

AERO

MILLER

X-CELLENT!

Build X-Wing
Xanadu for
free-flight
excitement

JOIN THE FOLD

A modern
approach to
paper planes

PLEASE SIR...
School club fun



RACE AGAINST TIME!

Our go-ahead guide to Vintage Team Racing

QUICKSTART

BRITAIN'S LEADING RANGE OF SMALL ENGINES FOR THE SPORT FLYER

DART



SPITFIRE/SABRE



WASP



MERLIN



BEE



• See them at your local model shop	DART 0.5cc DIESEL	rrp £21.99
•	MERLIN 0.75cc DIESEL	rrp £17.99
•	SPITFIRE 1.00cc DIESEL	rrp £18.50
•	SABRE 1.49cc DIESEL	rrp £19.50
•	WASP 0.049 GLOW (Beam Mount)	rrp £18.50
•	BEE 0.049 GLOW (Radial Mount)	rrp £19.95

ALL ENGINES ARE GUARANTEED AGAINST DEFECTIVE MATERIALS & WORKMANSHIP FOR 60 DAYS FROM DATE OF PURCHASE

Manufactured & Distributed by
QUICKSTART PRODUCTS
LAKE ROAD
DOUGLAS - ISLE OF MAN
Telephone: (0624) 74224



Jointly Distributed by
CHART HOBBY
CHART HOUSE · STATION ROAD · EAST PRESTON
LITTLEHAMPTON · WEST SUSSEX · BN16 3AG · UK
Telephone: Rustington (0903) 773170



THE SHOP WITH THE STOCK

OPEN 9 a.m. — 6 p.m. FRIDAY 6.30 p.m.
CLOSED WEDNESDAY ALL DAY.

5 MINS FROM M25. 30 MINS FROM HEATHROW AIRPORT

ADDLESTONE MODELS LTD.

63 Station Road,
Addlestone, Surrey
Tel: 0932 845440

24 HRS
ANSWER
PHONE

POSTAGE	
Engine tools & kits under £15	1.50
Radios + kits over £15	2.50
Other items	1.00



- JET X KITS KEIL KRAFT.**
- MIG 15 3.99
 - Sabre 3.99
 - Panther 3.99
 - Hawker Hunter 3.99
 - 50 size Motor set 9.95
 - 40 Pellets 5.60
 - 2 Yds. Fuse £2.50
 - Spare Washers £1.30
- NEW FROM AIRSAIL.**
- RUBBER POWER**
- Piper Club 450mm Span 8.40
 - Cessna 172 445mm Span 8.40
 - Piper Pawnee 460mm Span £8.40
- AIRSAIL VINTAGE SERIES**
- Skyroamer 1949 10.50
 - Ascender 1949 Rubber 9.20
 - Canton Towline Glider 8.20
 - Sgomem Aerobatic Control Line 0.75 to 1.5cc 10.50
 - Sportsman Control Line Trainer 0.75 to 1.5cc 8.10
- UNION - SUPERB KITS**
- NEW LOW PRICE**
- Electric Charge Planes, complete with charger pack & motor. Fly very well.
 - Cessna 150 16.99
 - Bellanca Champion 16.99
- CO2 VETERAN AIRCRAFT**
- Piper Vagabond 6.99
 - Dart Kitten 6.99
 - Spirit of ST. Louis 6.99
- MICROMOLD**
- Piper Super Club 24 9.20
- BEN BUCKLE KITS**
- Diamond Demon 75cc to 1cc 19.95

- Slicker Mite 14.95
 - Southern Mite 14.95
 - Hepcat 48 19.95
- ENGINES**
- PAW DIESEL**
- 80 STD 19.55
 - 100 STD 19.55
 - 1.49 DS 3 21.85
 - 1.49 Contest 3 23.00
 - 2.49 DS 3 24.15
 - 2.49 Contest 4 25.15
 - 19 DS 4 26.45
 - 29 DS & Silencer 39.10
 - 35 R/C A/C 46.00
 - 80 R/C A/C 24.15
 - 100 R/C 24.15
 - 1.49 R/C & Silencer 28.75
 - 2.49 & Silencer 31.05
 - 19. DS. BR 37.95
 - 249 R/C A/C BR 42.55
 - Talco CO₂ 13.95
- COX**
- Pae Wee 020 19.95
 - 049 Black Widow 21.95
 - 049 Babe Wee 19.95
 - 049 Glowhead 2.95
 - Cox TD 049 34.95
 - Irvine Mills 29.95
 - 2nd Batch Due in Now
 - New AE 1cc 22.95
 - PAW 249-DS-4 24.15
 - 19 R/C A/C BR 44.85
 - AE 1.5cc 23.95
- CONTROL-LINE PLANES**
- MODEL HOB**
- Yeyito 14.50
 - Smdusan 17.50
 - Baron 28.50
 - Mustang 18.95
 - Mercury Midge 8.99

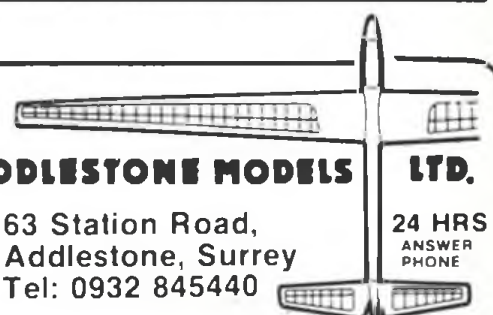
5:4:3:2:1 THE COUNTDOWN HAS STARTED! MODEL ROCKETRY IS LAUNCHED IN BRITAIN THE ESTES RANGE FROM AMERICA.

- Alpha III Starter Set 24.80
- Space Shuttle 25.56
- Sizzler 26.58
- Yankee Rocket Kit 2.95
- Wizard 3.45
- Big Bertha 10.83
- Astro Cam inc. Camera 39.47
- A6-2 Engine 1.87 (3)
- A8-3 2.17 (3)
- B4-2 2.31 (3)
- C5-3 2.55 (3)
- Launch Pad 11.82
- Ignited 1.25 (6)

OTHER ITEMS IN STOCK PLEASE RING FOR DETAILS

- SUPER KITS - DPR**
- Hyper Club Free flight rubber sports model of CO2 Wingspan 750mm 14.95
 - Rare Bird Free flight towline launch or slope soarer. 900mm 9.95
- KEIL KRAFT**
- Gipsy 40in 9.99
 - Senator 6.99
 - Competitor 32in 6.99
 - Robin 23in 4.79
 - Ace 30in 7.99
 - Gemini 21 1/2 in 4.79
- MODELHOB**
- SE5A Bi Plane 24" 12.95
 - FW 190 20 1/4 12.95
 - Spitfire IX 21" 13.95
- UNION**
- Super Chipmunk 13.99
 - Piper Club 13.99
 - Aero Star 12.99
 - Try 1 12.99
 - Piper J3 Yellow Cub 16.99
 - Cessna 150 Omni Flyer 19.99
- RUBBER POWER FOAM CONSTRUCTION EASY TO MAKE FUN TO FLY.**
- Zero 20" 5.95
 - ME 109E 19" 5.95
 - Mustang 19" 5.95
 - Spittire 19" 5.95
 - Staggerwing bi plane 9.50
 - Spirit of ST. Louis 9.95
 - Sky Boy 18in 6.95
 - Sky Kid 19in 8.50
 - Schweizer 27 1/2 8.50
- GLIDERS**
- Very easy to build Sheet Balsa Wings.

- Chuckie 300mm 2.25
 - Boy 600mm 3.75
 - Winner 425mm 4.95
- GREAT FUN - Easy to build catapult Gliders complete with glue and super stickers.**
- Concorde 170mm 3.95
 - Gnat 230mm 3.95
 - Tornado 145mm 3.95
- KEIL KRAFT**
- Dominiette - Solid fuselage, wings to be constructed 4.49
 - Kits to be completely constructed all Balsa Wood, require Balsa Cement, Tissue Paste and Dope to finish.
 - Dolphin 26in 3.99
 - Pioneer 26in 4.59
 - Comquest 30in 4.59
 - Invader 40 1/2 in 6.99
 - Caprices 51in 10.49
 - Soarer Baby 36in 6.39
 - Cheif 14.95
- ACCESSORIES**
- C/L Tank 50cc Wedge Plastic 1.20
 - C/L Tank 20cc Rectangle 85p
 - C/L 50cc Wedge Metal 2.25
 - Banana Oil 68p
 - 1 Litre Dope 6.00
 - Waystrate Heavy 70ft 2.35
 - Heavy 150ft 2.85
 - Lightweight 2.60
 - Lightweight 100ft 2.00
 - Adjustable Control Line Handle 3.00
 - Line Connectors (2) 90p
- POWER DURATION**
- Cardinal 35" 10.49
 - Tiger Moth 14.99



AERO

MODELLER



p.298



p.318

Editor	<i>Geoff Clarke</i>
Group Editor	<i>Alec Gee</i>
Editorial Director	<i>Ron Moulton</i>
Art Editor	<i>Ron Cunningham</i>
Advertisement Manager	<i>Paul Kavanagh</i>

Cover:

A team to beat in '88 - Les Pilgrim and his Fox 29 powered Wrangler, victors at last year's Vintage B Nationals event, are sure to face much more competition this time round! Our Vintage T/R guide starts on p.298. Photo: Ron Cunningham.

HANGAR DOORS	The latest update on the aeromodelling scene	296
TEAM UP!	Vintage Team Racing is set to blast the control-line circles - Terry McDonald fuels up...	298
READERS' LETTERS	Stand and deliver your own point of view	303
PLEASE SIR!	Tony Sizer lets us into the active world of the Chigwell School Model Club	304
SCALE MATTERS	A browse through the world of Plans Service scale models with Bill Dennis	306
THE PAPER PLANES OF MICHAEL JOHNSON	Fold, cut and glue - a new approach to a time-honoured medium	310
FROM THE HANDLE	More on stunt practise flying from Claus Maikis	313
WONDERFUL WATFORD	Our photo-report on the latest SAMS Indoor Fun Fly	316
XANADU	X marks the spot! Build Kevin Wallace's X-wing free-flyer from our full-size plans	318
BALSA CUTTINGS	Cyano de Bergerac's at it again with another dose of sharp comment	327
VINTAGE CORNER	Pioneer models from Wembley and a new find examined by Alex Imrie	328
FLYLEAVES	Read all about the latest books for the aviation enthusiast	333
THE SKY'S THE LIMIT	Paul Clark looks at UK model rocketry - with the accent on forthcoming Estes products	334
FREE FLIGHT SCENE	Dave Hipperson reveals some startling techniques for the Rubber flier...	337
MIND THE LINES	The concluding part of the Hal de Bolt story told by Ron Prentice	342
WHAT'S ON	Where to go and what to fly at home...	344
INTERNATIONAL WHAT'S ON	...and overseas	345

**ARGUS
 PRESS
 GROUP**

P.O. Box 35, Wolsey House, Wolsey Road,
 Hemel Hempstead, Herts HP2 4SS



ISSN 0001-9232

HANGAR DOORS

Aircraft Archive winners

Congratulations to Mr. J. Goodband of Upper Borth, Dyfed, winner of our Aircraft Archive Quiz in the March *Aeromodeller*. As our photo shows, the winning postcard was drawn from Ron Moulton's hat (hijacked especially for the purpose) by Folly Marland, Argus Books editor, with GC on hand to ensure fair play (and to get in the photograph). Mr. Goodband will receive a £50 voucher for Argus Books. Second prize, a £25 voucher, goes to John Cooper of BFPO 30; third (£10) to James Keyser of Farnborough. Correct answers were:

1. Gladiator. 2. Mosquito. 3. Defiant. 4. Spitfire. 5. Beau-fighter. 6. Hellcat. 7. Dornier Do 335. 8. Me 109. 9. Lavochkin La7. 10. Thunderbolt. 11. Kittyhawk. 12. Zero.

Well done, all who took part!

More at Old Warden

There are further developments to report for our 1988 Flying Days at Old Warden. In addition to the Golden Era Day Lypne-Scale competition for 1923 and 1924 ultralights, announced last month, the same meeting will be the occasion of the Howard Boys Memorial event with the famous Pterodactyl Trophy for best unorthodox model. Informal judging for flight, finish and originality will decide the winner...

This month's full-size plan, Kevin Wallace's X-wing free-

Above: Ray Roberts of Paper Airplanes offers a pre-cut, pre-decorated Corsair - and more besides in their catalogue... Below: come to Scale Weekend and enjoy all the fun! Apologies to Geoff Burkett whose Fury this is.



flighter Xanadu, was one of last year's participants. Build one and compete - or take a look at our brainwaves sketched here and let your imagination go. And tell us what you're up to on the way!

...including our Vic Smeed event

As well as the usual Vintage Weekend informal events (plus the forest of SAM 35 activities) we invite enthusiasts to attend a Vic Smeed get-together on Vintage Sunday; that is, 21st August. All you need is one of Vic's designs and a can of fuel, for you will be asked to demonstrate the model. Not that this should be a problem, for apart from straightforward, robust construction the hallmark of Ethereal Lady, Tomboy, Debutante and all those others is stable, vice-free handling. Delve into our Plans Handbook or wait for our X-List



Above: Argus Books editor Folly Marland and your very own GC pull the winning Aircraft Archive Quiz entry out of Ron Moulton's hat (see first item)!



distillation next time. What? You haven't one of Vic's designs already?

