect!

Ensure all line fixings, both at plane and pole are well secured and as with normal practise do not use a flying wire that has become kinked. For first flights do not use too much fuel — there is nothing more horrifying than to see the pole (and model) start 'walking' across the floor . . . knowing there is still plenty of fuel in the tank!



# FREE FLIGHT SCENE

with Dave Hipperson

## Pete Michel's '51 Wakefield own design...

I make absolutely no apologies for featuring what, in essence, is a Vintage model this month. Return gear set-ups have always been rather a mystery to me so when I saw Pete's model performing so well last autumn I thought it was time we had it all explained.

The pre-51 Vintage Wakefield rules of course penalise the length of the fuselage -  $L^2/100$  has to be the cross section minimum so the shorter the fus, the slimmer it can be. If we want a long power run we can either use a large prop on a short, thick motor or a smaller prop on a long thin one. The short, thick motor and big prop is actually very effective and doesn't require a long fuse, but I have found large props do behave rather erratically on these small and heavily loaded models - not to mention the added clearance necessary at ROG! The alternative is the medium sized prop and very long motor.

Return gear systems allow the long motor to be split in two or, more accurately, bent in two via the gears. In this way a great deal of rubber can be accommodated in a short fuselage. Of course low moments of inertia so produced can only be an extra bonus to glide stability.

Right, that's why Pete uses return gears - now how? Working from the nose block back, Pete arranges it thus. A conventional assembly with centre shaft line arranged fairly high takes the top motor. The rear of this motor connects to a neoprene covered S hook mounted in the top gear on the rear peg. Fig 1. This gear engages with another similar S hook gear set-up beneath it onto which another motor is connected. This runs forward to the nose where it is located and locked into the nose former. This is now effectively the back peg position. Fig 2. The motor can be said to have been 'folded' about the gears.

OK, so how on earth do you wind it? The fuselage is made sufficiently large - it has to be fairly big somewhere along its length to meet the rules so there is little waste in enlarging the nose and tail. A 1in plastic winding tube is used and cut away at the back in such a shape that fits snugly over each gear in turn. The gear train is loaded into the fuselage with the motor and, when it is wound, a 10swg locking bar is passed through the drive loops behind the gears. Fig 3. This peg can then either be held by the helper in the normal way or mounted on a 'stooge' as long as it has been designed to accept the model on its side.

The motors are pretty tight between hooks, incidentally, to minimise the possibility of bunching - Pete allows about 1in slack. The bottom motor is wound first in the usual direction and locked in the nose - remember the rear gears are locked all the time the motors are being wound. The top motor is then wound - same direction - prop attached and held. Removing the rear

locking peg simply allows the bottom motor to 'join in'. It must be said that although in principle that is simple - Pete had the model blow up on the winding jig at the Wells Wakefield meeting due to what he put down to ham-fistedness, so it's not infallible yet.

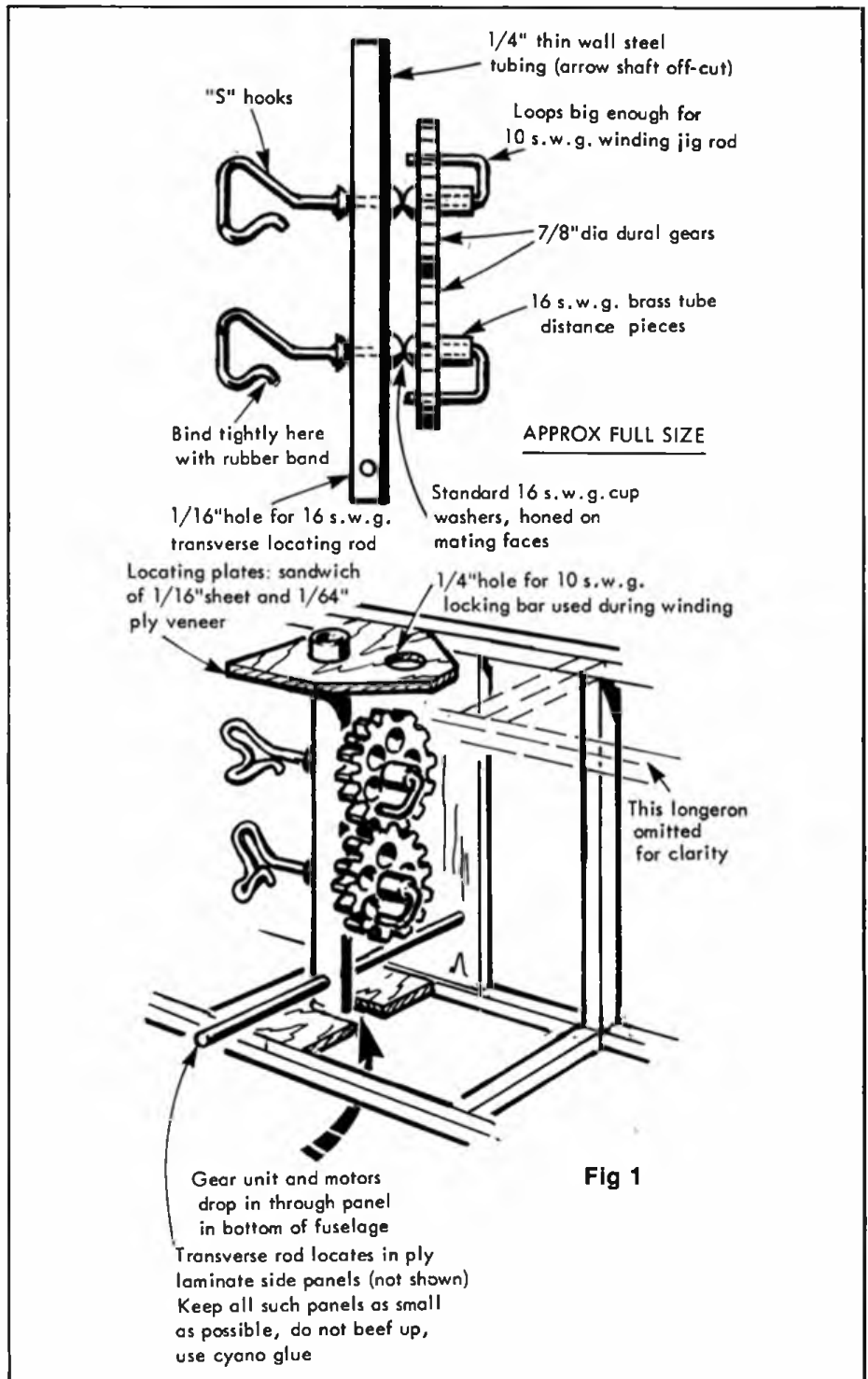
This aeroplane is estimated to have a 4½ minute plus potential and, perhaps more

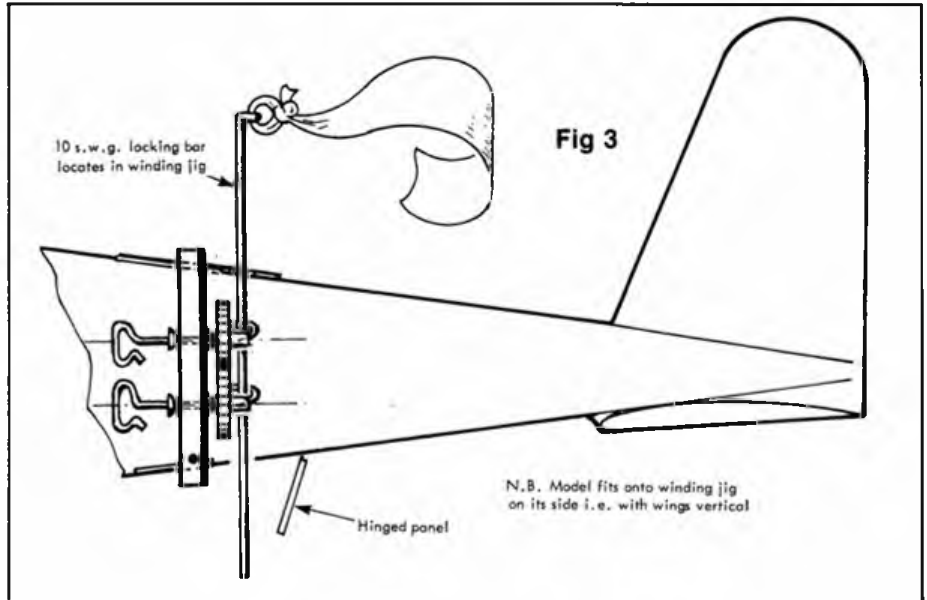
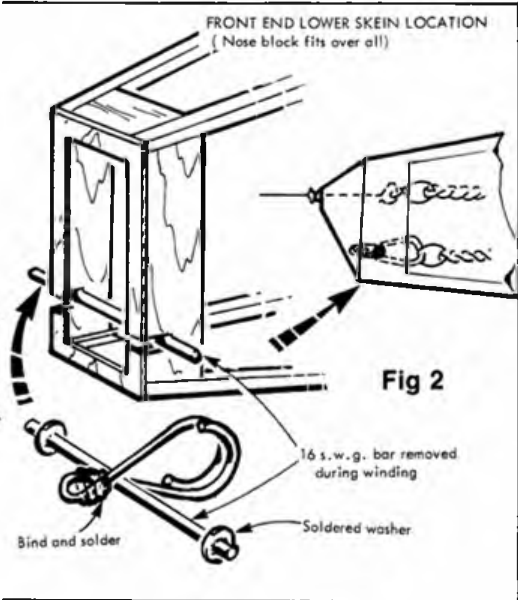
important, does it in a manner more reminiscent of a modern Open Rubber model - that is nice and gently - rather than the more frantic pattern associated with the short run Vintage set up.

Pete plans another model with a little longer fuselage to allow even more rubber; maybe up to 5oz as at present the model actually carries ballast!

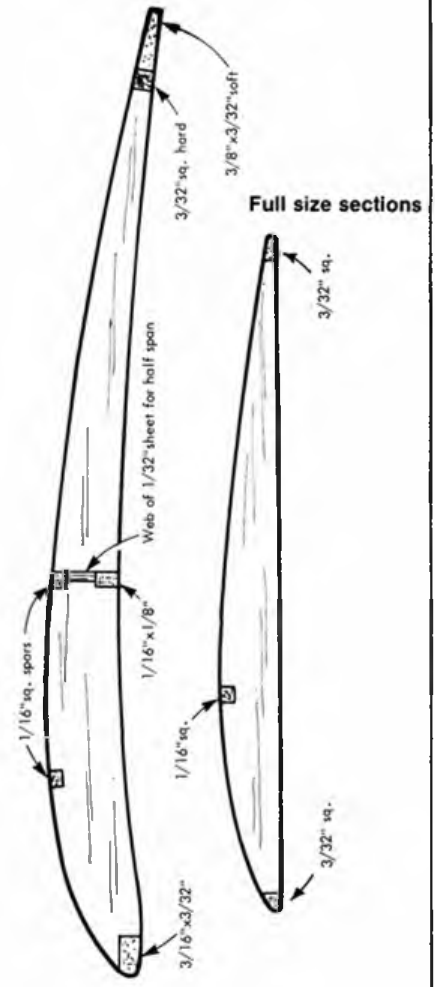
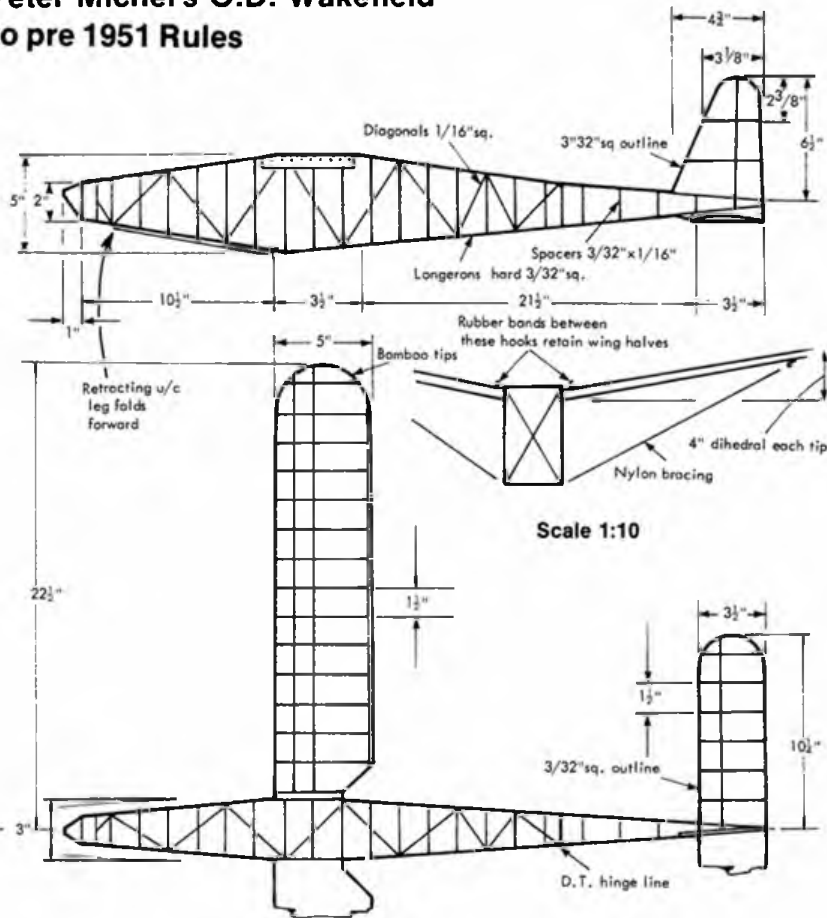
Data:-  
Weights