Beat the clock

There is no doubt that Vintage Team Racing is set to really go. At last year's C/L Nats the racing went on until it became distinctly dusk - and chilly! With the help of Terry McDonald's guide in this issue we hope that many more will be encouraged to take part this season. Why not team up and try it? If you can fly C/L happily 'round and round' you're three-quarters of the way there. Even your editor has been looking closely at the old Keil Kraft Pacer...

We have just learned from John Noble that the SMAE C/L Tech. Committee have decided to award Vintage Team Race official status. We'll publish 'em in full next month - but suffice it here to say that there are no radical departures from the 'club' rules as published in our feature this month, so it's quite safe to go ahead...

Nor is it essential to use a true Vintage engine, which can be a risky business anyway, particularly if you have no facilities for

rebuilding and reworking parts. Don't forget the evergreen PAW range of diesels, all of which we can say - without fear or favour - are well made, powerful and give good service. The full range is advertised elsewhere in this issue. Diesel economy gives plenty of opportunity for 'tortoise and hare' tactics against faster glows in Vintage T/R so build light and strong and see how you get on!

Three Kings clarification

The gremlins got at last month's What's On, with the result that the Three Kings C/L Profile Carrier and Vintage Event was advertised twice. Fact is, this fun event will take place on 7th August. It is the same club's always-enjoyable Sport and Vintage Day which is scheduled for 5th June. Old-Time Stunt, Midge speed and that classic 'rally' competition, the Concours d'Elegance are planned there. We are happy to make this correction; What's On has been amended too.

How not to do it

We hear that somewhere in Essex recently a large R/C model was flown on a frequency recommended (via the SMAE band plan) for soarers. Unsurprisingly, the frequency was also in use by the local R/C Glider Club and the result was one wrecked power job. Frequency allocations are designed to help, not hinder - so stick to 'em, and always check with other users!



Above: F1C World Cup winner Randy Archer from Phoenix, Arizona. Below: Terry Rosa's view...



Crikey! I bet Bob Copland doesn't have to clear things away at bedtime!

Nats update

Going to the F/F Nationals on 28-30th May? RAF Barkston Heath is the venue for the best in British free-flight aeromodelling. Full details appeared last month; but broad classification is as follows: 28th May - Mini Day; 29th May - Open Day plus Frog Junior, Women's Cup and Vintage; 30th May - FAI Day plus Slow Open Power, Tailless and the 'unofficial' Junior Kit Competition.

We'll repeat that last bit. The Junior Kit Competition is on Monday, 30th May and not as published last month.

Right: Last public outing for the KMAA Shield seen being held at October's SMAE AGM by Jonathan Walker at right: retirement to the SMAE office followed...



Hoped for attractions are a Rocketry demonstration on Sunday evening, as described last month - and if you fancy taking to the air in person, evening balloon rides may be available. Leisurely sandwich-munching over Barkston could be the menu.

David Beales has just phoned with the news that he is to run an 'unofficial' Vintage Wake event (4oz and 8oz categories) at the F/F Nats on behalf of SAM 35. Monday is the day; start time is 11am. Call David on 01-858 2714.

up with rule changes...

Inclusive indices...

All subscription copies of this issue contain the '87 Aero-modeller index free of charge. Copies are available from Readers Services, 9 Hall Road, Maylands Wood Estate, Hemel Hempstead HP2 7BH; price £1.50 including postage.

Of course, if you are aware that a subscription costs no more than regular monthly purchase (not to mention its zippiest arrival) you will have already saved this amount...

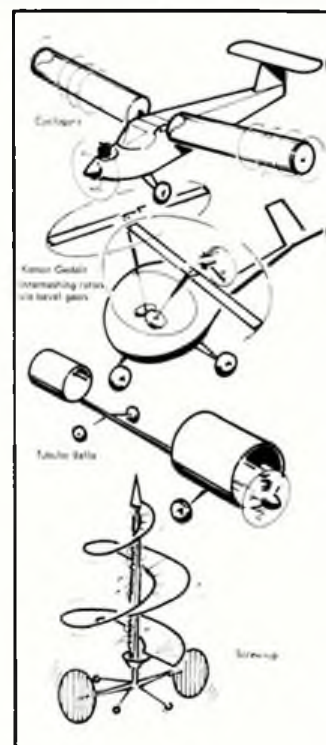
World Cup Latest

With over 300 participants in a dozen events the first FAI World Cup series was a great success. The West German duo of Stefan Rump and Dieter Paff won F1A (glider) and F1B (rubber). Stateside F1C flier Randy Archer took power, flying in two events in Europe and two in the US to accumulate a 65 point total with two first places and one third. By the time you read this, all the 1987 winners will have received their awards at the CIAM meeting in Paris. Ten contests have been nominated for the '88 F/F World Cup, so the future looks bright. We look forward to this season's news.

Remaining World Cup events for 1988 are as follows:

- 20-21st May Domaod, Hungary: Memorial Fulop Sandor Contact: Istvan Gombocz, Modell Klub Budapest Pf.614, 1374 Budapest, Hungary.
- 25-26th June Terlet, Arnhem, NL: Midsummernight Trophy, F1A, F1 Bonly. Contact: T V Eden, Vermeerlan 15, 3764 WB Soest, Netherlands.
- 26-26th July Revinge, Sweden: Scandinavian Open Contact: T Koster, Harlosevej 1B4, 3400 Hillerod, Denmark.
- 30th July Livno, Yugoslavia: 12th Memorial Izet Kurtalic Contact: Aeroklub Izet Kurtalic, Dure Pucara 3, 71300 Visoko, Yugoslavia.
- 19-21st August Thouars, France: International Days of Poitou Contact: M Poussard, 78 rue la Fontaine, 79100 Thouars, France.
- 27-29th August Zulpich, W Germany: 19th Eifel Pokal. Contact: H P Gatzweiler, Kolnstrasse 52, 5325 Zulpich, W Germany.
- 15-16th October Sacramento, USA: 12th Sierra Cup. Contact: R Simpson, 2625 Queenswood Drive, Rancho Cordova, CA 95670, USA.

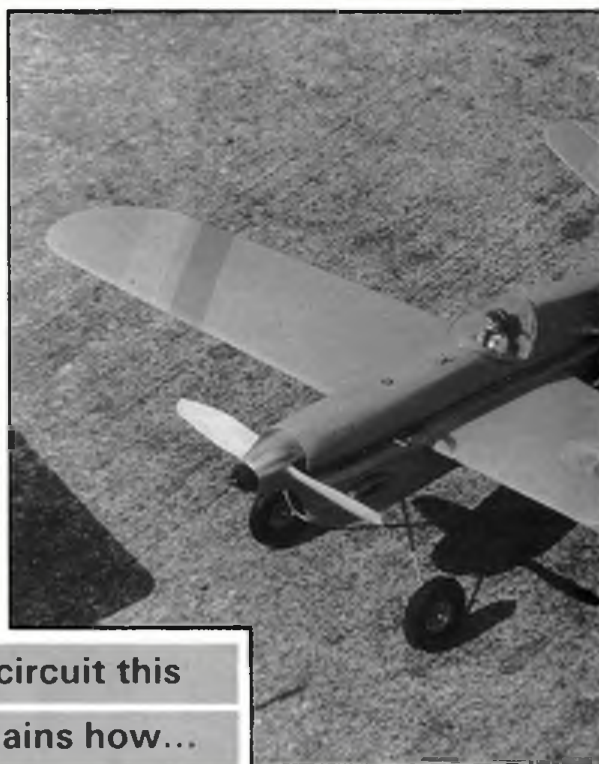
Points are awarded from 25 (for a win) down to 20, 15, 12 and 10, diminishing thereafter to one point for 14th place.



Above: The Howard Boys Memorial event, to be held at Golden Era Day, fuels thoughts of project like this. Go for the unusual!

Nanotechnology

What's this? As readers of a recent Sunday Times will doubtless be aware, nanotechnology is the measuring and construction of components to incredibly small tolerances. And in this world, small really is small, for a nanometre is just one-millionth of a millimetre. Machine tools of immense rigidity are needed for such work; and we learn that a group at the National Physical Laboratory, Teddington, headed by none other than ex-C/L flier Kevin Lindsey have produced the Tetraform, a tetrahedron-shaped device that can almost cut away single atoms. In the aeromodelling world Kevin is known for his development of silencers, his abhorrence of Rat Racing (remember that?) and for his painstakingly-made C/L props for Speed and Team Race. But here we surely have an instrument which is superfluous to the requirements of the modeller's workshop!



Join the Vintage Team Race circuit this season! Terry McDonald explains how...

ONE OF MY Christmas presents in 1949 was the *Aeromodeller* Annual in which I saw the first mention of team racing. The design for Keith Storey's *The Key* really took my fancy but a McCoy 29 as the power plant was about as probable as a Rolls-Royce Merlin to the impoverished schoolboy, which is what I was at the time! Many were the discussions between my brother and myself as to a team racer's actual function before the news came filtering down to us through the pages of the modelling press. A couple of years or so later, when my brother had one of the new ED 2.46 Racers, we decided that we had to have a go at this new event. The trouble was that our club field had only one very limited flat strip of grass suitable for take offs and if the wind was in the wrong direction - tough! No take offs. Even so, we managed to indulge in some very basic racing and found that we enjoyed it very much.

Time rolled on a little and my brother created his own designs for the ED and his new acquisition, an ETA .29 Mark III. As his name is Stuart, they were called *Stu-por* and *Stu-pot* and they performed very creditably in club races; but because of pressure of school and university work we didn't enter much in the way of proper competitions before we took an enforced break from aeromodelling serving Queen and Country. On our return in the early sixties, things had moved on in Class A with the introduction of the FAI rules; a deleterious step from the aesthetic point of view, I feel.

No doubt the modern machines are masterpieces of technology, but goodlooking they ain't - well, not to my prejudiced eyes anyway. The founding fathers had visualised something like full-fuselaged Goodyear Racers when they laid down scale or semi-scale appearance as one of the design criteria. I reckon that they would be disappointed at the way it has developed.

Viva Vintage!

After a break of nearly twenty years I returned to the hobby and found it much changed, especially with regard to the arrival of the Vintage movement; it's a sobering thought that what you did when you were a teenager is now part of history! As with many who return to the fold I started with radio control but also did a bit of control line flying whilst waiting for the frequency peg. The articles by Jim Woodside and Andy Bough in *Aeromodeller*, particularly discussion of Vintage team racing, immediately stirred me into sending for the plans of *Sorcerer* and *Sorcerer's Apprentice* from the X-List. I remembered both models well from the old days, and decided that my 20-odd-year-old Webra Mach I and second-hand ETA29 would power them nicely. At the same time, some of the other fellows in the Long Eaton MAC were taking an interest and a PAW powered Footprint made by Les Pilgrim appeared on the scene, duly receiving its baptism of fire at Old Warden (where

better?). A few of us visited a number of venues in 1986 and saw some Vintage A & B racing, the most impressive being at Three Sisters where many of the experts from the 'serious' racing scene were having a go at this more light-hearted event. It was there that I first obtained details of Dave Campbell's Grantham Club Vintage T/R rules. These codified the necessary controls for ensuring that this does not become an expert-only event, giving a chance to the low-key entrant who merely loves to see these beautiful or characterful old models performing as they once did. In the interests of safety, modern techniques of race management and safety equipment are used without detracting from the general enjoyment. Also in the interest of safety, the longer line lengths from the late fifties are used (not the 42 ft. and 52 ft.6ins of the early days). Just as well perhaps; some of the models are being propelled at very respectable speed by late period motors and I fancy that 90 mph on 42's is a fair rate of rotation (actually 20 secs for 10 laps)!

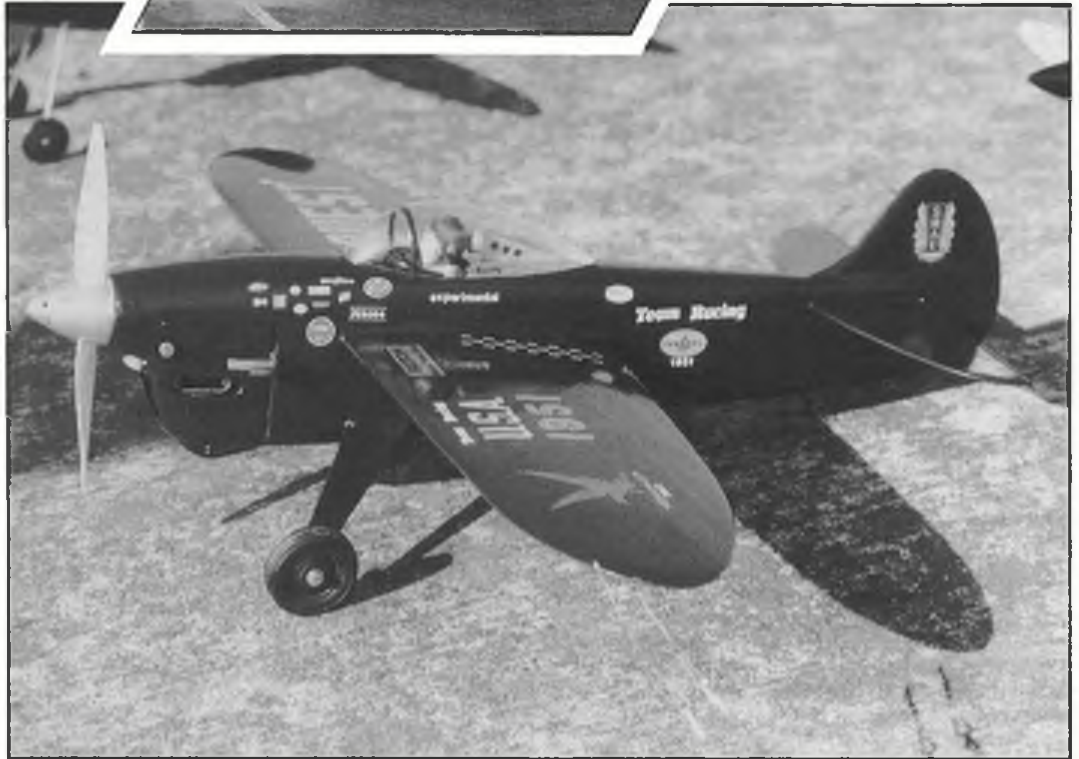
More and more popular...

The 1987 season saw a number of events at Three Sisters and Barkston Heath; and very enjoyable they were. Many more models were in evidence and several illustrious fliers had joined in resurrecting a number of old designs which had not been seen in the previous season. A design which I played a

UP



Left: Alex McDonald pits Terry's Sorcerer's Apprentice. Below left: Brian Hunt's Class A Weaver and Skyleada Hornet. Centre: Neat Bluebottle is the work of I. Hewitt. Below: Sleek Quest for Class B by Brian Hunt



small part in reintroducing to the circuit is Pete Wright's Wrangler; I met Pete at Old Warden in 1986 and saw his model, complete with ETA 29, performing very rapidly. In the course of conversation it transpired that the plan had been published by Model Airplane News in the States but not in the UK. Pete kindly let me have a Xerox of the magazine plan which we of the Long Eaton Club then had blown-up to make a negative to run-off some dyeline prints. Les Pilgrim built one which was very successful in '87, winning Vintage Class B at the Nationals with assistance from Ian Horne and Nigel Bowers. This, I think, is the joy of this branch of the hobby; bringing back to life a design from the past and competing with it in a friendly spirit.

Enough of the waffling, and down to the nitty gritty. The basis of the events is adherence to the 1957 rules, a date which encompasses the last of the old Class A and the first essays at the new FAI rules. Class B, however, was virtually unaltered for much longer as it was not an international class. I don't propose to print the whole of the 1957 rules here but only the portion which is of immediate interest to the modern event.

1957 Rules General

- 1 Models shall be scale or semi-scale in appearance and, if semi-scale, must have a raised windshield or cabin.
- 2 The aspect ratio of the wings shall not be more than 8:1 or less than 4:1.
- 3 The cockpit or cabin must contain a scale pilot, the head of which shall be no less than 7/8in. deep.

Class A

- a) Maximum engine capacity 2.5cc.
- b) Minimum effective wing area 70 sq. in. excluding fuselage.
- c) Maximum fuel capacity 15cc.
- d) Minimum fuselage width at cockpit 1.5 in.
- e) Minimum fuselage depth 3 in. at cockpit; engine cowling extending below the fuselage shall not be included.
- f) Minimum landing wheel diameter 1.5 in.

Class B

- a) Engine capacity 2.51cc. to 5cc.
- b) Minimum effective wing area 125sq.in. excluding fuselage.
- c) Maximum fuel capacity 30 cc.
- d) Minimum fuselage width at cockpit 2 in.
- e) Minimum depth 4in. at cockpit; engine cowling extending below the fuselage shall not be included.
- f) Minimum landing wheel diameter 2in.
- g) Line length 56ft.

It is interesting to note that a team consisted of a pilot and two pitmen in those days - overmanning by today's 'bionic arm' standards.

Additional rules proposed by the Grantham Club

- 1 The circle will be marked out in line with current practice with pitting segments.
- 2 Mechanics will be allowed to catch the models (however, running around the circle to recover models that drop short is much more common in practice).
- 3 Minimum line thickness will be 0.012 in (0.3mm) for class A, and 0.014 in (0.35mm) for Class B.
- 4 Refuelling by squash bottle only.
- 5 Use of a cut-out during the race will be penalised, even if the original design had one fitted. Their use as an engine saver after the race is finished is permitted.
- 6 Propellers are to be either wooden or commercially available nylon or glass filled nylon. No Kevlar, Carbon Fibre-epoxy or other modern high-tech types.
- 7 Only published designs or commercially produced kits are eligible.

8 The following are strictly verboten:

- a) Monowheel undercarriages
- b) Rearward or CG wheel positions
- c) Glass fibre, Kevlar, carbon fibre or other laminates or composite materials as part of the model's structure or finish.
- d) Internal leadouts or line hatches.
- e) Circular bellcranks.
- f) Multi-function type tank valves/fuel cutouts
- g) Pressure refuelling systems or male spike type tank valves.
- h) High tech propellers
- i) 'Hot thumb' type battery connectors for glow motors.

Of course any of these may be used if they are shown on the original drawing.

Eligible Engines

The engines of the race era are those most acceptable but plain bearing non-Schnuerle ported engines of any period are permitted. The brand leader is obviously the Oliver Tiger mark III for Class A but have you tried to get one recently? They are as common as rocking horse manure, and some of the prices being asked are startling to say the least. Other obvious contenders are the ED 2.46 Racer (not the modern Super Racer), a very important motor in the history of British Class A racing. The Frog 2.49, especially the souped-up version with the red cylinder head fins, is quite handy. The Webra Mach 1 is light, high revving, fairly powerful and, if mine is anything to go by, very thirsty and with a voracious appetite for pitmen's fingers. Also eligible are Elfin 2.49's (both PB and BB), AM 25, DC Rapier and PAW 2.49. Incidentally, Hunt/Gibbs won a Class A event at Barkston with a PAW when they kept going as the exoticas blew up.

The rorty stuff

For Class B, the ETA 29 is the favourite around the circuits. Due to the difficulty of obtaining earlier models, the mark VIc is accepted. The Yankee motors which were favoured in the old days, such as the disc valve McCoy 29 and Dooling 29, have not been apparent, except for Don Burgess' McCoy powered Tantivy. Perhaps some of these collectors will remove the cellophane wrappers and let it rip with their pride and joys this season. On the Yankee front Les Pilgrim's very quick Wrangler is powered by a Fox 29. John Haytree has these and Fox 25s for sale at moderate prices. Brian Hunt from the Bilston Club uses a Merco 29 to great effect as a cheap alternative and one interesting model at Three Sisters was equipped with a PAW 29 diesel. This was very true to life for in the old times there were optimists who tried to win by using a 3.5cc diesel such as an Amco 3.5, hoping to fly the race out on one tankful of juice. The Miles 5cc diesel was also used by some fliers in the past but its starting left a lot to be desired.

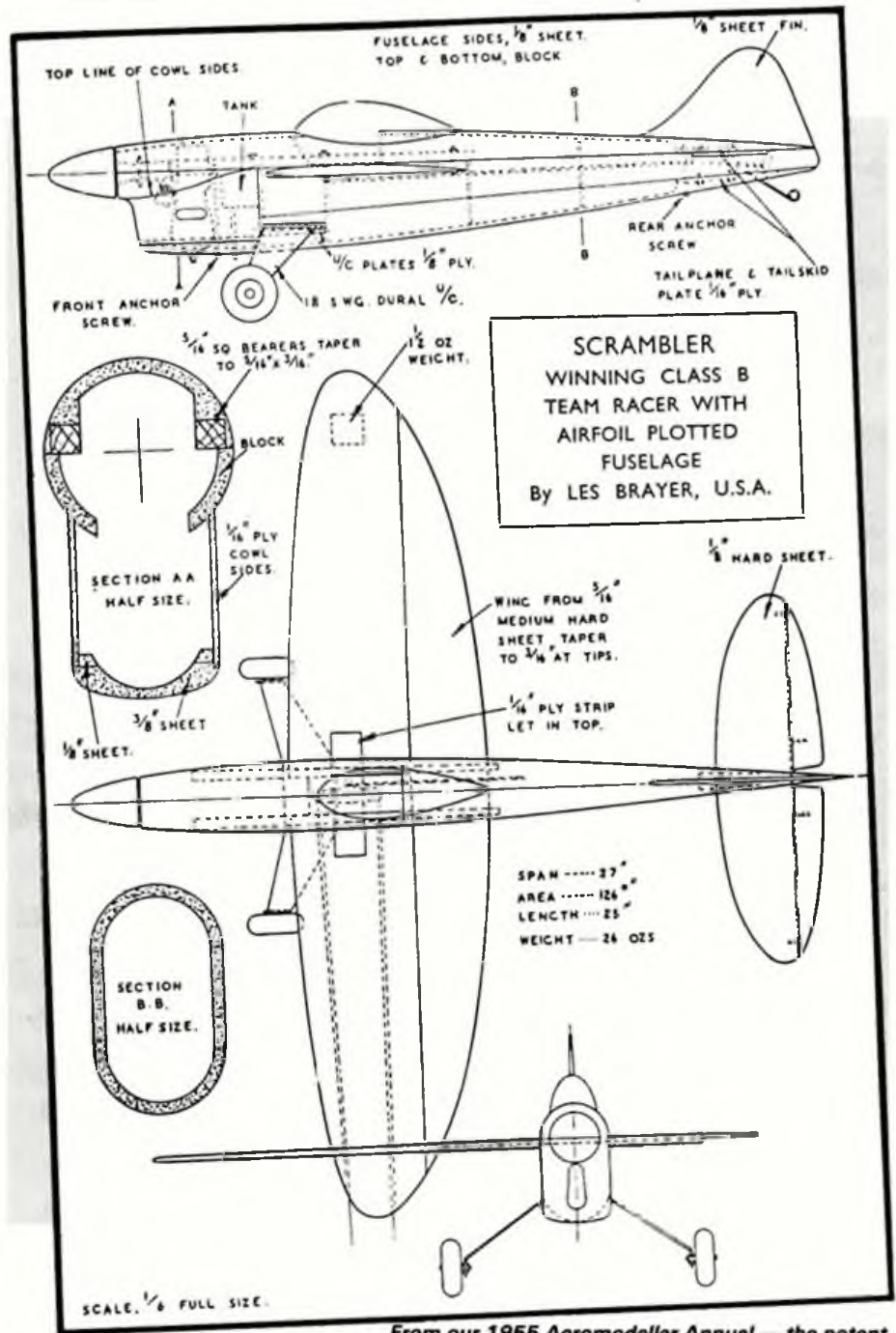
So there are plenty of motors suitable for these events; you don't need to spend a fortune on buying collector's items. New motors are available at the budget end of the market.

What to build?

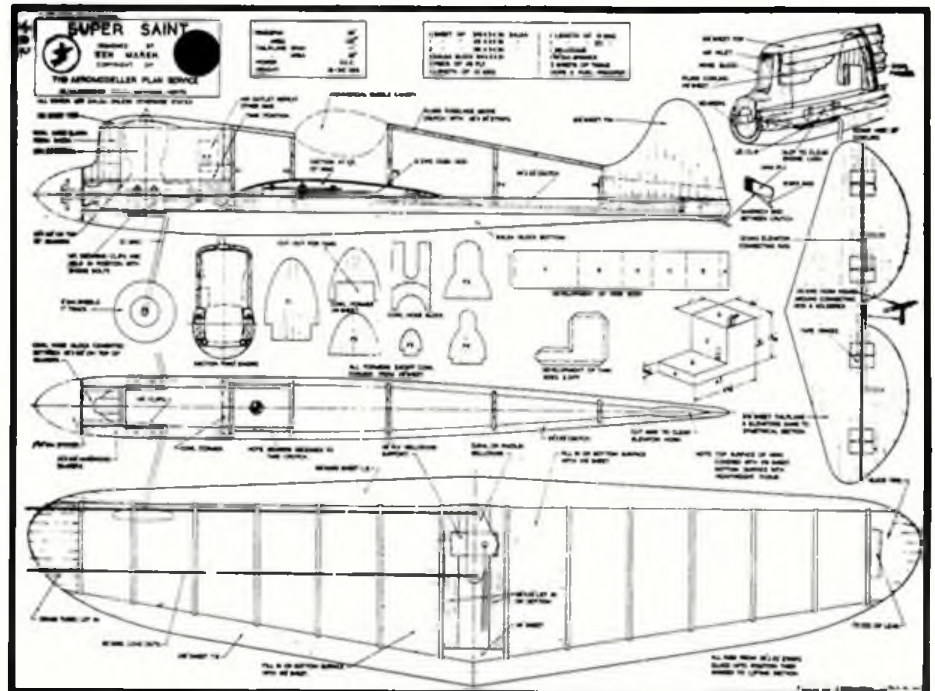
Hunting out all the eligible designs under the rules laid down is a mammoth task and doomed to end in failure; someone somewhere will always produce a plan for a model which no one else has remembered. However, I'll list all the designs which I've sorted out and, where possible, comment on the model. If you are interested in this event I suggest that you visit one of the '88 race meetings - seeing the models in the flesh will give you a better idea of how they look than any amount of drawings or photos.