Wing	.....	28.3g	....	1.0 oz
Fus	.....	36.8g	....	1.3 oz
Fin section	....	8.5g	....	0.3 oz
Tail	.....	5.7g	....	0.2 oz
Prop	.....	19.8g	....	0.7 oz
Gears & Hooks and bands, etc	.....	17.0g	....	0.6 oz





**Peter Michel's O.D. Wakefield to pre 1951 Rules**



Rubber.....92.0g... 3.25 oz  
Ballast.....18.4g... 0.65 oz

Motor: arranged 12 strands x 2 from FA1 Supplies. 800 turns running off through prop in 90 secs  
Prop: 20in diameter x 26in pitch  
Section: Davies Type  
CG: 55% chord  
Warps: 3/16in wash-out on port tip. 2 1/2 degrees right thrust.

**Free Flight Technical Committee for '86...**

You will be pleased to learn that no less than 7 keen contest fliers have agreed to serve on this year's Technical Committee. Having an all too vivid memory myself of what this entails I would like to ask readers to assist them wherever possible. If you have any ideas for rule improvements, new classes, and particularly new venues, don't

hesitate to let them know and you will find your ideas get a better hearing if you commit them to paper and send them to the Chairman rather than just mention them casually at a contest.

FFTC members for '86 are Ian Bracken, Gerry LeVey, Martyn Gregorie, Brian Lavis, Dave Greaves and Pete Harris who is chairman. Phil Ball, last year's Chairman, also stays on in an advisory capacity and to help continuity. Offers of any assistance

and advice should be addressed to Pete Harris - 90 Baldwin Road, Kidderminster, East Midlands.

### Open versus F.A.1

They are all sensible chaps of course, but I can't help feeling their tastes are more than a little biased towards FAI. I wouldn't usually expect that to mean trouble as it has been true of late that those keen enough to want to commit time to the management of our sport are invariably also keen enough to have made progress mostly in the FAI classes - there are few exceptions, like me, who are seriously involved and effective in both Open and FAI. What worries me is that recently I have become conscious of an 'anti-open' lobby emanating from a vociferous few. Thankfully the leading protagonist of this camp is not on the FFTC at the moment, but he is an SMAE officer!

Of course the Open versus FAI argument is nothing new. It all began way back in the late fifties as the tighter FAI specification first separated classes and the performance differentials became more marked. What is new is that this anti-open lobby is beginning to embrace anything that isn't straight FAI. In other words, they argue that the SMAE are offering competitions for too many and widely divergent classes, they would like just three. Personally I don't agree. Although I have long been a fan of the one class day, whatever they may be for, preferably something fairly obscure, I enjoy variety in what I fly and know most others do too. I enjoy Wakefields but would hate to be limited to this class only when there is so much to learn flying all the other disciplines.

What is more, there is absolutely no evidence to support the theory that if we reduced the number of SMAE classes it

would improve either those remaining events individually or the movement as a whole. On the contrary, it would certainly discourage those that only fly the events that are axed. Sure, some would change classes but not all. On the other hand, how many people would a shrinking number of classes actually attract? The only argument is that with fewer but better contests, more would enter. I agree they might but the key word there is 'better'. Who is going to run them 'better'? We all know how difficult it is to get events run at all. I suggest we would be faced with fewer contests run to the same casual and slowly deteriorating standard. Using last year's FAI at the Nats as a good example - heaven help us!

Some say if we flew solely FAI it would improve our performance in the World and Euro Champs. Even if that were true, which I doubt, it would appear a radical step just for the benefit of 9 people once a year! Once again what is more likely is that we would get the same standard of flying but less of it. I see no evidence that deep involvement in Open classes lessens ones potential in FAI. I fly much more open than FAI but have qualified for the European Team this year after winning a place on the last four consecutive World Champs Teams too!

The current calendar allows the contestant to make his own decisions freely. There is absolutely nothing stopping those that think they need more practice at FAI, flying the class more, building more models and doing more testing. Neither is there anything stopping them getting off their behinds and actually running an event for the classes they hold in such high esteem. I did it for Open Rubber and achieved virtually a Renaissance in the event. I don't know if we are any better at it than we were but it is certainly different and more popular now.

### Number of entries

I can, however, understand some doubt being expressed over SMAE classes that regularly attract very small entry levels, even when there isn't a gale blowing, but if entry numbers are used as the criterion the FFTC could quickly find itself in a cleft stick. The first class that would have to come under scrutiny would be FAI power and that wouldn't do at all. Or would it? It can also be argued that the Open events are a bit 'silly'. Too much performance for the maxes during the day and then a one flight lottery in the evening usually involving too many. Not perfect, I would agree, but intelligent contest direction can improve it enormously even if only by increasing the max and delaying the fly-offs. Certainly open events like this are no less valid than last year's World Champs. A great meeting but what could be more pointless than flying 7 contest flights through the hottest part of a 100°F day and then begin the fly-offs - involving nearly half of the entry in most cases - just at the moment the thermals get stronger! Complete lunacy but lots of fun and very spectacular.

Let's face it, it's all a bit silly if you think too hard and logically about it. Grown men playing with model aeroplanes indeed! Let's get on the enjoy another season but leave us the variety - it's the spice of life. I would be all for bringing back Payload and Jetex - never know, it might get someone making the fuel again!

### A guide to the venues...

As we embark upon another contest season it might be useful, particularly to those who are just making a start, if we show you exactly where Free Flight contests occur throughout the Country. We certainly don't want to keep them a secret, although by the way we advertise our activities you could be forgiven for thinking so. Listed here are the venues that figured last year. It should be stressed that very few of them are available for casual flying on a day-to-day basis. They are most likely to have been booked specially for events. So, if you are thinking of making a start in contest Free Flight please remember to make sure there is an event on before you set-off. The contest calendar or local Comp. Secs will tell you.

#### A. Brunton:

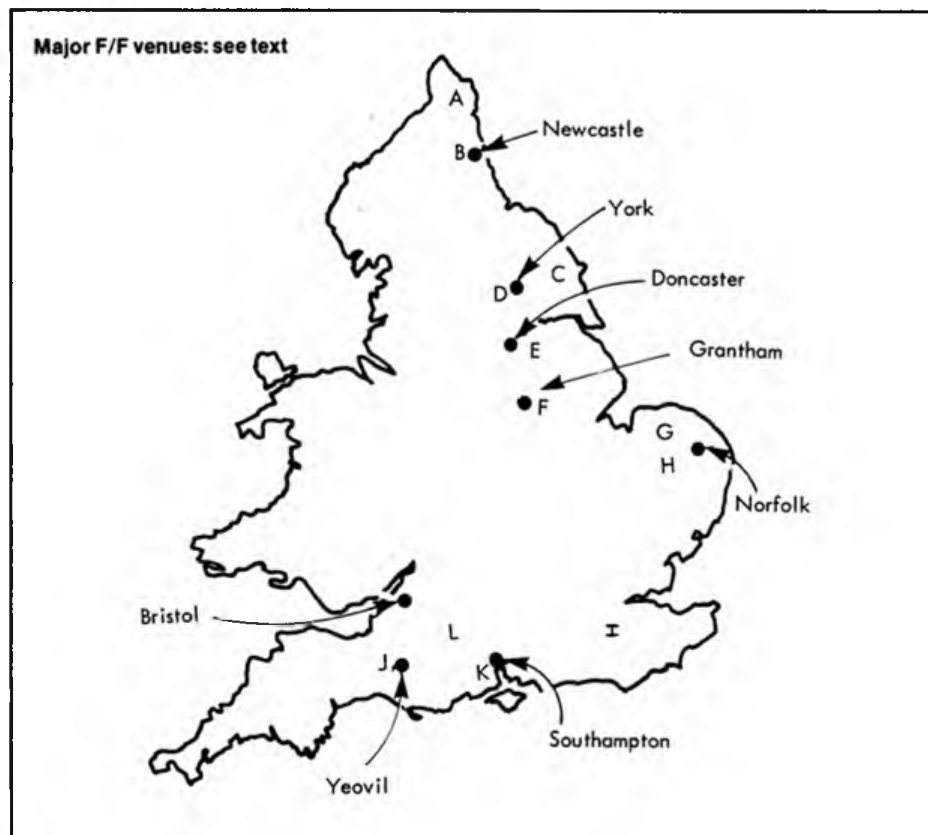
Ten miles north of Alnwick in Northumberland, just north of the village of Brunton on west side of B1340. All runways intact, but now the property of a farmer so it's cropped in all but late and early season. Occasional Area venue for North East.

#### B. Albermarle Barracks:

(Formerly Ouston Aerodrome) Newcastle, Northumberland. Just north of Harlow Hill on the right when travelling west out of Newcastle on A6318. Small operational but picturesque Army aerodrome-undamaged. Usual area venue for North East.

#### C. Driffield

One mile west of Great Driffield, Yorkshire. Entrance on left of A163 when travelling East towards Bridlington. Area venue for North, also occasional site of centralised SMAE & local meetings. Large and flat but much of the runways have now been dug up by the Army. Good local pubs.





*Pete Buskell releases an ETA 29 open power model of interesting vintage. The motor, a Mk VIc, dates back to the early '60s. The fuselage was built in 1965, whilst the wings and tail are nearly new, built in 1971. All still in very good condition, and still reasonably competitive - so much for progress. However, this venerable machine might disappear by default - both Pete's ETA 29s require new piston rings - can anyone help? Photo: Tanya Buskell.*

#### **D. Church Fenton:**

Four miles south of Tadcaster - Yorkshire. On the right of B162 when travelling North. RAF aerodrome - awkward shape for many wind directions and very security sensitive. Rarely used venue for Northern Area. Numerous good pubs.

#### **E. Lindholm:**

Five miles East of Doncaster - close to both M18 and M180. On the right of A614 when travelling North. Flat and unspoilt aerodrome but with some difficult swamp and wooded retrieval areas on its perimeter. Recently a prison has been built amongst what used to be the married quarters!

#### **F. Barkston Heath**

Six miles North East of Grantham, Lincolnshire. Entrance on left when travelling North up the A6403. Fully operational RAF training field intact and with low security apart from very sensitive missile site on north west side. This is main area site for Midlands and South Midlands areas plus North London - in fact, one third of the country. Also site of numerous Nationals and other major events. Excellent pub at Wilsford village only 2 miles distance.

#### **G. Sculthorpe:**

Five miles West of Fakenham, Norfolk. Entrance on right when travelling north west up B1454 off A148. Fully operational USA airforce base with largest military runways in Europe - 2 miles long. Lots of concrete with very high security and unclimbable fences surround it. Occasional area venue for East Anglia plus prestige site for FF Trials. Cafe on the corner. Pubs 3-4 miles away.