Whilst on the subject of the models, it should be stressed that the idea is to replicate the original but this need not be done slavishly. Original materials such as obeche sheet are not readily available now; nor are teamrace pattern 1.5in and 2in wheels. Also, in the early days, many races were run on grass rather than tarmac and the models were more lightly built. A bit of beefing up of the undercarriage wire, replacement of tissue covering with 1/16th balsa sheeting and so forth is quite acceptable (but a fibreglass cowl definitely is not!). Such strengthening will assist the model to survive on tarmac - and it was widely practiced in the fifties.

The earliest designs which I've found are: The Key, an American Class B design published in the 1949 Aeromodeller Annual; Battler, an Elfin 2.49 powered model which first appeared in the Summer 1950 edition of the Ian Allan publication Model Aviation; and, of course, Phil Smith's Midget Mustang kitted under the Veron label. This model was designed in 1949 and won one of the first team race events to be held in the UK. Ron Moulton's DeLong powered Playbox was an early design but I've only seen photos. Perhaps he's got a plan hidden away somewhere? Anyway, I've not included it in my lists - yet. From then on designs came thick and fast, some prettier than others. Butcher and Cameron were very successful with Sorcerer and Sorcerer's Apprentice



From our 1955 Aeromodeller Annual - the potent Scrambler. Below: Ken Marsh's Super Saint is one of many available from our X-List of plans. Send £1.50 to GC at Aeromodeller for your copy of this invaluable reference...



which represent the opposite ends of the spectrum for looks. Chas Taylor's Tantivy and of course the High Wycombe club's Humpty Go-Cart were also well up in the prize money. Some designs have vanished. For instance, the Foresters Club from Nottingham were very successful in the 'fifties but I've not yet seen a drawing of any of their winning models such as Jiawatha or Yellow Peril which were mentioned in the contemporary race accounts. I think it would be a good thing if researchers pried out some of these famous designs from the past to widen our scope even further. As an example. Rob Millinship took a shine to the class A version of the Wrangler which he saw in an *Aeromodeller* photo and, by reducing the drawing of the class B model, he succeeded in making the little 'un. As a seal of approval, Pete Wright, whom he had consulted, signed the fin to vouch for its authenticity. You can't do much better than that! I fear that the problem is that the majority of these models were made by drawing on the surface of the wood and taking it from there. Apart from a rough outline, each was probably totally different from its predecessor. Study of the photos in modelling mags of the time shows that published designs were only an approximate guide to the appearance of many celebrated models. I've seen pictures of Sorcerer with a very different shaped fin and rudder to that shown on the published plan. Let's try to re-establish some of the long lost designs; after all, Fruitnose and The Gay Deceiver are mentioned in one article. They don't give models names like that nowadays!

And smaller still...

Another idea which has been toyed with is the introduction of Half-A racing. So far I've only seen a couple of models but I like the idea. The suggestion is that any Half-A or A design with an appropriate motor would qualify. The PAW 1.5 DS would seem to be about right, but there are plenty of AM 15s about, not to mention DC Sabres so 1/2A could catch on if it gets off the ground (joke - geddit?). Suitable designs for this event are somewhat limited. Grantham rules propose 31st December 1960 as the cutoff date which brings in as number of *Aeromodeller* Plans Service designs. However, two models from outside the period have also been accepted - the KK Ranger (new version) and Veron Pinto. The chief differences from Class A, apart from the engine size, are:

Tank size: 10cc
Line Length: 42 feet
Wheel diameter: 1.25 inch min.
Wing Area: 55 sq in min.
Lines: 0.010in min. diameter

Some designs from various sources are:

Cupid: CL/708
The Weaver: Model Aircraft, May 57
The Nurk: Model Aircraft MA 256
Little Warrior: Aeromodeller, Feb 60
Mercury 1/2A Racer
Frog Hornet
Half Pint: Cyril Shaw, Aeromodeller Annual 1951

I think that Black Chiffon would fit into this class beautifully.

Also, if you dig back you'll find the Frog Mirage and Cream Puff described in the early 'fifties as Half-A. However, they are *very* tiny and designed for under 1cc motors. Might be amusing with a PAW 80 or, even better, a TD .049 - but not on the 20 ft lines mentioned in contemporary articles, before firm 1/2A rules had been drawn up! A kind of early Mouse racing, I suppose.

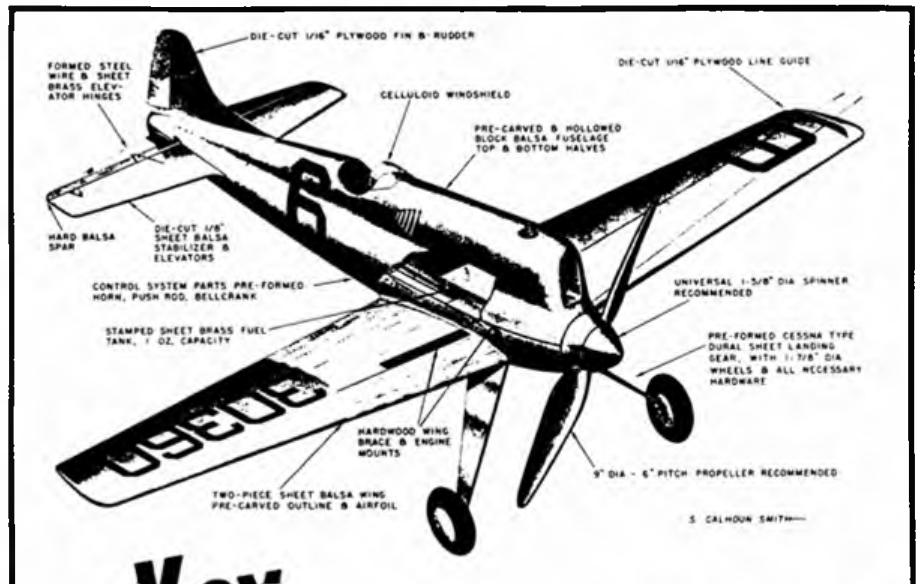
Class A designs

Name	Designer	Date	Comments	Source
Sorcerer's Apprentice	N. Butcher	6/53	ED 2.46 powered Upright motor. Robust	CL/515X
Footprint	P. Smith	6/55	Oliver Tiger power. Inverted motor	CL/589X
TK4	R. Moulton	1/51	Super flier but weak rear end. Both A and B versions on same plan	CL/411X CL486X
Black Chiffon	C. Milford	10/52	Scale model. Neat ED Racer design but very flimsy looking	CL514X 1950 Model Av'n
Jabberwocky Battler	W. Hume R. Moulton	6/53 /50	Twin finned ED design. Upright motor. Side winder 125 sq. in. wing. Eflin power. Early rules. AM 25 power robust, good flier. AM 25 powered. Wing needs sheet covering.	Mercury kit Mercury kit
Mac Texan	S. McGoun R. Young	7/50	Original bit needed. Upright motor. Radial cowl.	KK kit KK kit Kit CL/600
Ranger Scout	W. Dean W. Dean	7/49	Biplane. 125 sq. in. Upright motor.	Veron
Mercury Mk II	H. Thomas G. Yeldham P. Smith	7/50 7/55	Upright motor. Scale model. Oliver power. Inverted engine. Upright motor.	MA264 MA244 MA 200 CL/642X Skylead kit
Minibuster Gengangaren (The Spectre)	M. Hagberg	11/57	FAI type. Swedish design	
Alien	W. Woodrow	8/56	Inverted Oliver. Mid wing	
Nervensage	W. Kroger	1/55	German design. Inverted ED 2.46 or Webra Mach I.	
Time Traveller	R. Edmonds	12/56	FAI type. Inverted Oliver	
Hornet			Inverted motor	
Humpty Go Cart	R. Edmonds	5/51	Inverted ED 2.46	
Pacemaker	S. Rymill	4/53	Gorgeous looks. CL/509X. Wide u/c. spats. Inverted motor. Double delta. 50's futuristic. Scale 125 sq. in. for A or B. Wing needs sheeting. One of the first British T/R winners.	CL/678X
Skyhawk	L. Ellis	49	Nats winner '54. MA211 High aspect ratio wing. Inverted Oliver	Veron
Midget Mustang	P. Smith			
Pluto	M. Smith	5/55		

Class B designs

Men o'War	R. Moulton	7/50	Upright motor	
Red Lightning	D. Rowe	7/51	Amco 3.5 power	CL/383X
The Key	K. Storey	7/49	McCoy 29, upright. US design.	MA/88 AM Annual 1949
Lil Lulu	N. Butcher	49/50	Law's kit. ED 3.46, inverted	AM Ann 1950 (sketch) CL/411X Veron kit
D.H. TK4	R. Moulton	1/52	Class A model but with overscale wing	
Philibuster	P. Smith	7/50	Wing needs sheet covering; good looking.	
Mew Gull	Clahoun Smith	7/50	Scale model. Pre-war canopy shape. US design for McCoy 29.	Flying Models AM Annual 1951
Quest	K. Storey	7/51	Inverted motor. US design.	MA95 CL/465X CL/526X MA133 AM Ann 1953 AM Ann 1953 AM Annual 1953
Cardinal Puff	C. Taylor	3/51	Upright ED 3.46	AM Ann 1953
Super Saint	K. Marsh	7/52	Upright motor	CL/544X
Bluebottle	C.S. West	9/53	Inverted Frog 500. Butterfly tail.	AM Ann 55-56 CL/428X
Greenfly	C.S. West	7/52	Inverted Amco 3.5	CL/454X
Jezebel		7/53	Swept wing & tail; scimitar prop!!! I fancy this one.	MA238
Nemesis		7/53	Italian job, upright motor.	MA253
Tantivy	C. Taylor	7/53	Inverted ETA29. Popular design	Keil Kraft Mercury Mercury Frog kit MA230
Wrangler	P. Wright	7/53	ETA 29 power. One of the most successful; very fast.	
Delta	P. Battailou	7/54	Horrible French design. Looks like nothing on earth.	
Sorcerer	P. Cameron	3/54	Inverted ETA 29. Detachable wing. Flies well off grass.	
Scrambler		7/55	Mid-wing US design. Inverted motor. Good handling	
Lazy Daisy	P. Wheeler	5/56	Inverted ETA 29	
Scramble	J. Jones	2/57	Delta wing for A or B	
Kestrel	P. Godfrey	7/51	Upright motor	
Nucleus	W. Woodrow	7/50	Early design. Upright motor	
Pacer	W. Dean	7/55(?)	Inverted motor	
Mercury Mk I	J. Nunn		Inverted motor	
Thunderbird	S. McGoun		Swept wing! Tailless! pusher Amco 3.5!!! Follow that!	
Vantage	J. Vanderbeek			
Nimbus	H. Wilde			

Below is the design that started it all for author Terry McDonald. The Key was an Air Trails plan, then a Berkeley kit and was featured in the '49 *Aeromodeller Annual* too.



the Key

Berkeley's team racer is bringing in new recruits to the sport

Go to it!

You can see that there are many attractive aircraft all waiting to be built. I hope that these lists will stir a few more people into starting in vintage team racing. At present the range of models is increasing, but still there is a tendency to stick to a few well-established winners like Time Traveller and Footprint. However, there are some exceptions such as Gordon Isles' beautiful Mew Gull, which is well finished and pretty damn quick to boot! One of the heartening things about this branch of the hobby is the way real experts join in and happily help out the beginners and geriatrics like myself. I had Ed Needham and Malcolm Ross pitting for me on two occasions last season. I feel that we can all benefit from a fun event that doesn't cost a fortune or demand access to machine shop facilities plus an advisor on the properties of modern composite materials!

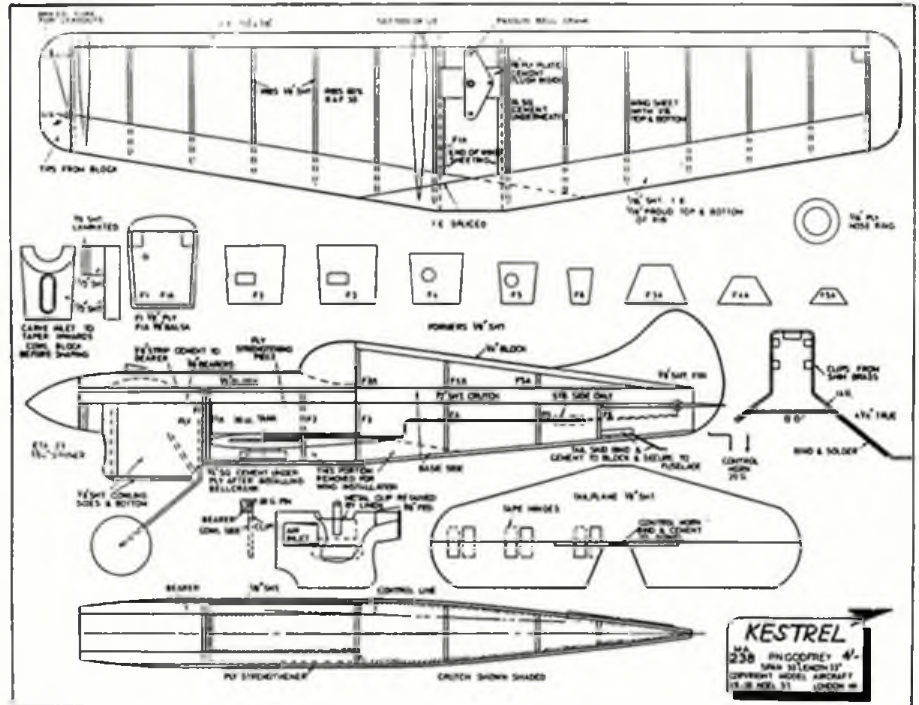
Motor matters

The thing to work on next is the vexed question of motors. For Class A an Oliver Tiger is always going to be the fastest, most economical and easiest starting motor of that period. Having said that, do we want it to become a one-engine event? I think not. Perhaps the answer is to do as suggested by Derek Heaton and set an arbitrary time for each model based on the motor, the model (and the pilot, dare I say?). This should give a chance to some of the earlier and more eccentric designs, and the outclassed but very correct contemporary motors such as the ED 2.46 and the Amco 3.5 would be in with a chance. The aim of the competitor is then to equal or perhaps better these criteria; the winner being the team showing best improvement. It sounds complex, I know; but it's not beyond the scope of a capable number cruncher armed with a simple calculator. In the end though, it's all meant to be a bit of enjoyment and nostalgia, and it shouldn't get too cut-throat.

A point which will bug some people is where to get the plans from. Obviously the ASP Plans Service will come up trumps with all the X-List goodies that I've tabulated; Phil Smith can supply the plans for that elegant trio, Midget Mustang, Philbuster and Minibuster; Peter Martin offers the Keil Kraft Pacer, original Ranger and Skyleada Hornet in his plans service, along with lots of other redrawn kit plans for long-vanished designs. As for the rest, you must search out the appropriate books and magazines and start scaling up the micro drawings which you will find in them. It will be worth it in the end, believe me.

It's official!

Since writing the bulk of this article, I've been talking to John Noble who tells me that an official set of SMAE rules are being issued to cover these events. Basically, I understand that they will be very much on the same lines as the Grantham rules that I've spelt out here. John is keen to solicit opinions on the



A number of Model Aircraft T/R plans survive. Here's the Kestrel from 1956. Try your own research — how about some designs from Europe?

extension of the motor qualification to include Oliver Mk IVs as he feels that they are really not too different to the Mk IIIs and are still available new from John Oliver — if you are prepared to wait that is. Obviously we don't want to get into G20/15s and ETA Elites but maybe Mk IV Ollies and Rivers 2.5s would not be too far out of line. The ED Super Racer would fit nicely, I reckon, without being too expensive and they are available new. Another idea being mooted is to have an Oliver winner and a non-Oliver winner — I like that idea myself. Alternatively, there is Derek Heaton's proposal which I mentioned earlier.

A final thought; is there scope for a bit of stretching of the rules for a deserving case? I'm speaking of that most beautiful of Class B models — Able Gull, dating unfortunately from 1963 but fitting in with both the letter and the spirit of the event. I'm building one and I'll fly on my own if no-one else will join me in the circle! Seriously, I think there may even be a case for own designs to the '57

rules using the appropriate Stone Age technology; that is, proper modelling! What do you think?

May I close by acknowledging my debt to such stalwarts as Dave Campbell, Jim Woodside and John Noble who have taken the trouble to make this event the undoubted success that it is becoming — we might even get the embarrassing situation at the Nationals of more entries for Vintage A than FAI!

Interesting articles to read

Aeromodeller Annuals 1949-56.

Article by David Kinsella in SAM 35 Speaks

Useful addresses

Peter Martin: 16 Ashfield Court, Middleton Hall Road, Birmingham B30 1AF. Tel: 021-459 5520.

Phil Smith: 32 Verwood Crescent, Southbourne, Bournemouth, Dorset BH6 4JE.

Terry's Footprint for Class A captures the character of Vintage T/R. Go on — give it a try — you won't regret it!



READERS' LETTERS

On the edge?

Dear Sir,

A lot seems to be happening at the moment in the modelling world but I can't help feeling that the movement here at home seems to be on the edge of the main events. Someone, somewhere ought to be asking why it is that there are no competitors from this country for the Junior F/F World Championships in the year of Youth in the Air (See Hangar Doors, April, GC). Are there any plans to generate interest in model flying in schools generally? Have entertainment officers in local boroughs been contacted to find out if they have organized flying demonstrations and competitions at the summer shows? Why not a nationwide DPR competition along the lines of the successful enterprise at Wembley?

The new-found enthusiasm seen clearly at the M.E. (and again at the recent SAMS Watford Fun-Fly) gives some hope that things will soon be improving. How it will be possible to get all the happy individuals doing their own thing. To co-operate and get down - for once - to the job of helping young people to push standards. I think that is the central problem. There is certainly room for many events of the Watford type, with an element of competition for Juniors included. Manufacturers could do very well out of the exercise!

Southgate, London

John Coolen

Exquisite joy

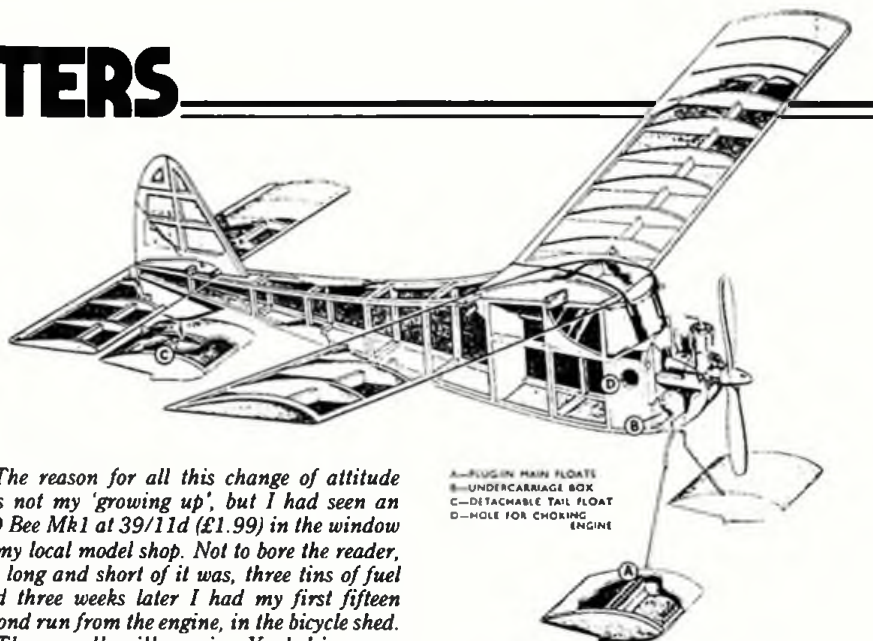
Dear Sir,

My first attempt at aeromodelling, some time in 1946, was to creep home with a Keil Kraft 1/3d kit and try to build the plane in my bedroom. My mother, being headmistress of a village school and of Victorian and latterly Edwardian convictions, made completion of such an endeavour a very daunting project. Needless to say, there were quite a number of part-finished bits that were put in the fireplace. My father, also a teacher, did try to give me some advice on the bits which were left; i.e. 'why not use Seccotine and brown paper?' I felt like Jack in the nursery rhyme, for I also have a twin sister, who was at least two years ahead of me in any scholastic achievement and at all stages of my upbringing was used as a shining example of excellence, in my dim-witted days.

The crowning glory of these early escapades was when I finally completed all the woodwork on about the tenth model. I installed a rubber band or two. You can guess the result of winding up the prop on an uncovered framework...

The next phase was to buy an Aeromodeller instead of Hotspur, Rover or Wizard - and behold! I found out how to cover the framework. I now realised that a nice large building board, plenty of space and solitude were the order of the day.

It was approaching Christmas and my birthday, so I had ordered my next Dinky or Minic car and was on the waiting list for these almost unobtainable goodies when I was able to say to Mother that 'I had now put away childish things, and that I would like money in lieu of any further presents.



A-PLUG-IN MAIN FLOATS
B-UNDERCARRIAGE BOX
C-DETACHABLE TAIL FLOAT
D-HOLE FOR CHOCKING ENGINE

The reason for all this change of attitude was not my 'growing up', but I had seen an ED Bee Mk1 at 39/11d (£1.99) in the window of my local model shop. Not to bore the reader, the long and short of it was, three tins of fuel and three weeks later I had my first fifteen second run from the engine, in the bicycle shed.

The small village in Yorkshire was introduced to its first sounds of an unsilenced diesel. The hens, chickens and three dogs on the farm next door were now held at bay. As the weeks passed and my index finger got stronger, I could start it completely to order and compete at any time with the animals.

In the ensuing months, I followed a teach-in article by the Rev. Callon and read books by Col. Bowden from York Library. My mother by now realised that she had lost the battle and acknowledged that her son was at least 'good with his hands' and might make an engineer or some such animal. I was allowed the use of the school room in the holidays, as long as I kept it clean and swept up after myself. I also had the use of a large blackboard taken down from the easel and put across the desks.

Since the Reverend had used the APS Tomboy for an introduction to Powered Free Flight, I decided to follow religiously (pun not really intended) the step-by-step instructions in these articles. I now raced ahead on Tomboy with interchangeable U/C for wheels or floats.

It was during the next Summer holidays that my ambition of early life came to fruition, when my model became the talk of the village and surrounding countryside.

I had not forgotten to put my name and address on Tomboy and my mother's pupils would find and bring back my beloved plane. It came back from fields and trees, far from home, always in one piece. In all Tomboy survived for five years, until I became a Merchant Navy Engineer Officer.

I hope these reminiscences of a mis-spent youth will be of some help to any aspiring modeller; and hopefully any young persons who read this will get some realisation of the exquisite joy that is to be had from building and flying planes. I count myself lucky to be a member of this happy band of brothers...

Bridgend, Glam

Mike Moore

Ex-patriot success

Dear Sir,

I noticed in your recent report on the New Zealand Nationals. I am enclosing photographs of one that slipped through the net.

Sandy Sanderson, now resident in New Zealand and still a Wharfedale member, came first in Control-line Scale. His Pitts Special, modelled on one resident at a local airfield, is 1/16th scale, 34.1/2in span and weighs 43 ounces. Power is provided by a HP 40 Gold Cup with throttle. The home made silencer exits through the scale exhaust. The

Mike Moore's memories should fire renewed enthusiasm for Vic Smeed's Tomboy, a perennial favourite. Plans are available for £4.10 including postage; quote PET 398. Span is 36 or 44 ins; float plane or land plane details given.

close-up of the cowl was taken before the installation of the rigging wires and a first-flight crash! Damage was extensive but you would never know that, would you. The upholstery is real leather and the rear wheel fitting copies the original's leaf springs. The



Sandy Sanderson's NZ Nats-winning C/L Pitts Special is a fine piece of work. Let's have more news of models like this!

plumbing under the cowl looks complicated but Sandy has given me no details. I get the impression that the motor has a remote needle valve. This kind of thing is typical of Sandy. He takes the complicated bits so much for granted that he thinks everybody else will have no trouble understanding what's going on...

Leeds, W. Yorks

Jeff Smith

Please Sir!

The Chigwell School Club are an active lot, as Tony Sizer explains. . .

ON TUESDAYS the youngsters of Chigwell School have a greater-than-usual interest in the weather. For Tuesday lunchtime is Model Club flying time. 'Don't worry,' I tell them. 'If it is calm we will fly the aeroplanes, and if it is windy we will fly the kites. Whatever happens we shall be able to do something!'

They look at me dubiously. They know from past experience that even on a calm, sunny day, my appearance on the field carrying a free-flight aeroplane is more likely to produce a hurricane than all the sailors in the world whistling in unison. Alternatively, a fresh breeze can instantly be stilled by paying out a hundred feet of line with a kite on the end and uttering the magic words 'Let go!'

But this time, the gods of the weather have other ideas. As we stand, gloomily watching the seagulls paddling across the rain-lashed fields, one of the boys turns to me. 'Why don't we make some boats?' he asks.

Boats are about the only thing we don't make. The games master was not at all happy about my plans to turn his swimming pool into a boating lake, so we had to scrap that idea.