#### **H. Watton:**

Two miles East of Watton Village. Entrance on right when travelling East on B1108. Small flat drome mostly grass but with complete peri track. Some recently planted small trees. Occasional Area venue for East Anglia.

#### **I. Ashdown Forest:**

Eight miles south of East Grinstead on A22. Area usually used on the east of the A22. Terrain both very hilly and covered with small trees and gorse. Regular area site for South East.

#### **J. Merryfield:**

Ten miles North of Chard, Somerset. Entrance just north of Ilton. Small aerodrome. Regular Area site for Western Area.

#### **K. Beaulieu:**

(Beaulieu Heath). Three miles South West of Beaulieu. On the right when travelling South West down B3054-1½ miles past Hatchet Gate. Disused aerodrome and heathland - narrow peri-track only. Large and flat but much high gorse. No security but a very 'nature conservation' conscious area. Limited vehicular access but flying possible at any time. Regular flying site for Southern and London areas. Many rival attractions - motor museums, Isle of Wight etc.

#### **L Training Area No. 9**

(Salisbury Plain) Ten miles East of Warminster. Entrance on the right of B390 when travelling West between Shrewton and Chittern. Entrances also on small road joining Chittern and Tilshead. Rolling grass covered hilly site used for tank and paratroop training. Low security, many good local pubs and hotels. Stonehenge only 10 miles East.

**North Eastern Venues A and B** come under the control of North Eastern Area Comp Sec: Ron Pollard. 23 Ivy Road, Walkerville, Newcastle-on-Tyne. NE6 4PU SMAE members only.

**Northern Venues C, D and E** come under the control of Northern Area ComSec. Denis Davitt. 54 Tregold Avenue, Bramhope, Leeds Yorks. SMAE members only.

**Midland Venue F** comes under the control of Midland Area Comp Sec. Phil Ball, 17 Heronswood Drive, Spondon, Derby. SMAE members only.

**Eastern Venues G and H** come under the

control of East Anglian Comp Sec. Dave Oldfield, 15 Arundel road, Wymondham, Norfolk.

**South Eastern Venue I** comes under the control of South Eastern Comp Sec. Mike Howick, Harriers. Hare Lane, Lingfield, Surrey.

**Western Venue J** comes under the control of Western Area Comp Sec. Colin Sharman. 16 Holdham Avenue, Churchdown, Gloucester, SMAE members only.

**Southern Venue K** comes under the control of Southern Area Comp Sec. Barbara Tyson. 19 Wilverley Avenue, Strouden Park, Bournemouth.

**Mid-Western Venue L** comes under the control of London Area Comp Sec. Ian Bracken. 1 Dibdin House, Andover Estate, Hornsey Road, London N.7 7RT.

### **Model Engineer Exhibition "Experts Forum"...**

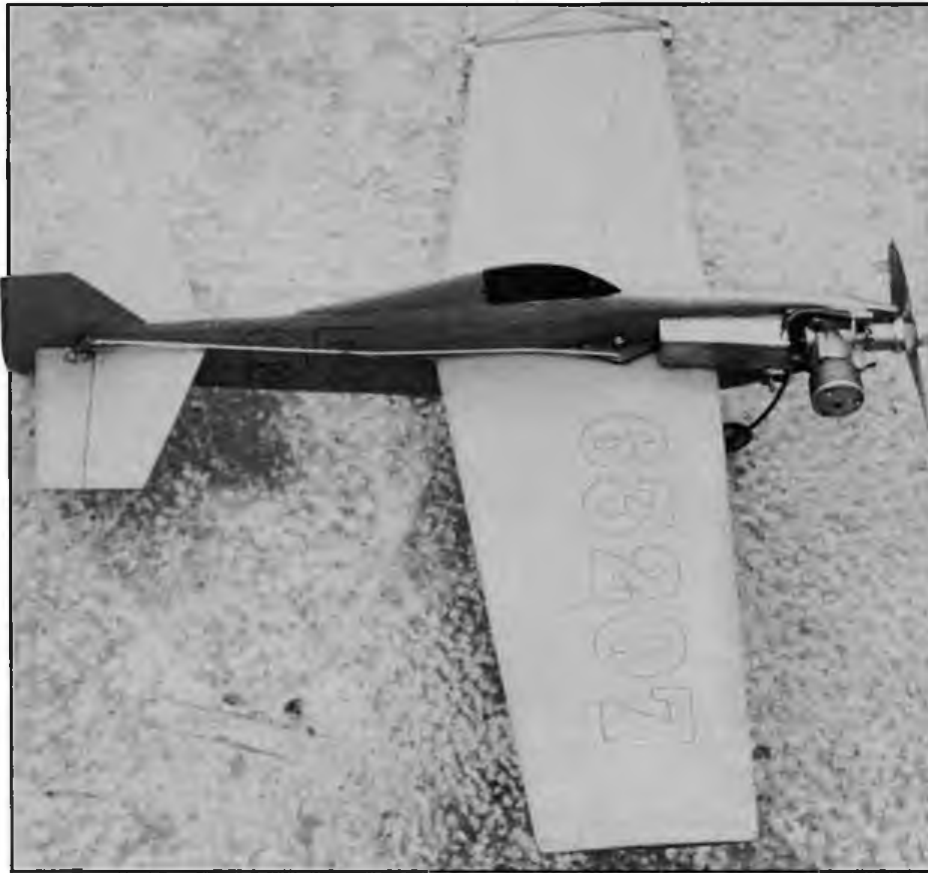
Last year's successful experiment was repeated on the first Saturday of the Exhibition and allowed some more time for more speakers. Nine separate 20 minute talks covered widely different aspects of Free Flight often in very great detail. Martyn Pressnell put forward some strong, if a little theoretical, points in favour of wing invigorators. Bernard Hunt explained his interesting findings on designing indoor models for best glide performance demonstrating with various examples which he had brought with him. Both Mike Fantham and Chris Edge explained their findings in design and structures and Stafford Screen continued his interrupted lecture from last year on the subject of FIC model development with the assistance of coloured slides. Perhaps there will be time next year for him to detail his own construction and preparation as this part of his talk was intriguing.

Steve Philpott let us into some of his contest winning techniques developed for CO2 duration. Steve had brought some of his models to help us understand and Reg Boor explained a suggestion for prop efficiency improvements by way of blade profile design initiated by Larrabee and used on the Gossamer Albatross Cross Channel project. The use of an overhead projector was very helpful in describing and drawing various aspects of the speakers' lectures. The line-up of talent was topped off by a witty and informative talk from John O'Donnell on the subject of covering with mylar film both for in and outdoor use. As might be expected John had inveigled the assistance of a female member of the audience to distribute samples of various types and weights of the mylar.

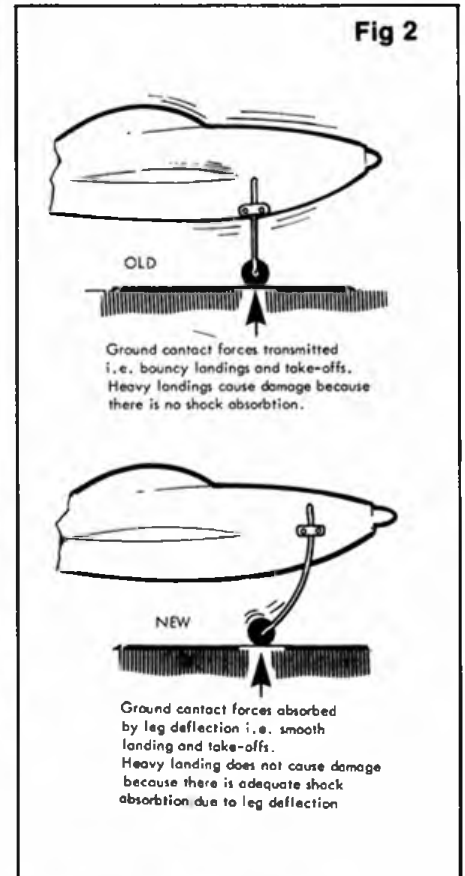
Altogether a very informative afternoon for Free Flighters - my encouragement last year must have had some effect on the attendance figures too as well over 50 attended the two sessions. I can certainly recommend it as an entry for everyone's diary next year.

All papers of the talks plus additional data that many of the presenters were unable to use in their limited time are now available for £4.00 (postage included) to Martin Dilly, 20 Links Road, West Wickham, Kent. Cheques made payable to SMAE FF Team Travel as all proceeds will go towards travel expenses to future World and European Champs.





Left, this is the same model as described in August '85 *Aeromodeller* but with detail modifications to the undercarriage and fuel system. The result is that 'Ol Blue' '72 is turning in significantly faster times...



# Go-Faster GOODYEAR

With these simple modifications, Dave Clarkson and Ed Needham knocked vital seconds off their best time

The August 1985 edition of the *Aeromodeller* contained my 'Ol Blue' (1972 version) Goodyear model plan in Class 2 form. This showed the details Ed Needham and I had installed on our 1984 model that we used to place second at the 1984 Nationals. For the 1985 Nationals we built a new model, again an 'Ol Blue' (1972 version), as shown on the plan but with significant changes to the metalwork developed as a result of racing experience in the meanwhile. This 1985 model we used to win Class 2 Goodyear at the 1985 Nationals setting new SMAE heat and final records of 4.36 and 8.44 in the process for the new shorter race distances of 80 and 160 laps respectively. Since then we have improved the heat record to 4.18 and can see our times improving to 4.10 in heats and 8.25 in finals just by eliminating mistakes.

Our Nationals victory and SMAE record-breaking performances have not been

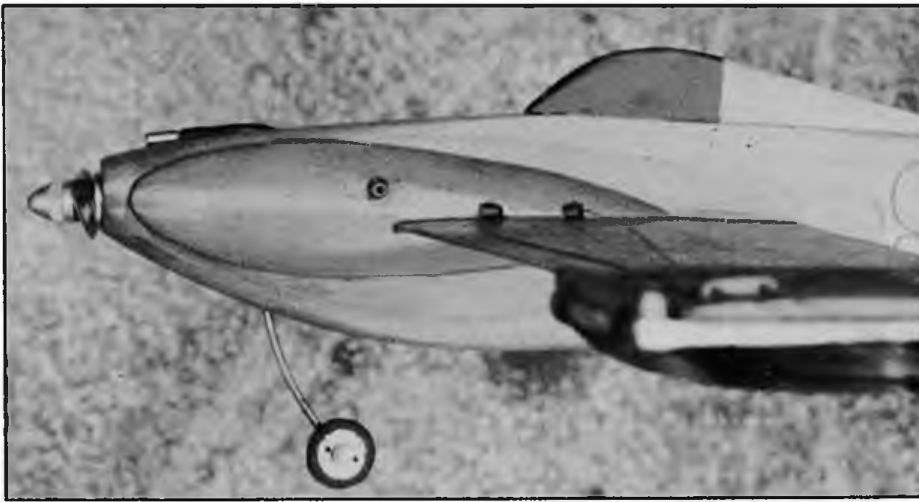
because of vastly superior airspeed, for no-one with a legal motor has that in Class 2 Goodyear, but rather because of our greatly improved overall pitstop performance. Those of you who may wish to try Class 2 Goodyear, which is by far the most suitable vehicle for newcomers entering control-line racing, may like to follow our metalwork innovations for they have helped us a lot in the most difficult part of the event - the all important pitstop. Now that the race distances have been shortened without the number of pitstops required being reduced, time lost in doing pitstops is even more critical than before. It follows that help in this area should be appreciated by newcomers and it is the intention of this article to provide that help.

We had already learnt with our 1984 model, thanks to Andy Snowdowne, that the method for obtaining consistent 1 bash restarts was to fill the tank against the

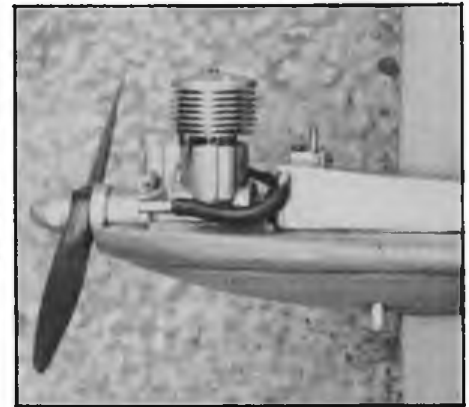
closed fuel shut off, then to prime the motor exhaust port with it closed by the piston, then to open the fuel shut off and finally to hit the prop very hard. For us this method works virtually every time but when you analyse all the actions required it is quite a complex procedure and therefore on the 1984 model, because of the way its metalwork was arranged, took quite a few seconds to complete and had significant potential for mistakes.