Cars are very popular, though, especially the small, electric, free-running ones. These are cheap, easy to build and fun to use. We have occasional organised race meetings and the cars have also livened up the odd boring history lesson. There are a fair number of radio-controlled cars around as well. Getting across the playground when it was infested with these monsters proved so hazardous that many of the non-modellers took up skateboarding in self defence. A master who had kept a class in during break was seen heading rapidly for the car park with two of the brutes snapping at his heels.

Fly 'em!

There is little doubt that flying things attract the most interest. Our first attempt at rocketry proved quite diverting. Not absolutely certain what to expect, I pressed the red button with a little trepidation. The thing launched successfully, but the parachute failed to deploy and the rocket bored several inches into the ground on landing. Our second attempt splashed down in the swimming pool.

For our Open Day, we flew a three-foot-diameter hot air balloon. Naturally, we tethered it to keep it from wandering off, and we spent a happy afternoon refuelling and relighting it. On the last flight of the day,

a gentle dust of wind tilted the burner, the flame burned through the tether and the balloon made its escape to loud applause from the spectators who thought that the whole thing had been planned that way. It landed in the Metropolitan Police Sports Ground half a mile away.

What of aeroplanes? Ten years ago, our flying models were made of balsa and tissue. Such kits took a long time to construct and inexperienced boys rarely made a successful model first time. One boy made two port wings for his Hurricane by mistake! As our meetings were held once a week after school, quite a lot of time was spent fixing what had been broken by storage or transportation since the previous week's building session. More importantly, repairs took a long time. Rarely were more than two models airworthy. Powered by elastic, these models flew in an unspectacular manner.

Priceless products

Then two products appeared on the market which changed all this: foam polystyrene kits with gearboxes, and CO₂ engines. The first boy to have one of the polystyrene kits built it, flew it, broke it, repaired it and flew it again in less than two hours! It flew so well that I decided to have a go myself.

I had no idea of what was to come when I launched the Messerschmitt for its first CO₂ flight. On rubber power, it had managed one large circle about ten feet up. I imagined that, with the new engine, it might manage two circuits.

As we watched it climb in gentle circles, I began to wonder if our flying field (two football pitches, a cricket square and a 400 metre running track) was going to be big enough. Thirty seconds later, as the 109 landed gently in the topmost branches of a sixty-foot oak tree, I knew that aeromodelling would never be quite the same again. Previously, our main problem had been to get our aeroplanes up: now we would need to find some reliable way of getting them down!

I claim to be the only man in the world who has shot down an Me109 with a bow and arrow.

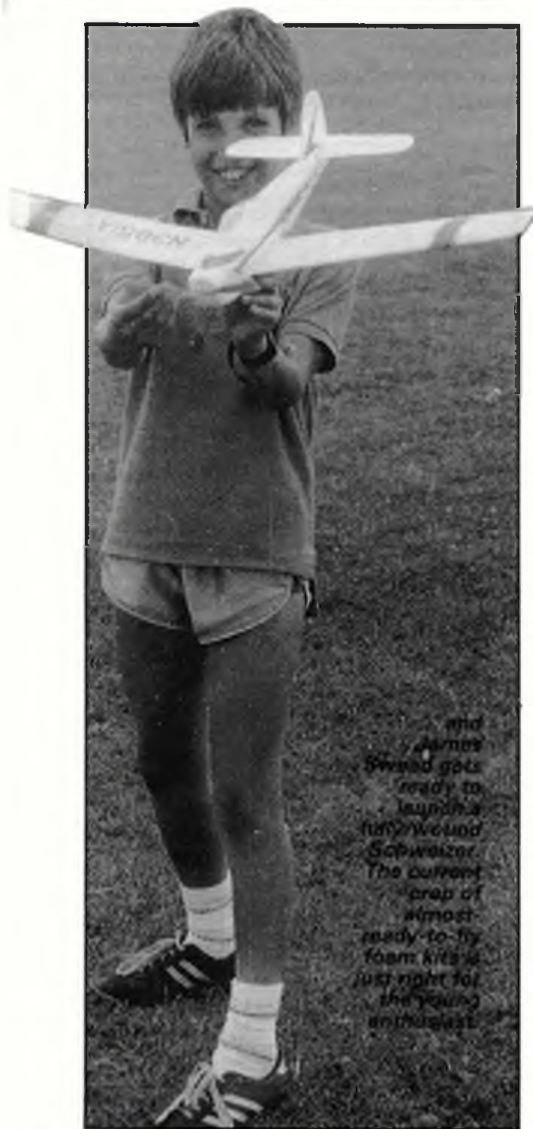
Purists may say that this not true modelling, but the boys know more about

Rather anxiously, Jeremy Stone displays the club's electric-converted Cessna...





Here they all are, club flag and all, at last year's Scale Weekend. Tony Sizer is almost obscured by pupils, planes and paraphernalia...



and James Sizer gets ready to launch a fully loaded Schweizer. The current crop of almost ready-to-fly foam kits is just right for the young enthusiasts.



Graham Fall (left) and Jonathan Swead prepare the electric Mustang.

flying and trimming models than ever they did in the past. Also, model shows are more fun if you can join in.

Flying awaydays

The usual complement for an Old Warden Model Day (without doubt, our favourite day out) is about a dozen boys, a similar number of models, several yards of rubber strip and a large pot of glue. The first job after piling out of the minibus is to repair the models damaged in transit in the Transit. More models get broken by boys' feet than by crashing.

It would be nice if, just occasionally, I got the chance to fly something myself. Usually, though, while the boys act out their dreams of being Biggles or the Red Baron, I am relegated to the role of aircraftsman, second class, with my pot of glue and my stapler putting the bits back together again.

From my repair shop I watch the models flying. The electric Bellanca and Cessna fly

exceptionally well, circling for a minute or more depending on the amount of charge they have been given. The four polystyrene fighters, converted to electric flight (courtesy of Knight & Pridham) fly quite fast with a slight tail-heavy trim, in a series of exciting swoops. The electric Staggerwing is a little slow to climb and flies in a large circle, snapping at ankles as it goes. Above them all, the rubber powered polystyrene kits wheel in slow and stately orbits. I try to keep an eye on where they all go, for the camouflaged fighters are notoriously difficult to find in the long grass and, should a model have a mishap, the boys are apt to bring back only the bigger pieces.

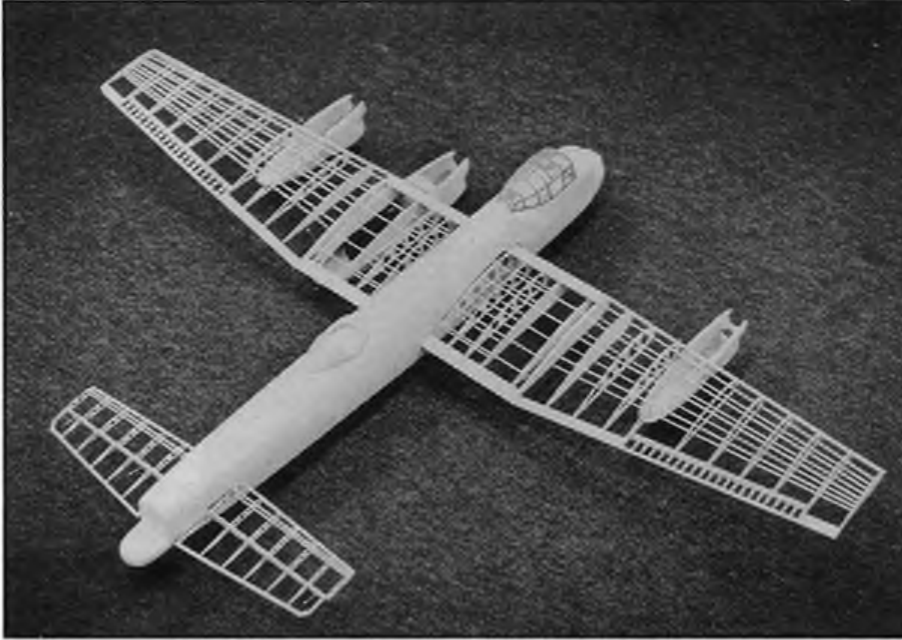
After a while, and with (in spite of my efforts,) the number of flyable models steadily decreasing, a delegation from the flying crew suggests that it is time to try out the Jet-X model. I am allowed to fly this because I took the precaution of pocketing the only box of matches. On the first try it ignites and hisses on its way, narrowly missing some startled spectators, and disappears into the long grass, its position marked by a cloud of blue smoke. As the retrieval crew set off in pursuit, I remember that I haven't warned them that the motor is likely to be hot. A moment later I see that my warning is no longer necessary.

and afterthoughts...

As I sit that evening finishing the repairs to the models, I wonder about plans for the future. Our rubber powered Twin Mustang has proved frighteningly expensive in propellers, so perhaps we could calm it down a bit by using a little less elastic. A radio-controlled helicopter is ready to fly and an R/C aeroplane is nearing completion. Jet-X model kits are now available again, so we must try some of those. What about a Jet-X powered car? Or a helicopter? One thing is certain, life at Chigwell is unlikely to be dull...

SCALE MATTERS

Bill Dennis examines a lightweight Lancaster and structural techniques, and considers the Longbon Trophy



Nifty structures

Recently I examined Charlie Newman's first Peanut model - a Grumman Tigercat built from an American drawing by Dick Howard. This is a very purposeful and streamlined-looking machine; Charlie's model weighs in at a creditable 14 grams, with a hoped-for flight time of up to 20 seconds. Now a twin Peanut model is very unusual in itself, but the main reason for mentioning it is the type of construction employed, which is new to me and could be suitable for larger machines of similar type.

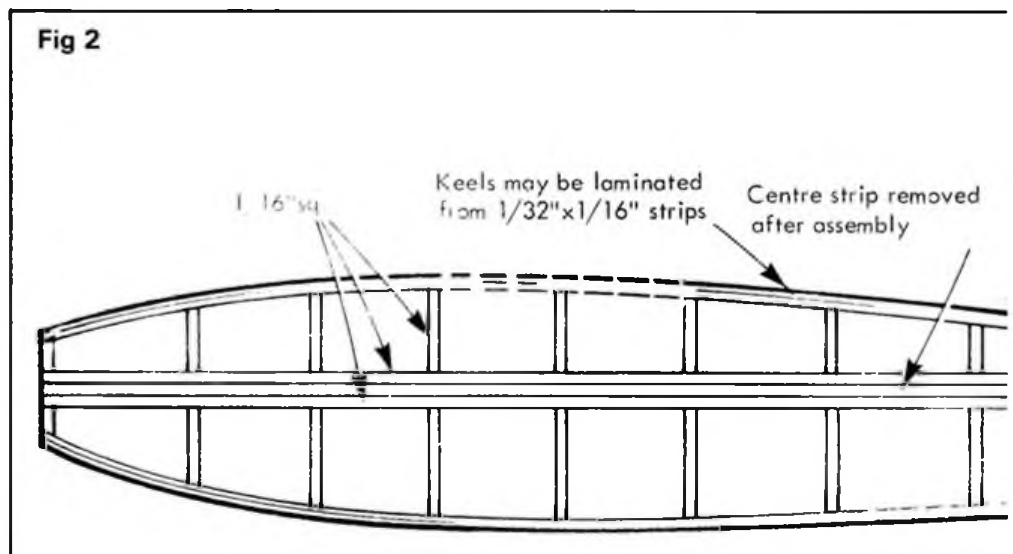
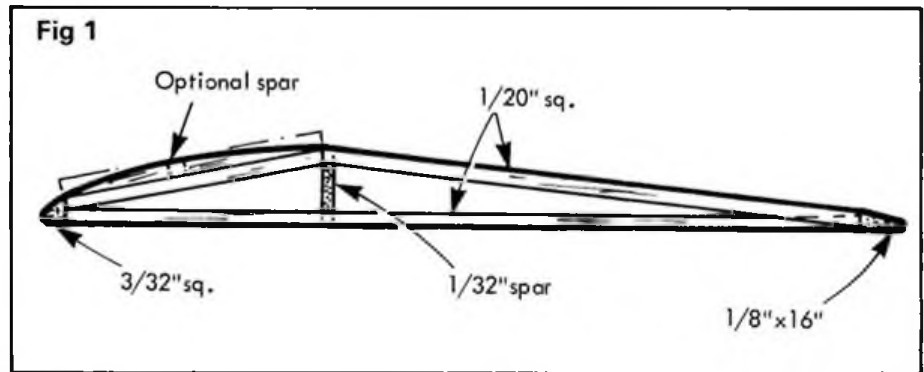
THE FIRST time I saw Paul Briggs, some years ago, he was wielding a large, rubber-powered Lancaster. Although unfinished, the model, which had been carved and hollowed entirely from blue foam, was fully painted. Several motors ran transversely across the centre section to drive all four props via gears and flexible links. It didn't work.

However, not to be defeated, Paul is trying again but this time with a much lighter structure and a more orthodox power train. The fuselage and nacelles are still foam carvings but Paul is confident now with his experience in using this medium that it can be reduced to a very thin layer after paper covering has been added.

Wings and tail are conventional open structures, although great care has been taken to achieve lightness while maintaining as accurate an appearance as possible. The leading edge will be sheeted on the upper surface to prevent sagging between the ribs, while the surface spars have been placed in the same position as the prominent sparwise panel lines which are a feature of the Lancaster.

Double-length motors will be used with return gears at the rear of the nacelle. The undercarriage will be a plug-in type; unfortunately with rubber power there is no nacelle space for the retracted wheels.

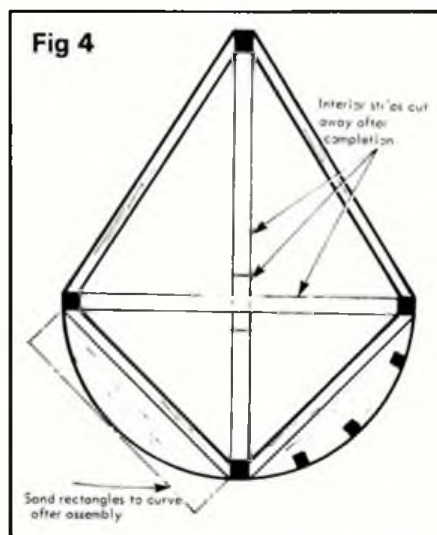
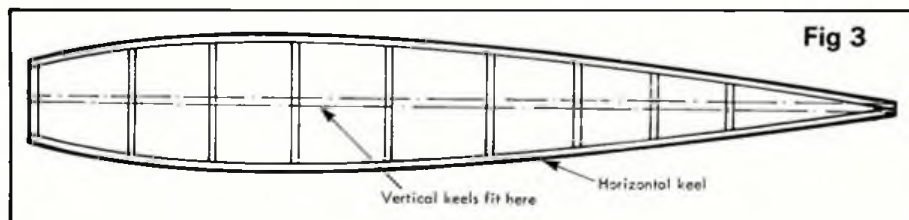
I am sure we will all look forward to seeing this project successfully airborne. Certainly the combination of structural techniques will ensure that it looks the part. An even lighter model could result by using stringers and formers on the fuselage and nacelles, but such an approach would be rather an outrage to perpetrate on such an aircraft!



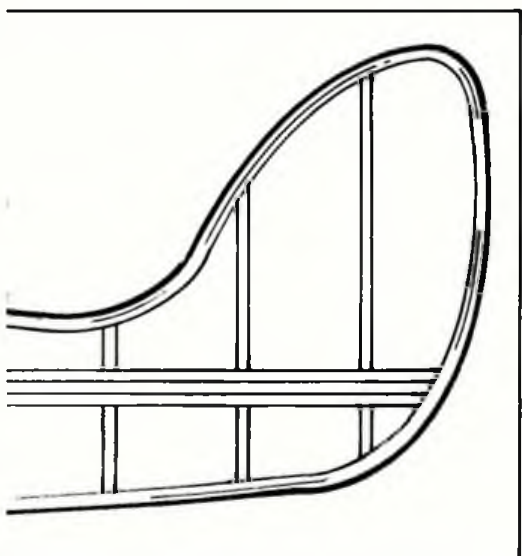


Far left: Paul Briggs' balsa/foam Lancaster for twin, geared rubber motors should be worth watching... Left: Bruce Kopasz brought this neat C/L Volksplane (converted from the Chart-Micromold R/C kit) to Scale Weekend last year. Flew beautifully.

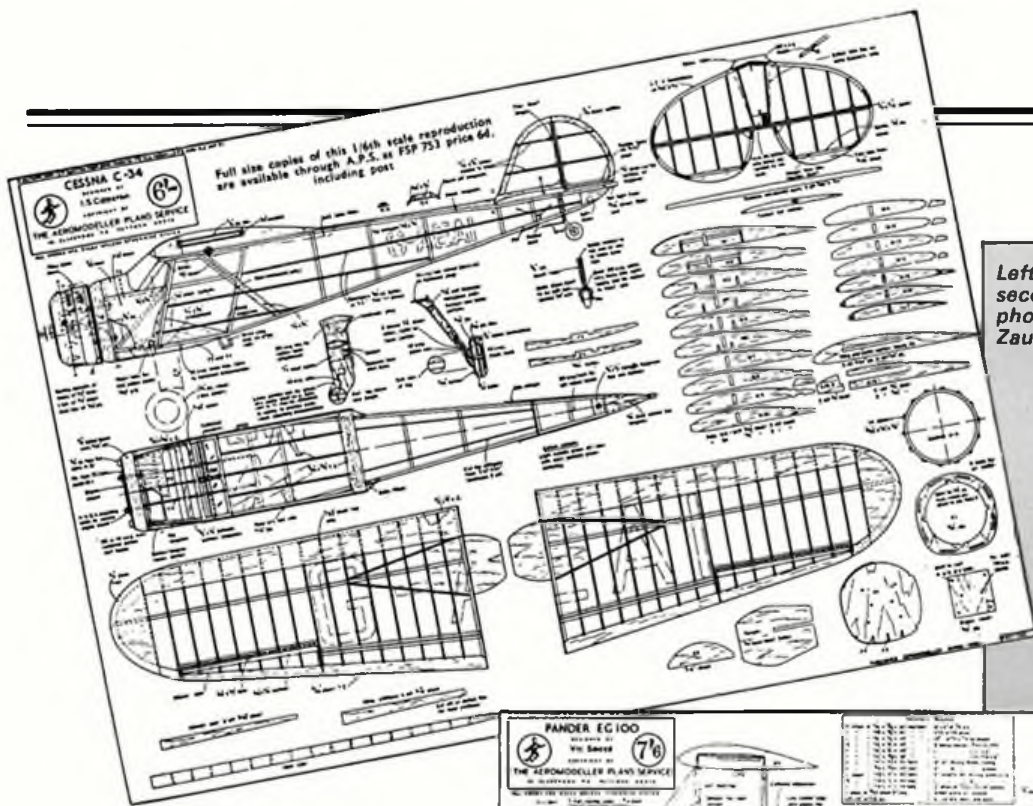
Let's deal with the wing first, which is the simplest to construct, and is self-explanatory from Fig. 1. The only sheet part to be cut out is the 1/32in. spar, which is tapered and notched 1/20sq. at each rib station. The outline of the wing is laid out in stripwood, along with the lower half of each rib from 1/20sq. The spar is added now, followed by the top 'ribs' from 1/20sq., cracked and tapered as shown. We now have a wedge-shaped airfoil which is given a curved LE by the extra pieces glued on top and sanded to shape. If required, an additional upper spar can be incorporated at this stage. Finally, a few deft strokes with a sanding block will give you a stiff, smooth-surfaced wing almost as quickly as it takes to write about it.



Fuselage construction is a development of the same idea. Upper and lower keels are built to the side profile; these may be laminated and can include the fin and rudder. A strip of 1/16sq. is pinned to the centre line, and additional strips pinned, but not glued, either side of the first, followed by spacers. Thus when removed from the plan the structure will be in separate upper and lower halves (Fig. 2). Next, a secondary structure comprising just the side keels and spacers is built to the plan. See fig. 3. The upper and lower frames are now accurately glued either side of the horizontal frame to give a cruciform cross-section. The points of the cross of each station are joined by 1/20in. sq., followed by extra pieces of strip glued on and sanded to the correct profile (Fig. 4). These strips are notched for the stringers, and when the whole thing is thoroughly dry, the interior of the fuselage is cut away (using



Stark CO. Grahame-White Lizzie built by Mick Oakey when he wasn't busy as Assistant Editor of *Aeroplane Monthly*! All-sheet construction.



Left: Two X-Listed plans worth a second look — see table opposite. This photo: John Greenland's original APS Zaunkönig. A stable choice...

a lot of manual dexterity, I assume), leaving you with a lightweight and stiff structure.

Build for Scale Weekend!

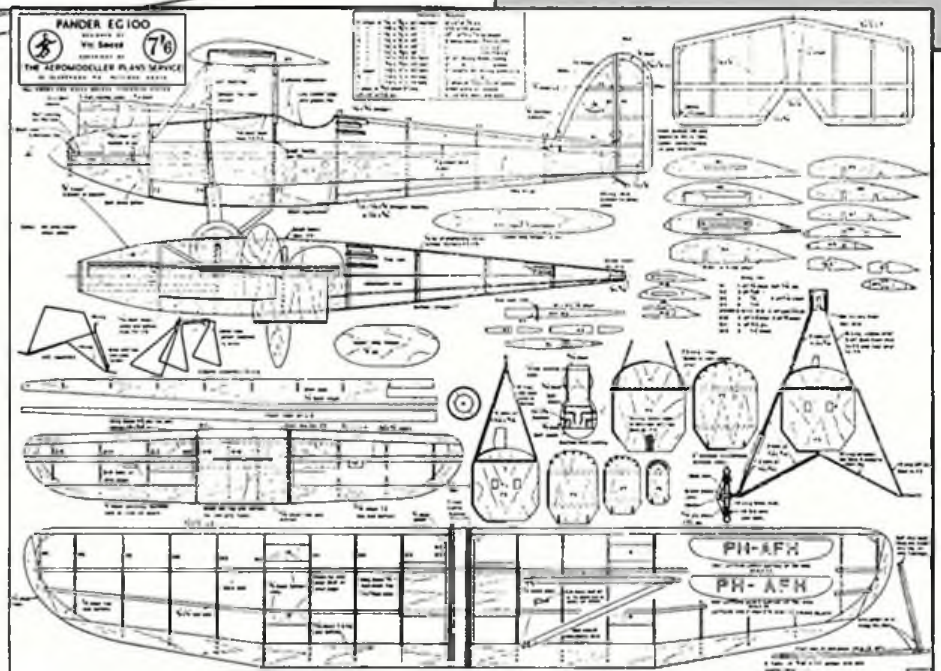
Got your Irvine Mills .75 yet? I'm still waiting for mine but I have seen one and it looks an extremely well-made little engine, much better than the original. Along with its larger brother the 1.3, the Mills remains unsurpassed for F/F Scale use, by virtue of its rear induction and long stroke. What better reason to get the balsa knife out and knock up a simple scale model for this season?

Last year, and at rather short notice, it was announced that the Epsom scale fliers had donated two awards to be presented at Old Warden. I have recently touched on the P.E. Norman Trophy which is for any model, whether designed by P.E. or an original, flown in the manner for which Norman was famous; that is, with plenty of power, speed, excitement and maybe a few aerobatics thrown in. And don't forget the ducted fans...

The Fred Longbon Trophy is for the best rendition of an APS F/F design — an excellent idea and one worthy of support. Here is an excuse to dig out your pile of plans and rummage through for something quick to build without worrying about accuracy, documentation and all the rest of it. There are no tedious rules about absolute adherence to the plan, and minor structural modifications in the interest of practicality and durability will not be frowned upon. After all, the whole purpose is to get models built and in the air. Pay particular attention to flimsy wing attachments and guaranteed-to-warp tailplanes.

The current Plans list shows only just over half of the F/F scale plans available from ASP. Over the years many designs have been consigned to the X-List. This is not because they are bad designs — both lists contain many excellent models as well as a few turkeys. I assume the current list is chosen simply as a cross section of interesting and relatively popular plans.

However, since the X-List no longer appears in the Plans Handbook, relative newcomers will be unaware of what is available so I have compiled a list of all the FSP and FSR (Flying Scale Petrol and Flying



Brian Barton's attractive Focke-Wulf Stösser — 42in beauty is FSP 517 in our Plans Service, price code £.