For the 1985 model we installed a tank-mounted shut off with a button re-set action operated by the thumb of the pitman's left hand. Using a pressurised refueller this allows tank refuelling and then shut-off resetting to be done with the pitman's left hand holding the model in the natural position with only his left forefinger, which has the refuelling valve attached, and his left thumb having to move. We also installed a large diameter tank overflow pipe





Above, undercarriage rake is quite obvious on his view from the port side. Right, fuel system with sensible auto prime resulted in valuable time being saved at each pitstop. Right below, fixing for the undercarriage is slightly different from original but very simple to put into practice.



terminating inboard of the motor needle valve and incorporating a small diameter priming tube leading to the motor exhaust port. (Fig 1)

This arrangement primes the motor as the tank overflows and, because the overflow terminates in front of the needle valve, prevents fuel feed starvation caused by model acceleration at the launch thus avoiding motor cuts or coughs at launch. One disadvantage of this arrangement is that the overflow pipe termination is in a position where only a slightly mis-directed finger when bashing the prop will hit it. Accepting that this will happen at some time, the overflow pipe at the front which contains the priming tube is clamped to the front upper motor mounting bolt and connected to the tank by a rubber tube. This means that if the pipe is flicked, no tank damage will result.

The tank/shut-off/primer assembly described above allows pitstops to be done using the following procedure.

- (i) Catch the model and place it on the ground with the right hand
- (ii) Grab the model with the left hand and apply the finger valve to the tank valve.
- (iii) Whilst the tank is filling, move the prop up to compression with the right hand and prepare to bash the prop
- (iv) When the tank overflows, hold for a second to prime the motor. Then

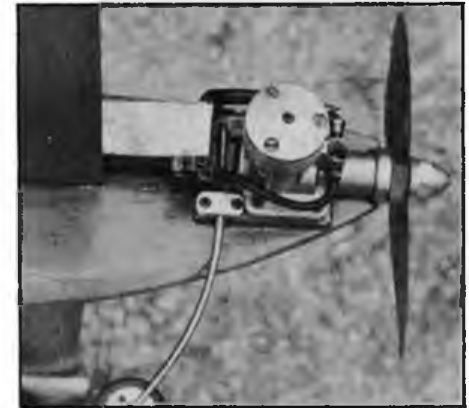
remove the finger valve and re-set the shut-off

- (v) Hit the prop as hard as you can and hopefully the motor will start and run.

This procedure could hardly be simpler and so is quickly and reliably performed. The longest time element involved is the period it takes to fill the tank and this we have minimised by using a 4mm dia tank overflow tube and a filling pressure of 1 Bar g.

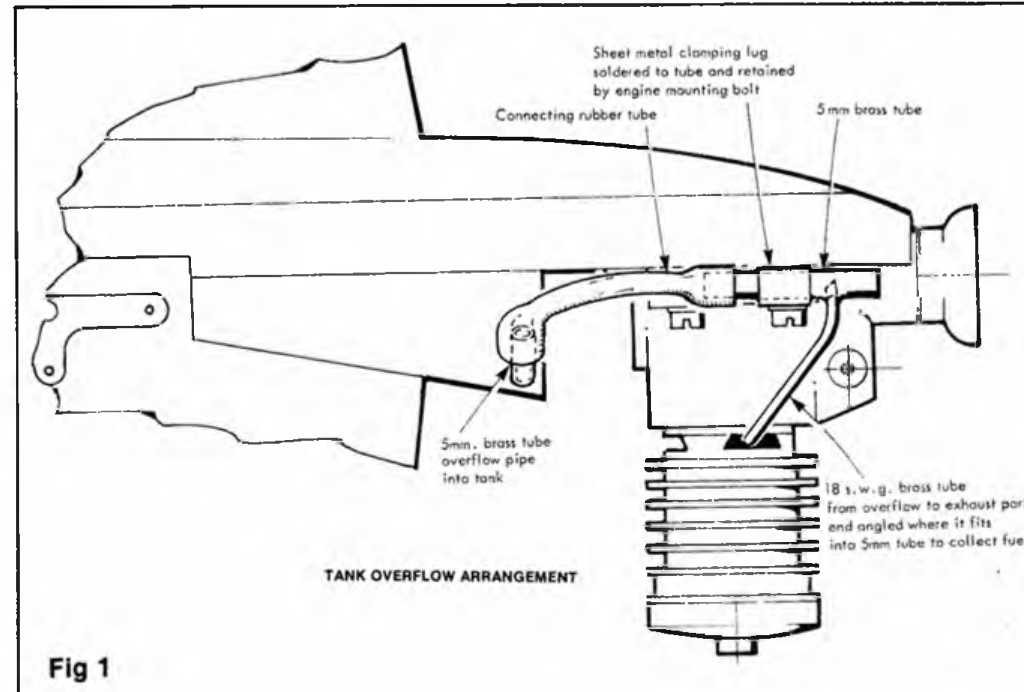
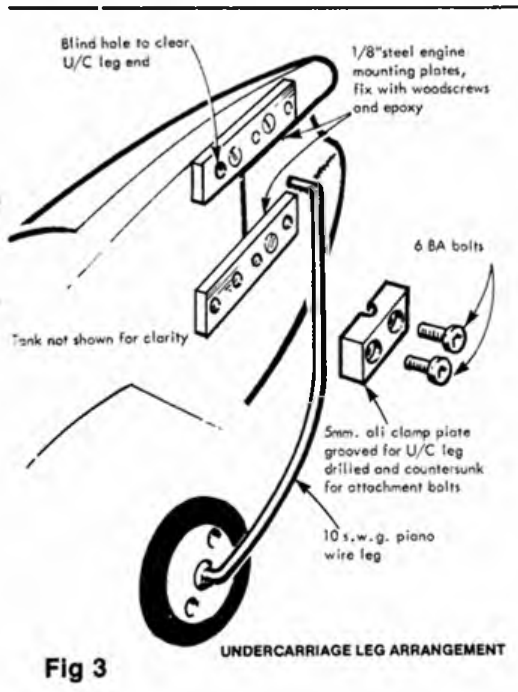
The 1984 model has a totally rigid undercart which caused it to buck and twitch badly when running on any but the slickest tarmac. Therefore I had to land it very lightly and run it through rather slowly for the catch to ensure it was where Ed expected it to be. I also had to be careful about take-offs to avoid razzing the prop on bumps. I am no Steve Smith and so all of this care and control cost vital seconds and the potential for mistakes was always there. We concluded that undercart suspension was vital for the 1985 model, a difficult thing to achieve when using an externally mounted piano wire leg as the rules require.

To the rescue came Bob Horwood for we adopted for our 1985 model his long, swept back, motor mounting plates-mounted undercart leg method. It is still from 10g wire but, because it is long and curved, now has the ability to absorb shocks. The rigid 1984 method resulted in a bent leg at each heavy landing. So far, despite some heavy landings, I have not managed to bend the



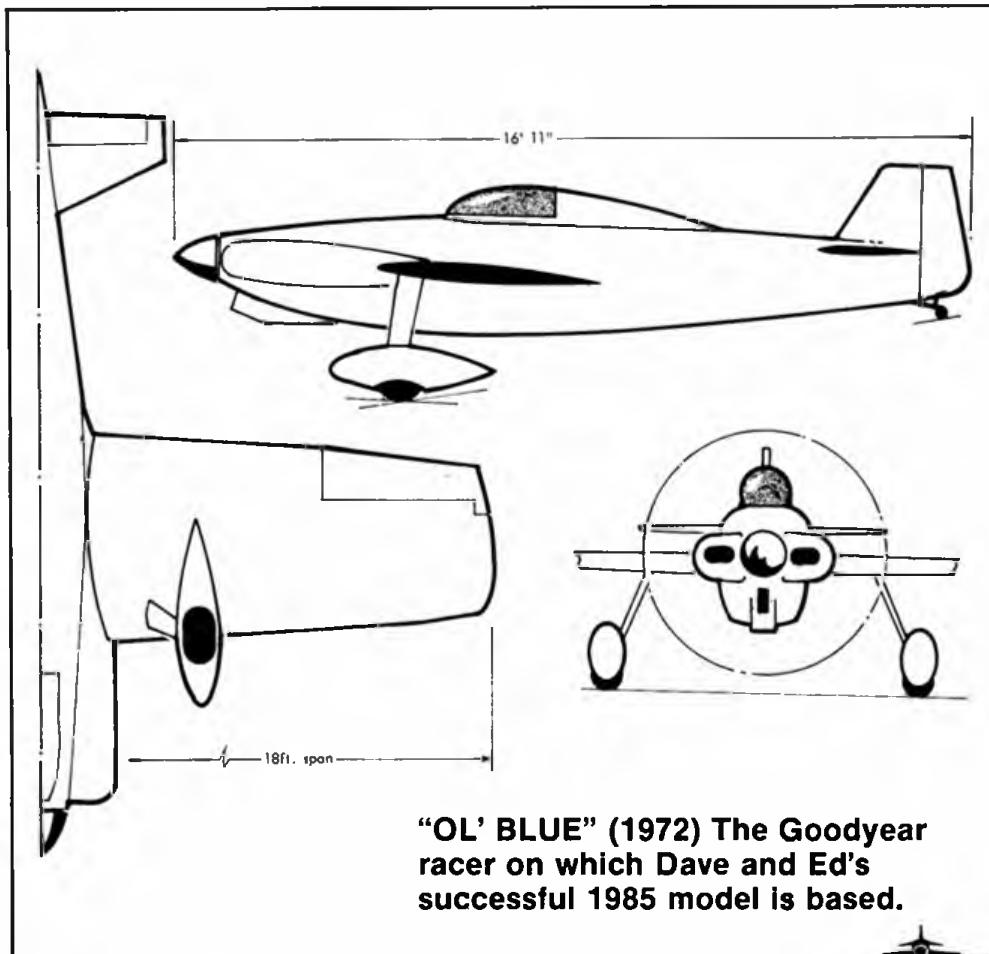
1985 leg back from its desired shape and so we have concluded that this 1985 method is more than adequately strong. The result is that I can bang our 1985 model in for spectacular catches from 1/2 lap shut-offs and really race the model out of Ed's hand at the launch. Bob's method has proved a totally effective and most welcome solution to our undercart problems. (Figs 2 & 3)

These have been our metalwork improvements and I guess they have eliminated about 10 sec. time loss from our heat times. One other change has resulted in a similar benefit and that is the change from glass/nylon props to a glass/epoxy prop. Until the 1985 Nationals we have used both Taipan



and Graupner 7-6 glass/nylon props at  $6\frac{1}{2}$  to  $6\frac{3}{4}$  inches diameter. For the 1985 Nationals we tried a low pitch FAI Team Race prop of  $160 \times 160$ mm dimensions as advised by John Schofield and a very useful improvement in airspeed resulted. I worked this prop up from a Ron James 'Vision Regal' blank moulded in glass/epoxy from a Tornado 'Plasticote' 7-6 master, a highly recommended and most reasonably priced prop but needing all of the knowledge and equipment necessary for successfully working up these specialist items.

If our 1984 model described and illustrated in the August 1985 *Aeromodeller* was a low tech 'spirit of the rules' type of model, then our 1985 Nationals-winning and SMAE record-holding model is a high tech 'letter of the law' affair. The difference between the two in terms of race time potential is large despite our motor remaining an old and very average PAW 2.49 DS Ed swapped for a tank valve. It must remain open to question in an event aimed at newcomers whether such high tech items as glass or carbon fibre props, pressure refuellers and so on should be permitted. My feeling is that, like in Scotland where Class 2 Goodyear is a much more popular event, they should not, for they make the event much less accessible to newcomers. However, whilst the SMAE rules permit such high tech features and whilst Class 2 points still count for inclusion in John Horton's Goodyear League list, Ed and I will continue to use them. It is the purpose of this article to show and describe how we have used them to make them more accessible to the newcomers control line racing so badly needs.



"OL' BLUE" (1972) The Goodyear racer on which Dave and Ed's successful 1985 model is based.



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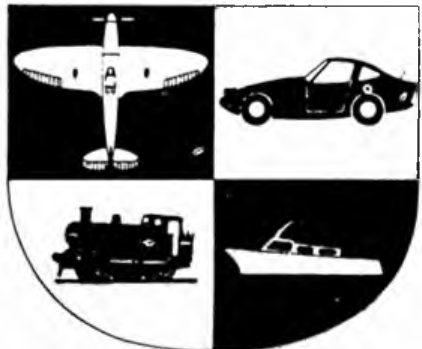
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**Kit Review**

# MAJESTIC MAJOR



**Leading C/L flier Jim Woodside swaps handle for Tx to test this beauty from Ben Buckle models.**

I concluded my review of the little 'Hepcat' kit (*Aeromodeller*, March 1985) by remarking that I was looking forward to one of the large models, powered by a four stroke motor. In truth the 'Hepcat' got traded for a 'Junior 60' kit and this, powered by a Saito 30, has put in many delightful hours of flying over the last nine months. It was this combination which set me on the path of building this latest (huge) airplane. Small may be beautiful but bigger has proven to be better. The 'Major' has the same excellence of handling as its smaller cousin plus the stately presence conferred by reason of its size (wingspan is 88in.); the title 'Majestic Major' is, in fact, most apt.

In the building of the 'MM' I decided to pursue a personal trait which gives me satisfaction - the use of British made engines. While American, continental and Japanese manufacturers turn out excellent products, often with no available domestic equivalent, there was no doubt that this model would be powered by the superb 'Laser 61' four stroke. However, as this motor is not available over the model shop counter it is perhaps not apparent as a choice when the average modeller goes out to buy. Well, believe me, it is worth writing for, as its performance is A1 and this on straight methanol-castor oil fuel.

## "Inside the box"

You are, no doubt, wondering to yourself when is he going to mention the box (all kit reviews start with a description of the box). Well, for you traditionalists the 'MM'

arrives in a large box very well filled with materials - mine, in fact, had more strip wood than essentially needed. The main ply formers were accurately cut, the wing ribs neatly bandsawn - although the spar slots needed some trimming. More importantly, the kit contains all that is needed to build the model with the exception of wheels and covering. I did buy some extra items but these were at my own desire and preference.

## Construction

Well, to the construction. At the outset check on the size of your building board to make sure it will accommodate the fuselage (5 feet long) and the assembly of the wing halves. I must admit that, for this operation, I had to migrate from the workshop to the kitchen table and also engage the help of 'her indoors'. Apart from the size, the construction is very straightforward and, in fact, the total construction time takes no longer than any similar model. What will

*Jim's completed 'MM' represents almost one hundred poundsworth of investment; to that you'll have to add the cost of engine and R/C gear! Nevertheless, the mighty Buckle kit is slow enough and stable enough to last for years...*

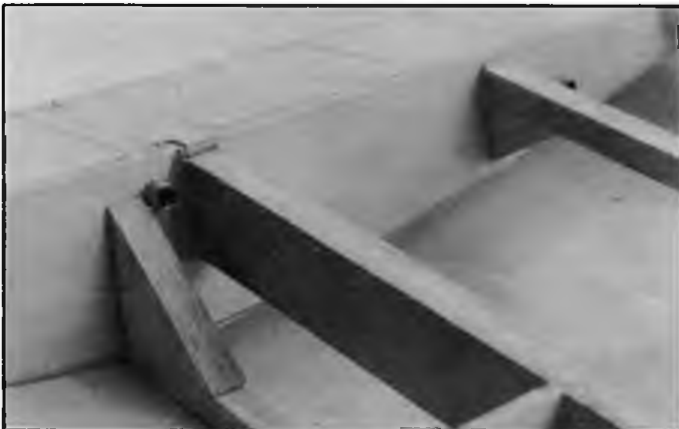
become apparent is that you can greatly effect your overall costs by the choice of glues used. An 8 oz pack of epoxy resin and 4 ozs of white glue will cover all the construction for about £6 with plenty left for further models. Using cyano will speed the construction but increase the costs to around £12. I followed the latter course as I tend to be a lazy and impatient builder. By the way, I used the new 'Roket' brand distributed by Irvine Engines; this new cyano formulation is available in both viscous and porous types and seems to have an edge in usability over its present competitors. This should be widely available and is to be recommended on its performance in this project.

## Wings

Begin by scarf jointing the main spar. Being a 'belt and braces' chap, I faced the joint with 1mm ply on both sides taking care to feather-off the edges to prevent stress

*Reinforced joints between sub-spars and 1/8in. ply ribs on the review kit; triangular web was added for extra safety by reviewer.*

*Close-up of wing tip showing triangular webs to support covering; leading edge sheathing has also been extended onto the tip.*



lines. The basic ribs and spar construction can be done in a couple of hours. In the fitting of the wing tips I chose to put in some extra pieces of balsa to better support the covering material. Time spent in the careful assembly of the centre section is wise as it will control the accuracy of the whole wing's construction.

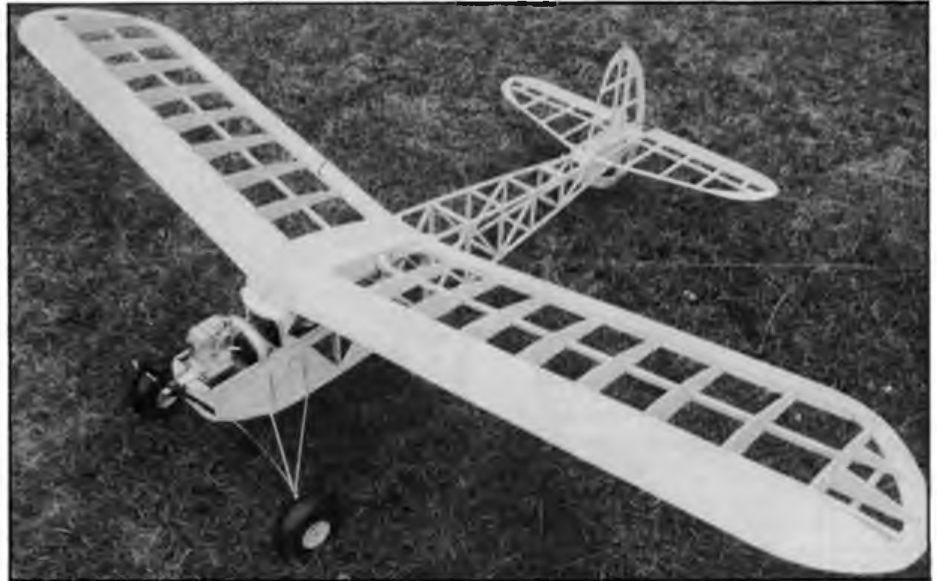
The unit comprises four 1/8 in. ply ribs and three tube/rod connectors. Dry assemble the parts and check for accurate mating along the centre line join. If you are happy, trim the tubes and rods to length. Polish the brass tubes, cleaning then finally with acetone. This simple process greatly improves the metal to epoxy bond. Box in the tube between 1/16 in. ply plates, filling the voids with balsa/epoxy. Dry assemble a wing panel and its centre section over the plan. Check that dihedral and wing incidence is correct in relation to the centre. If O.K., spot glue to the main spar. Leaving the sub-spar slightly overlong will allow you to angle their ends to make a neat butt joint to the ply rib.

At this point I deviated from the plan and added some triangular webs to lend extra support to the joint. The tricky part is to join the second panel to the first and maintain the same accuracy as before. Try to work on an open space and take plenty of measurements. An extra pair of hands is a great help at this stage. When happy, proceed as before. The centre section can now be capped with 1/16 in. ply. The rest of the work is routine - adding leading edge sheet, which I continued to the wing tip, sanding the edges and the like. Total time for all this was about eight hours spread over five evenings.

The construction of the tailplane and fin is entirely straightforward but I would suggest that you spend some time with a sanding block to taper both items towards their extremities to make sharp, clean edges. The saving in weight is important as with such a long movement arm the unit exercises a considerable influence on the centre of gravity.

## The fuselage

The building of this is no more complex than, say, a Keil Kraft 'Achilles' - two slab sides built one on top of the other. The same



Top, skeletal structure prior to covering. Above, Laser 61 power unit - British and a winner!



The neat Airtop wheels from Sailplanes International; not inexpensive but just the thing for the Majestic Major.

rules apply too: select and splice longerons of equal hardness; use lighter weight cross-members towards the back end.

Rather than pack the rear of the paxolin engine mounting plate to give downthrust I planed the bearers to the required angle. By the way, if you use the 'Laser 61' increase the downthrust to 3° to combat the power, which is far more than that of the early O.S.60 FS.

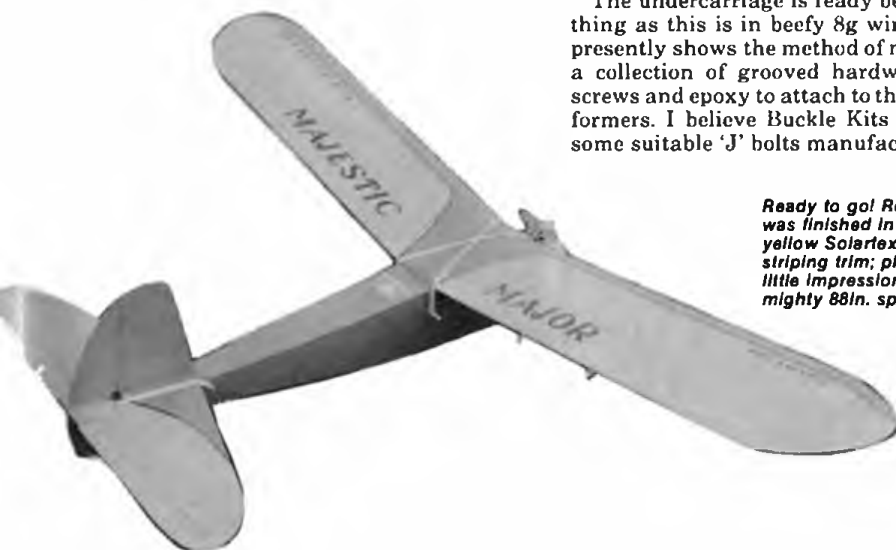
The undercarriage is ready bent - no bad thing as this is in beefy 8g wire. The plan presently shows the method of mounting as a collection of grooved hardwood blocks, screws and epoxy to attach to the main 1/4 in. formers. I believe Buckle Kits are to have some suitable 'J' bolts manufactured in the

near future, which should be much easier and neater. I, in fact, laced the landing gear to the formers using copper wire and epoxy to reinforce the binding. It will aid the construction stage if you fit the landing gear after the basic fuselage is completed but do not forget to drill any holes in the 1/4 in. ply formers beforehand!

Fit the tank in position and locate the throttle servo. Fit the elevator servo and pushrod, which will need regular bracing to eliminate bending over its considerable length. Twenty hours seems a fair estimate for this work spread over about three weeks.

## Finishing and detailing

A model of this size needs to be brightened up with some colour and nothing subtle at that! Red and yellow was chosen from the excellent Solartex range. Solartex, despite being new material, seems to blend so well with these vintage models and its ease of use has been so often noted as to, now, be almost a byword. Depending on how you decide to decorate the model, around six yards of Solartex will be needed. The neat trimming between the colour edges was done with 6mm P.V.C. striping as bought in car accessory shops. If this is done in a warm room it will go round quite a tight radius. The complete surface was given two coats of



Ready to go! Review model was finished in red and yellow Solartex with p.v.c. striping trim; photo gives little impression of the MM's mighty 88in. span.

Continued on page 249

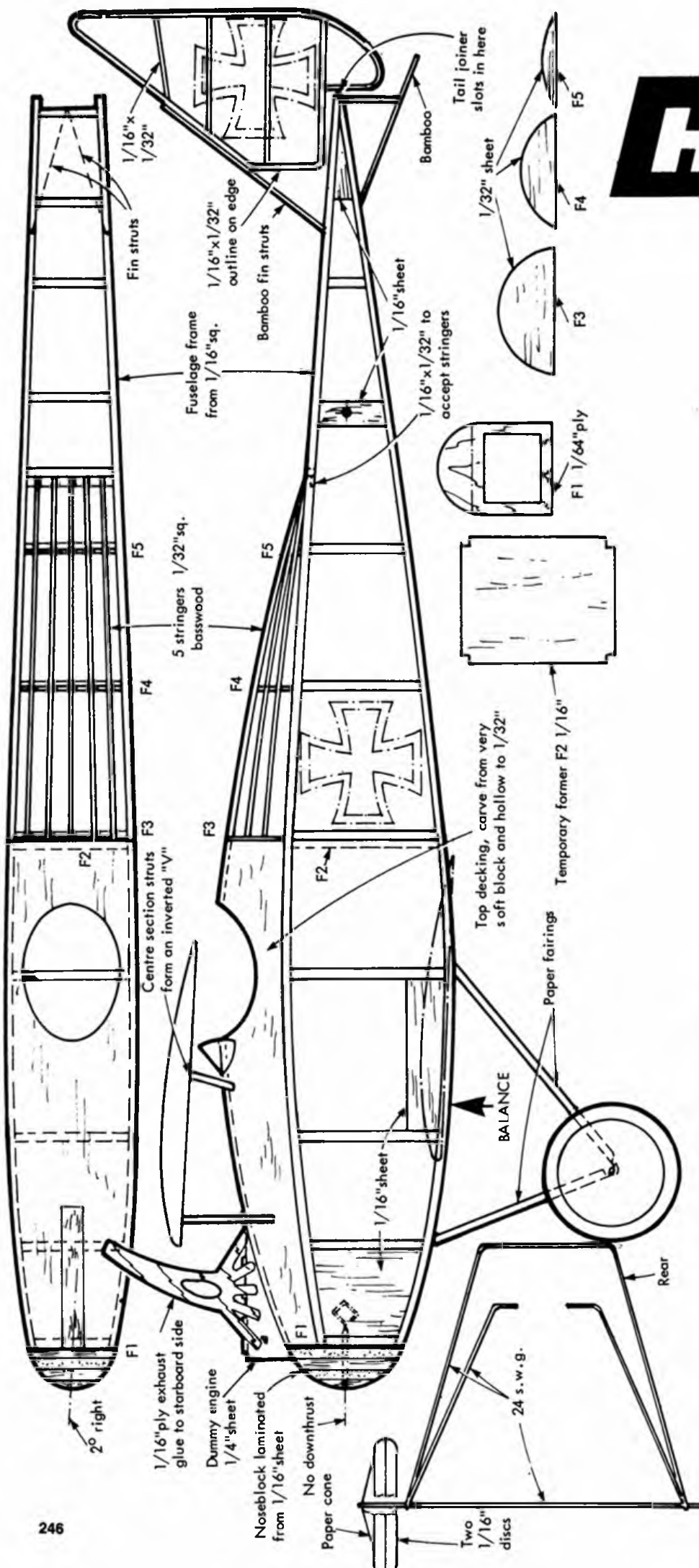
# HALBERS

Bill Dennis presents an attractive, quick-to-build Peanut version of this 1914-18 warbird.

**T**HIS SIMPLE MODEL can be built in a week of evenings. It is perfectly straightforward and the main point to stress is that care must be taken to keep the tail-end light, since extra fractions of a gram here translate into a lot of nose ballast. However, I am not noted as being a light builder and yet I got away with only a small piece of Plasticine on the front-end. Use light wood throughout, and feel free to reduce section sizes if you feel you can handle it. Glue is also heavy, so use PVA and apply with a pin: *just enough* to do the job.

Assembly of the fuselage sides is made very much easier if you use temporary former F2 to keep things square...but don't forget to remove it later! Tack-glue a suitably shaped block of the softest balsa you can find to the fuselage and carve and sand the top decking to shape; then remove it, split (don't cut) in half and hollow out as thin as you can - mine weighed 0.5 gram. When the fuselage structure is finished, use a very sharp pointed blade to remove material from the inside edges of longerons and spacers so that they have a triangular section between the joints - this also gives a useful saving in weight.

*Extremely short nose moment on the Halberstadt means that it's essential to keep the tail and rear fuselage as light as possible - fractions of grams can make all the difference...*



# TADT DII

Wings and tail need little comment here, but don't forget the strut mounting blocks. If you choose to simulate ailerons, make sure the tissue is well stuck down with dope. Cover all components separately with Jap tissue and steam shrink - just enough to tauten, then give two coats of 40:60 dope/thinners. The underside of my model was covered with blue tissue and left unpainted, but the upper surfaces were sprayed by airbrush using Humbrol enamel in cellulose thinners.

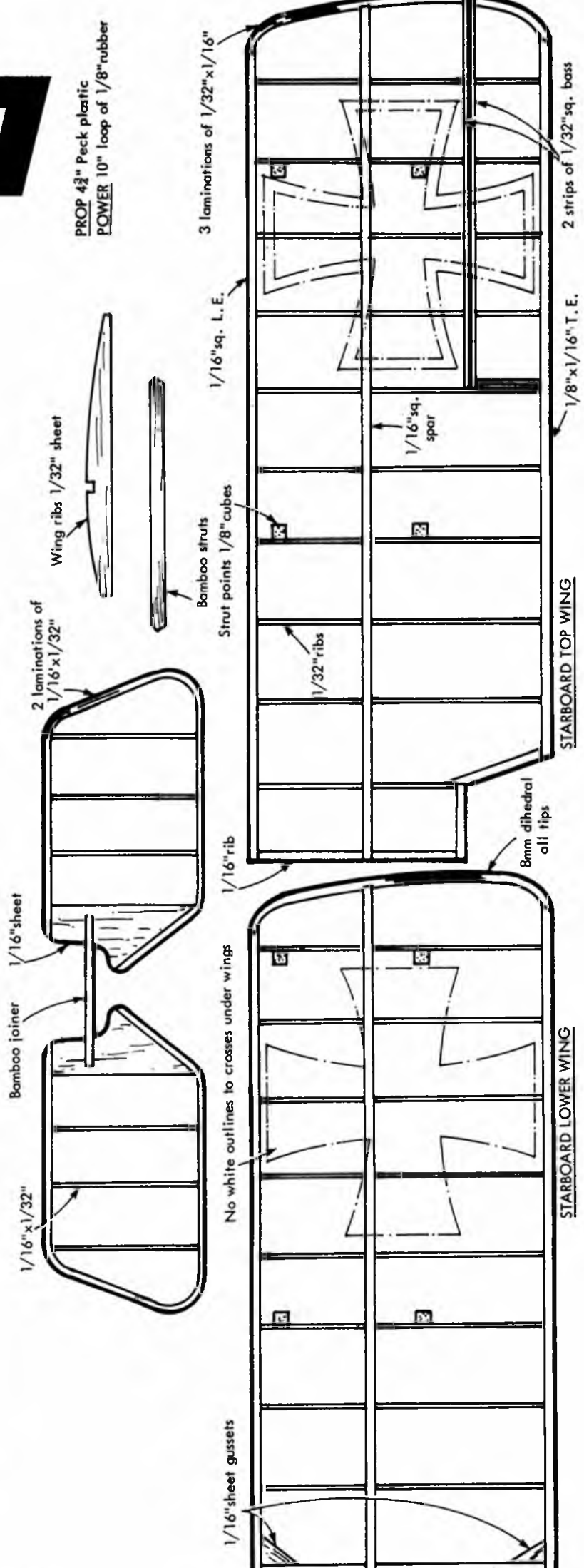
The tail surfaces and skid are assembled with thin splints of bamboo stripped from a cane, and although it may all look flimsy it is surprisingly rigid. The trickiest part of the model is putting the wings together. Cut bamboo struts to exact length - they're all the same but ensure the panels are warp free. Glue the top wings together and the lower wings to the fuselage at the correct dihedral angles. Cement the struts to the bottom wings and when almost set, add the top wing - an extra pair of hands will help here! Hold in the correct alignment until set and then add the centre section struts - glue these well since they give the wing cell its rigidity.

I tried the model out at the Wellington Indoor meeting. Initial flights were not too promising, but, once the trim was sorted out, the model was perfectly stable. Noseweight was added to remove the stall and a combination of 2° right sidethrust and a very small amount of tip weight used to induce a safe but positive turn. With a 10in. loop of 1/8in. rubber on about 3/4 turns, the model was flying for almost 30 seconds. No doubt with a proper balsa prop with more blade area and a longer motor, this time could be improved upon.

References: K. Munson's "Fighters 1914-19" (Blandford) and "Fighter Aircraft of the 1914-1918 War" (Harleyford).



April 1986



# MIND THE LINES

with  
**Andy Brough**

## Reflections

It never ceases to amaze me how quickly winter passes when you're an aeromodeller. No sooner do the dark nights arrive and one plans all manner of winter building projects, Christmas appears and you've just repaired last year's models and, lo and behold, the nights are becoming lighter. And what's more, the grass has grown and the paint has come off the house! Hope you've built your models. Well I haven't but I'm one up on you, as it's only early January for me as I write this. What's all this leading up to you say? Well, in order to build some models I need to stop writing for a bit so your kind editor is letting me have a couple of months' holiday. But whatever you do, don't stop writing or sending photos of your latest creation, etc., as we need to spread the gospel of vintage C/L as soon as my holiday is over.

Now, what of 1985? As this is the last column for a couple of months perhaps we should reflect on last year's scene. The number of modellers building vintage control line models has greatly increased and the great thing is that many of them are returning to the hobby or are radio flyers dabbling with their old love of flying by wires (thinks... perhaps this column should appear in RCM&E then the radio boys could see what they're missing). We could still do with more of the younger end joining in to give a solid foundation for the future. After all, I took it up not because I remember it all (I wasn't born in 1950) but because I liked the simplicity of the early designs and the beauty of many of them.

There were more events to attend in '85; Rubery, 3 Kings, 3 Sisters, Old Warden and some vintage rallies where C/L models were welcome. We could still do with more events for fun flying, especially in conjunction with the radio brigade as vintage is one branch of the hobby where it would be a shame if the 'us' and 'them' syndrome were to develop. (For some reasons the F/F enthusiasts seem to have a natural affinity with C/L flying). Besides, it's nice to be able to watch the large radio assist models wafting along in the breeze as I'm sure they appreciate the sight of an early stunter going through its paces.

I do feel that the last thing we need is more competition classes. With the simple speed (i.e. Midge/Class 1), stunt and a team race class we will have everything covered. The essence is simple rules, easy to judge and fun to compete in. The last bit only remains true if the rules are aimed at the average modeller, and not just the C/L modeller either. I hope the Midge comps continue to attract the same number of flyers as in '85, especially with the extra emphasis on the genuine vintage motors (see February issue). Ron Prentice and myself have recently discussed if any changes to the stunt rules are required and

Right, always a favourite...two of Steve Batney's Kell Kraft 'Scouts', one of the few designs ever for a biplane team racer. The other model is a 'Mite Mouse', circa 1948, from a plan published in *Model Airplane News* - this one is powered by an, as yet, unrun Elfin 1.8. Far right, a very popular and functional stunt model - 'Devil Bal'; this version is 1/4 times original, powered by Fox 59 and built by Laurie Glover.



Above, John Parry's version of streamlined stunter 'Icarus' published in *Aeromodeller* in April 1951. Two plans were available, one for 42 in span (5cc) and the other 67 in span (10cc). This is a larger version and is powered by a Fox 59.

I'll present them when available, but they will be largely unchanged.

The Team Race rules I'm not involved in so I can't comment on them but I do see a situation where the present competition modellers will produce a set of rules for themselves rather than a broader based format which would be somewhat tame perhaps but be more attractive, and safer, for the typical vintage enthusiast. The following comments by Mike Rolls would be very relevant at this moment:

"I was interested in your comments on Vintage team racing. As one who flew SMAE Class "A" and later "1/2 A" in the dark ages of the mid '50s (admittedly with more enjoyment than earth shaking success) I would like to contribute a few thoughts:

'Firstly, if Vintage T/R is to be popular it must, as you say, capture the interest of more than the existing T/R specialists. It needs the popular appeal that the Midge events have so quickly created...

The difficulty, I feel, will be holding people's interest enough if they find themselves totally outclassed - which can very easily happen. There is also the question of pilot competence - one nervous beginner can create a lot of carnage very quickly with three or four models airborne - I've seen it happen.

The early Class B racers were pleasant to fly, forgiving machines, if kept to 65-70mph - the sort of performance an ED 346 or similar gave them (some EDs went a good bit slower). Things were very different with a good 29 - right from the start 90+ was there for the asking. The Class A racers were less 'gentlemanly' - 70 sq. ins. usually meant a

fairly high wing loading with high landing speed, whilst the 42' lines made everything happen that much faster when trouble loomed.

I think that, as with Midges, there must be an approved engines list. A modern 2.5 would tow a 1951/2 Class A model around at well over 100mph with no trouble - a bit of effort from someone who knows what he is doing would probably get them around 120-125. Put your beginner to the art with an Elfin 249 battler at 55-60 in the same race and I don't think I would want to watch!

There is also the question of noise - a McCoy, Dooling, or ETA 20 sounds very nice when on song - but only to the enthusiast. Very few venues would survive such engines running unsilenced. Certainly we couldn't permit them at Croydon, for instance. Silencers could be fitted to some designs, but by no means all.

As a possible solution, what about the ubiquitous PAW range, with their very neat muffler for the 149, 249 and 19 and the very small silencer for the 29? They would fit the old designs and give them enough performance to make things interesting, without going to excess. Above all, they are available, cheap and British. It would make Vintage T/R a diesel only class, of course (unless you allowed the glow PAWs in).

Additionally, PERHAPS one could get away with one or two of the old-time engines without silencing them - the ED 346 and DC 350 for instance, were never propped to rev. very fast, so were a lot quieter than the 29s or even the quick 2.5s such as the Oliver."

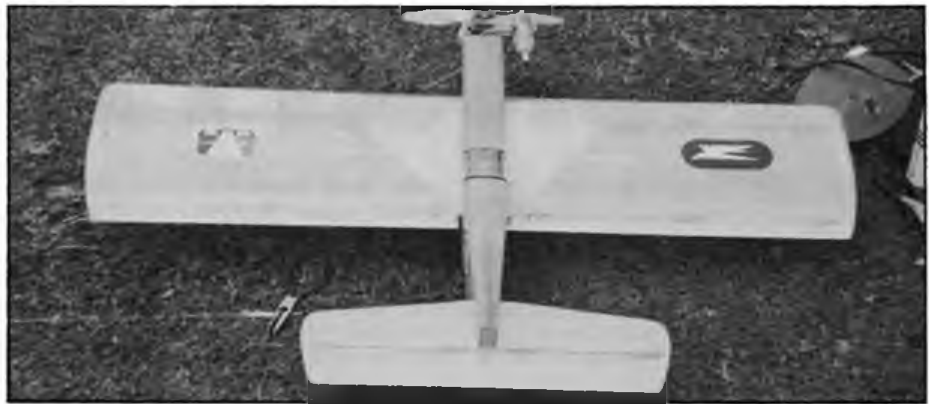
If any vintage team race rules are to appear it is in your hands so why not dream



up a set and offer to run a comp? The column can certainly air your views on the subject but I don't want to formulate the rules myself.

It may be worth mentioning that SAM 35 do not, in fact, have any competition rules. SAM 35 exists as a club to further the building and flying of vintage model aircraft and any comp. rules are actually set by individuals such as Ron Prentice for stunt and myself for Class 1 speed, but this does not prevent anybody from drawing up their own rules and running comps. This prevents arguments within the club which could become serious as happened in the USA with SAM and allows flexibility. People seem to accept the two sets of rules and run their own comps to them. Ron and myself put quite a lot of thought into their preparation (as Ben Buckle and Mike Whittard for the radio rules) and several people influence their final outcome... who needs committees; best to have a friendly dictator!

Any more good things happen in '85? Yes... the emergence of Ron Prentice's kits which I'm sure fill a long felt need. I think the list is growing, we have Small and Big Fry's, Monitor, Martin and Martin Mite and, whisper has it, the Magnette, which was Henry J. Nicholl's first kit. Keep 'em coming Ron! Several suitable replica engines became available such as the Elfin 2.49, Mills MkI 1.3 and the many Dunham examples which may appear a mite expensive but do consider that you're buying a hand-built engine with an



excellent after sales service.

Perhaps we shouldn't leave '85 without one more comment on Old Warden Vintage Day. I have made my views known in our earlier column, but I do feel the Sunday should be left for the pure enjoyment of fun flying and the chance to be included in the Fireball Trophy judging. Let's have the comps on Saturday. This also allows for those of us who also fly F/F or radio to either fly or chat and watch other facets of this, the greatest of all hobbies.

At this point I must thank the many people who write or phone; it makes it all worthwhile and, after all, I'm really only the editor of this column (or should be) if it is to reflect *your* views and news. However, special thanks must go to Mike Rolls, Johnny Hall, Gordon Counsell, John Noble (the organiser of local vintage comps,

especially for when I'm away on holiday!), Steve Betney (for many good photos - always welcome) and Alan Kingswood.

Actually, I must mention Mike Rolls again as he is engaged on a project to catalogue all vintage C/L plans to act as a useful record in the years to come. Mike is to be congratulated on a very worthy and ambitious attempt. The cut-off date chosen is 31/12/52 and well over 300 designs have already been recorded, although not all are available, of course, and many are virtually dateless and this is where *you* come in. If you feel you could add more data and, in return, receive the list, please contact Mike on 01-399-4945 (just imagine trying to compile such a list for F/F!).

Well, that's it for a few months; time to start building... now where did I put that balsa knife?



#### MAJESTIC MAJOR cont. from p.245

Solarlac clear, which is proof against non-nitro fuels. The lettering was hand painted using black Solarlac. While the black was to hand the undercarriage was also painted.

Some time was spent in selecting wheels which would blend with the model's style. Eventually this came down to the French Airtop brand - a genuine airwheel mounted on a split hub. These are not cheap but, in my opinion, are just right. Should you not find them in your local shop contact Sailplanes International direct - they advertise regularly in these pages. A wide range of styles and sizes are available.

#### So down to the flying field

The best of times and the worst of times. Range check O.K.? Engine running strong and reliable? Then off we go. On no more than half throttle the 'MM' is up and away. The next few minutes show that full down trim is needed so overnight some re-cutting of the tailplane mount is undertaken and the next day's flying is accomplished with neutral trim, providing only modest power

It is worth saying that, with a model such as the 'MM', it is possible to make the model climb briskly. The more power there is the more dramatic the climb - the pylon model was, in effect, developed to control high horsepower during a near vertical climb. If you wish to tame your 'MM' reduce the wing incidence during the fuselage construction by raising the cabin at the rear end. Alternatively, be prepared to use the trims during a flight as well as using the throttle control sensibly. At the moment my choice is: for take off and height gain - full down trim, half right rudder trim and half throttle on the Laser. For cruising; - quarter or less throttle, neutral rudder, half down trim. For

*Two views of the business end of Jim's review model; note exhaust extension from Laser 61 power unit strapped to starboard u/c keeps gunge clear of the woodwork! Not all builders will be able to stretch the budget to a Laser but they're a fine investment if you feel like splashing out!*



gliding:- engine on tick-over or stopped, nearly full up trim on elevator.

I have now put in a total of about three hours airtime on the model - sufficient to say it is an excellent flyer with super safe slow flying characteristics. Best of all is its presence in the air; large, colourful and pleasing. Try one! Costings for the model as built:-

1. Majestic Major kit. R.R.P.	54:95
2. Glues	10:00
3. Solartex	12:00
4. Solarlac, thinners, etc	7:00
5. Airtop wheels	11:00
6. Trim Tapes	1:00
7. Sundries	3:00
	£98.95

Laser 61 four stroke including silencer and U.K. postage £120 from A.G.C. Sales Ltd., London Road, Apsley, Hemel Hempstead, Herts.

Not a cheap model but one that should last for years of fun, stress free flying. Now where is that Buckle 'Falcon' plan...



# AT THE LAUNCH PAD

with  
John Wheddon

## 'Yellow Bird' boost glider

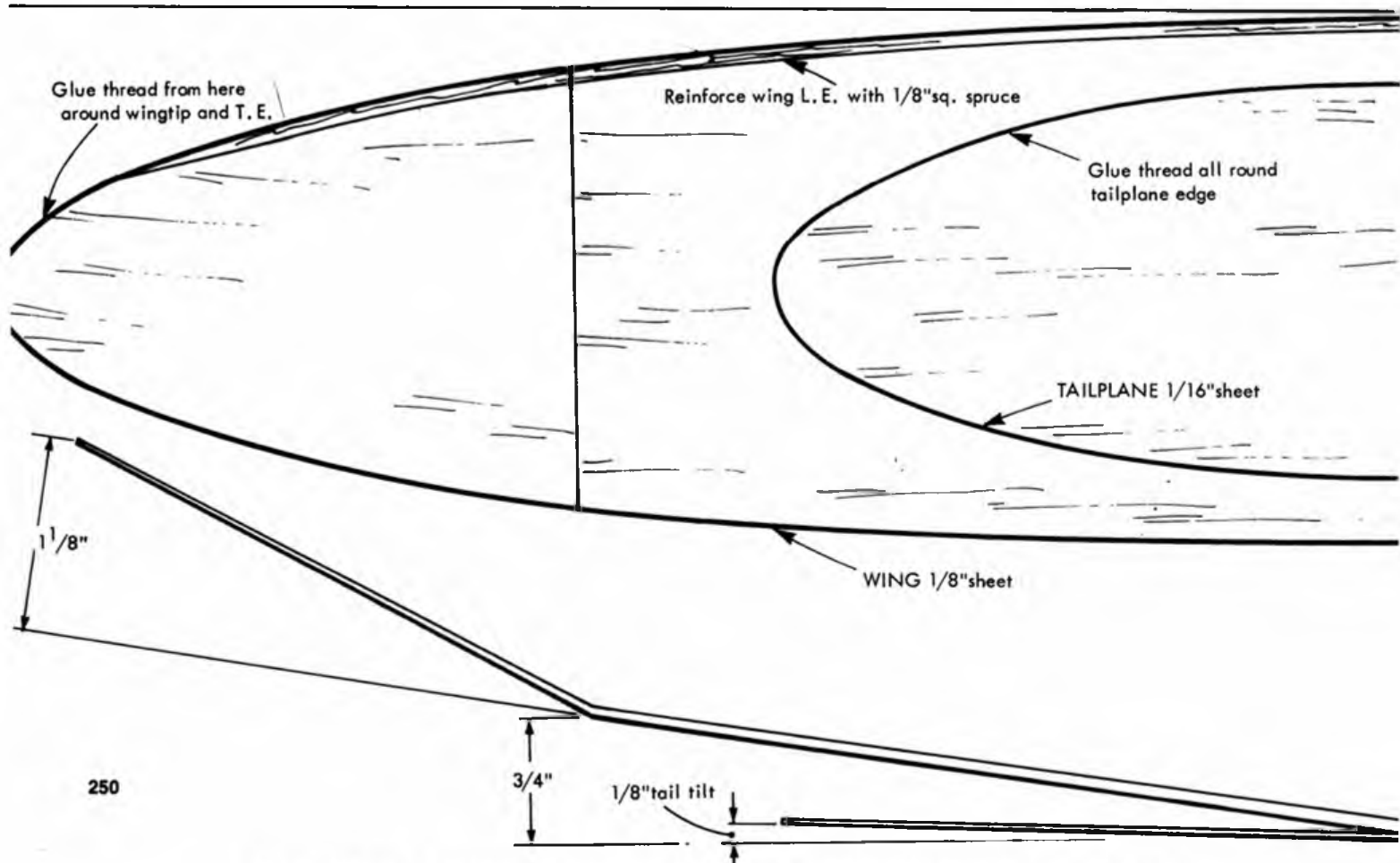
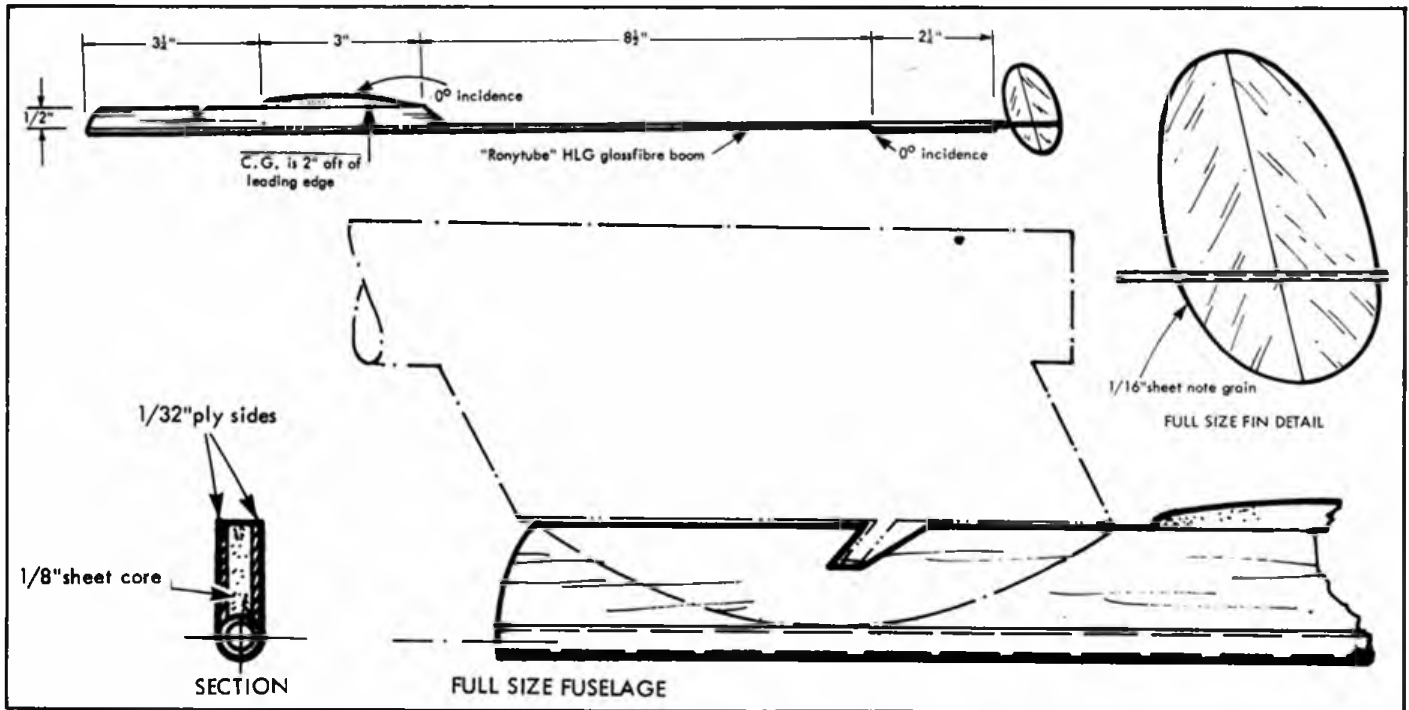
Almost twenty-five years ago, in September 1961, *Aeromodeller* contained an article on 'Yellow Bird', a 20 inch span chuck glider designed by A J Webber; a full-size plan for a 13 inch span version was included and both models were very good performers.

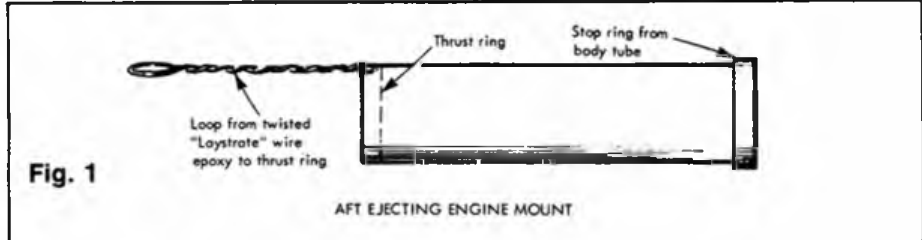
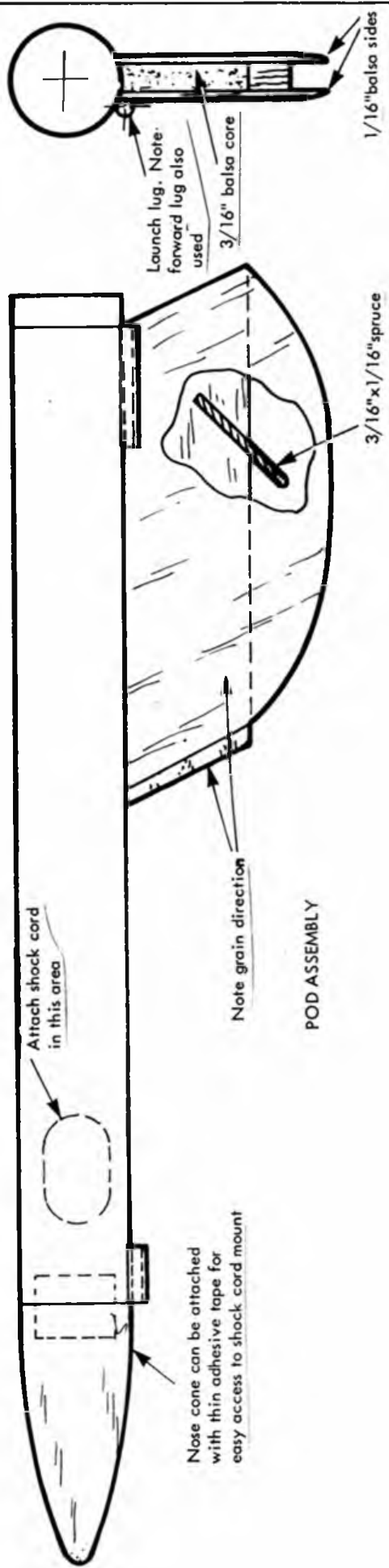
My initial attempts to produce a boost

glider came much later than 1961, but it seemed logical to base such a model on something which was known to work and so a boost-glider with a 15 inch wingspan based upon the 'Yellow Bird' planform was evolved. Since then various other sizes have been built down to the 13 inch size and up beyond the 20 inch span. However, for 'B'

class and 'minnow' engines, the 15 inch is just about right.

Construction of the model is standard practice, the main factor affecting final performance being weight - or the lack of it! It is important to select wood carefully for this type of model using stiff, quarter-grain sheet for the flying surfaces wherever





possible. The wing leading edge is strengthened with spruce and that, combined with the edging of the rest of the wing and tailplan with thread, makes the model quite serviceable and damage-resistant. Before finally covering the wing with Japanese tissue, the dihedral joints should be reinforced by glueing 1/4 inch wide strips of lightweight nylon over them.

The tailplane and fin should be sealed with thinned sanding sealer to prevent absorption of moisture and also to prevent damage due to the 'Speed of Balsa'. Boost Gliders with unsealed surfaces and weak joints suffer from a low speed of balsa and tend to disintegrate during the boost phase of flight, showering the launch point with small pieces of lovingly-made model!

Structurally, the main departure from the original design is the use of a 'Ronytube' fibreglass rod fuselage. These are purpose-made to the specification of two well-known free flight aeromodellers. Ronytube's advertisement can be found among the *Aeromodeller* classifieds.

The pod is based upon standard body tube and nose cone materials according to the type of engine in use. The main pitfall for boost gliders is the 'Red Baron' caused by the pod recovery streamer wrapping itself around the glider after ejection. The result is an earth-shattering return which also often damages the glider! This is a very unpredictable event which seems to be subject only to Murphy's Law - it always happens at the most inopportune moment. So, the aft-ejection system has been used successfully on the latter versions. The price of defeating the 'Red Baron' is a little weight and complexity but so far it has been worth it. Touch wood...

In the aft-ejection system the whole engine mount (fig 1) is ejected from the pod. The mount is attached to the pod by a standard shock cord and the rearward motion has the effect of dragging the pod away from the glider. A streamer can be attached to the shock cord to aid recovery (fig 2).

Trimming a boost glider is carried out by making a series of hand launches, without the engine pod, to check the glide trim. Plasticine can be added as additional nose weight to smooth out the glide. If your model dives or seems nose heavy, check the wing and tailplane angles carefully. They should be zero-zero - that is, parallel to each other and also to the engine when that is fitted. A small amount of tail tilt is shown on the drawing to provide glide turn (the glider turns towards the highest side), but this can easily be cancelled out by minor inaccuracies in wing attachment. Turn can also be induced by bending the fin trailing edge or adding weight to one wing tip.

Next comes preparation of the pod. Check that it is a good fit on the glider nose and that it will separate easily. Then feed the shock cord and streamer into the pod

followed by some recovery wadding wrapped around the laystrate wire which should prevent the ejection gases burning the cord. The engine mount is then wriggled into place. An engine can then be installed, using tape wrapping to secure it inside the mount and a final check should be made to ensure that the mount is still *free* to move aft at ejection.

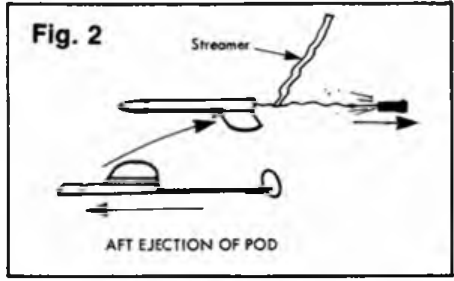
The whole assembly can now be placed on the launch rod and is ready for launch, or is it? Boost gliders need a little more 'ground equipment' than standard rockets. The first problem is that the engine is a lot higher off the pad than usual and the weight of the electrical leads tends to pull the ignitor out of the engine. The leads can be supported by taping them to a stick - some fliers make up special leads and supports for this purpose.

A second problem for boost gliders is that small gusts of wind tend to swing the glider around the launch rod in the few moments before launch so it is a good idea to prevent this by placing piano wire supports in the ground behind the glider wings.

Finally, before launch, check that the various bits of equipment and glider cannot become entangled during launch and that the glider can move smoothly off the pad.

Once the glider is airborne great care and good eyesight are required to keep it in sight although the lower speeds make tracking of boost gliders easier than standard rockets. It is a very good idea to have a helper who can concentrate on the pod to make sure that at least that part is not lost! At this stage it will become obvious that a well trimmed boost-glider must have a dethermalizer. Remember that chuck glider fliers can find thermals by simply throwing a glider from ground level so the chances of a boost glider flying away are much greater.

The most simple method for dethermalizing this type of model is by a fuse-operated drop weight system as employed on the original 'Yellow Bird' but other methods can be used. Pop-up wing is very effective where the wing is hinged at its trailing edge, moving up through about 40° for dethermalizer action. Other fliers use fuselage mounted spoilers - it really is a matter of choice. Bear in mind that the glide trim should be checked with an appropriate length of fuse installed because it can affect the glider performance to the point where a dethermalizer becomes unnecessary!



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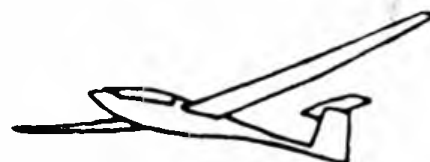
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## APPENDIX - LINKS to the Plans

The original issue comes with two free plans (Witbliz, Deperdussin) printed front/back on a pull out banner of four sheets. The banner is not included in this document.

### Expendable by John Pool

FF Rubber Open

[https://outerzone.co.uk/plan\\_details.asp?ID=9497 ...](https://outerzone.co.uk/plan_details.asp?ID=9497...)

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### Deperdussin by Richard Halfpenny

FF CO2 Scale

[https://www.hippocketaeronautics.com/hpa\\_plans/det ...](https://www.hippocketaeronautics.com/hpa_plans/det...)

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### Witbliz by Dave Clarkson

CL 1/2 A Team Racer

[https://www.hippocketaeronautics.com/hpa\\_plans/det ...](https://www.hippocketaeronautics.com/hpa_plans/det...)

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### Halberstadt DII by Bill Dennis

FF Rubber Peanut

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