The Complete and Utter Collection of X-listed Flying Scale Plans Power Subjects

	Span	Max Engine Size	Designer	Date	Plan	Price
Aeronca C3	36	0.8	Lewis	1958	MA285X	D
Airspeed Courier	36	0.5	Rattle	6/64	FSP1016X	C
Arrow Active	36	1.0	Norman	3/58	FSP691X	F
Auster B4	55	1.5	Stowell	11/53	FSP531X	D
Austin Whippet	32	0.5	Garnett	8/52	FSP480X	D
Avro Avis	30	0.5	Eisegood	8/67	FSP937X	C
AW FK8	45	1.0	Eisegood	2/68	FSP960X	C
ABC Robin	37	0.8	Linn	8/54	FSP564X	D
Boeing XL15	49	1.0	Martin	10/50	FSP395X	D
Bristol F2B	44	1.5	Palmer	12/65	FSP1021X	D
Bucker Jungmeister	27	0.8	Palmer	12/65	FSP1021X	D
Bucker Jungmann	36	1.5	Newman	11/61	FSP807X	E
Buhl Sport Air Sedan	35	0.5	Coates	4/71	FSP1135X	D
Cessna C34	34	1.0	Bowers	4/68	FSP899X	C
Chrislea Super Ace	54	1.0	Cameron	3/60	FSP753X	D
Comper Swift	36	1.5	Riding	2/52	FSP331X	D
Curtiss Jenny	29	1.0	Golding	10/54	FSP464X	D
Curtiss Owl	41	1.5	Lewis	10/54	MA197X	D
Dart Kitten	32	1.0	Bridgewood	1952	MA159X	D
Dart Pup	45	1.0	Lambie	1952	FSP497X	D
Draine Turbulent	32	1.0	Holland	2/56	FSP620X	D
Draine Turbulent	Tiny!	0.8	Moulton	12/55	FSP613X	D
DH84 Fox Moth	31	0.3	McHard	12/60	MA318X	D
DH108 Swallow	25	0.8	Barton	1957	FSP654X	D
DHS	26	0.8	Golding	10/65	J479X	D
English Electric Wren	62	1.5	Wyatt	3/52	FSP879X	D
EP9	44	0.8	Woolis	3/59	FSP466X	D
Fairey Fulmar	30	0.5	Hawkins	2/62	FSP722X	D
Fairey Swordfish	31	0.8	Moore	3/54	MA363X	D
Fairey Flycatcher	29	1.0	Perry	5/55	MA178X	D
Gloster Gladiator	36	1.5	Gannon	2/60	FSP586X	D
Hanriot HD1	28	0.5	Roger	5/63	MA322X	D
Money Bee	34	0.8	Mooney	4/53	FSP837X	D
HK 1	45	1.3	Coasby	1956	FSP505X	D
HM 300	26	0.8	Howe	6/65	FSP637X	D
Jodel D9	39	0.8	Hoh Fang	6/65	MA213X	D
Luton Minor	43	1.0	Chun	6/55	FSP591X	D
Miles Sparrowhawk	36	0.5	Fearnley	12/53	FSP534X	D
Miles M35	20	0.5	Collin	1/71	FSP1089X	D
Miles Student	22	0.5	McHard	2/55	FSP576X	D
MiG 15	35	1.0	Fleming	6/56	J629X	D
Pander EG100	36	0.8	Norman	1955	FSP603X	D
Rumpler CV	36	1.0	Smeed	8/59	FSP738X	D
Short Seamew	37	1.0	Rattle	1963	MA402X	D
Sopwith 1 1/2 Strutter	34	0.8	Fearnley	8/55	MA218X	D
Sopwith Schneider	36	1.0	Rae	5/66	FSP907X	D
Sopwith Triplane	35	1.5	Simrance	1963	FSP1019S	D
Spad	38	1.0	King	3/54	FSP545X	D
Thomas Morse	35	1.0	Bagley	4/50	FSP373X	D
Waco Y2C6	45	1.5	Watkins	5/71	FSP1102X	D
Zaunkonig	39	1.0	Meixell	8/63	FSP844X	D
			Greenland	9/50	FSP392X	D

Rubber Subjects

	Span	Designer	Date	Plan	Price
Airacobra	36	Hodgson	1941	FSR100X	C
Airspeed Envoy	52	Towner		FSR126X	D
ABC Robin	37	Riding	7/46	FSR239X	D
Bieriot Monoplane	44	Greenland	1948	FSR275X	D
BEZC	55	Riding	12/43	FSR215X	D
Douglas O-38	40	McDenough	8/71	FSR1123X	D
Douglas O-46A	35	McHard	7/53	FSR5/BX	D
FW190	36	Hodgson		FSR129X	D
Heinkel 51	30	Woollett		FSR141X	D
Lockheed Lightning	42			FSR159X	D
N.A. Navion	34	Pridmore	4/44	FSR264X	D
Potez 75	21	Dubery	5/47	FSR581X	D
SE5	28	Spittle	4/55	FSR274X	D
Taylor Cub	29	Coleman	1944	FSR195X	D
Typhoon	42	Moore	?	FSR205X	D

* Unconfirmed at time of research
 Note: Other, non-listed Scale plans may still exist. Call GC at Aeromodeller for scarce-subject data!
 Price codes as follows:
 C £2.25 F £4.25 D £2.75 G £5.00 E £3.50
 UK postage up to £6.50 is 60p; above that, add 70p.

And don't forget the dozens of subjects currently listed in our Plans Catalogue!

Scale Rubber!) designs thereon, plus some of the Model Aircraft plans. The dates of publication are given, since, as a very broad generalisation, the more recent the design the better it probably is.

For my own effort I have chosen the Fokker EIV because it is simple and quick to build. I know this because I built one in six days when I was 15. It didn't fly too well. Perhaps it was made too hurriedly. I think one of the most worthwhile little mods on any model is to mount the engine indirectly via an engine plate so you can easily alter thrustlines, or even change engines altogether. It doesn't surprise me at all that my first Fokker was not a success when I recall drilling bolt holes in engine bearers with a hand drill; if all four

went through the lugs I had done well! The resultant thrustline was a pure matter of chance.

Go to it and let's see your Aeromodeller or MA Scale job at Old Warden!

Delightful Dreaming Spires

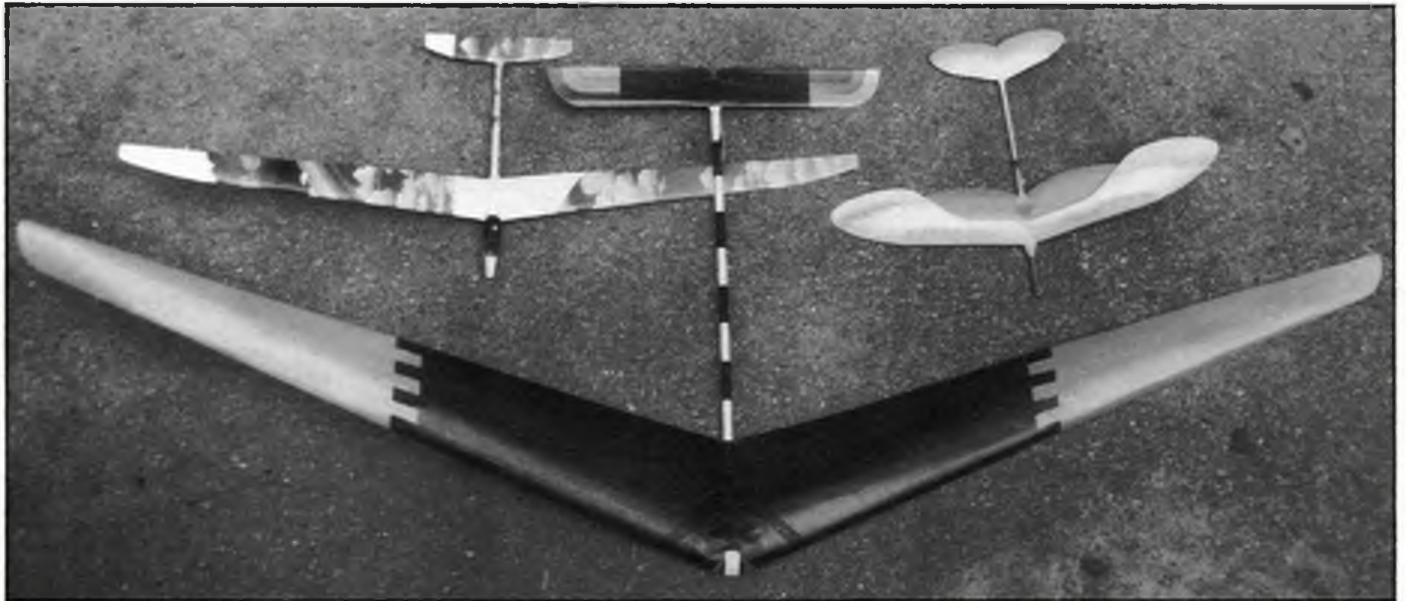
I would like to add a reminder for the Dreaming Spires Gala at Port Meadow Oxford on 24th July. This is a marvellous meeting for F/F Scale and Vintage which doesn't yet receive the support that it deserves from the scale types. The site is excellent and the atmosphere friendly - what more can you ask for?



Top: The late Fred Longbon's fine Cessna 170 is now owned and flown by Mike Holloway. Below: John Lambie's APS Dart Kitten. Really simple!



The PAPER PLANES of Michael Johnson



YEARS AGO I was involved in the designing and building of A 2 gliders. After moving to France eleven years ago I continued their development conducting various experiments into wing sections, turbulators, planforms and so on.

All this led to the building of small, quickly-built experimental gliders to test various theories, and the development included studies of gliding birds, most of which had wing chords of the same dimensions as models. As they were working at similar Reynolds numbers it seemed logical to look into this side of aerodynamics more closely, especially aerofoil sections and wing shapes. Birds studied varied from large condors and vultures down to small swifts and swallows.

An interesting study of a particular wing section came after I found a dead swift outside the house. It had been killed and partly eaten by some predator, but the wings were intact, so in order to take accurate sections from the wings, I embedded them in resin. When this had cured, I took a fine saw and cut four

**Score, cut, fold and
glue - an early
aeromodelling
technique brought up
to date**

sections from root to tip; and to make accurate co-ordinates from the wings of this particular bird I photographed the cut sections, projected the photos onto a board, and traced off the enlarged sections with a rootchord of 7in.

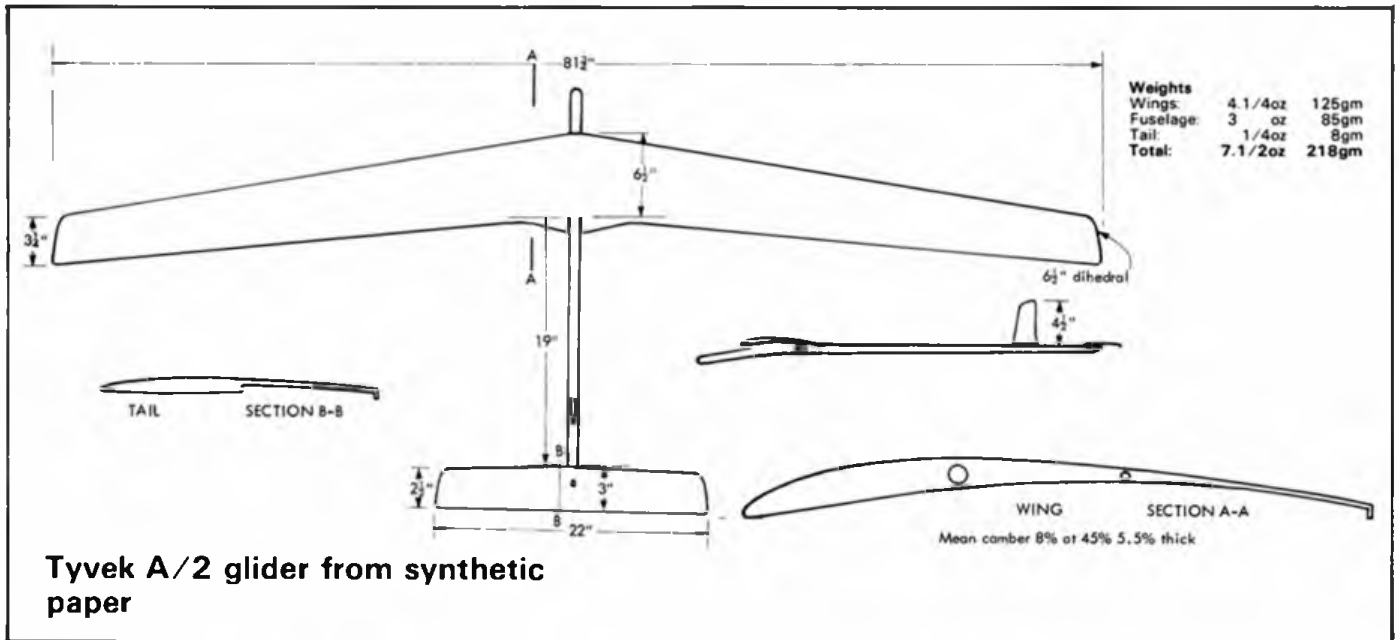
All these experiments were then adapted to various gliders, trying in some cases to get as close as possible to the bird sections. This was done by using a construction of solid balsa wings. For

instance, if a chord of 4in. was required, the leading edge and the first one-third of the chord was made from soft 3/16in. sheet; the last one-third to the trailing edge from 1/32in. sheet, the centre portion tapering from 3/16 to 1/32in. This type of wing gives an exceptional glide in some cases. Later, because of the tendency of this very thin trailing edge to warp, a thin strip of 1/16in. x 1/32in. hard balsa was glued under the trailing edge, which not only improved the rigidity, but often the glide.

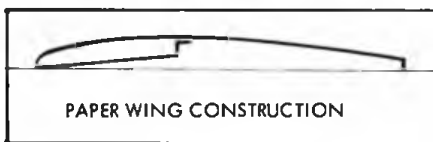
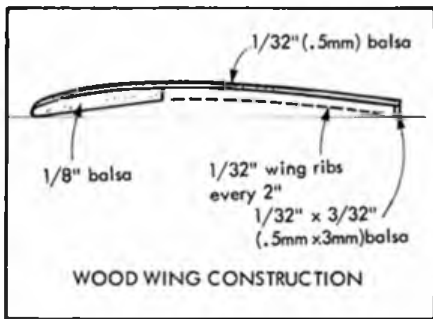
Pro bono publico

After a few years of this kind of experimentation I realised I had a large and varied collection of quite interesting gliders, and as a freelance illustrator and designer working in publishing and advertising I had the idea for a book of 10 or 12 glider designs.

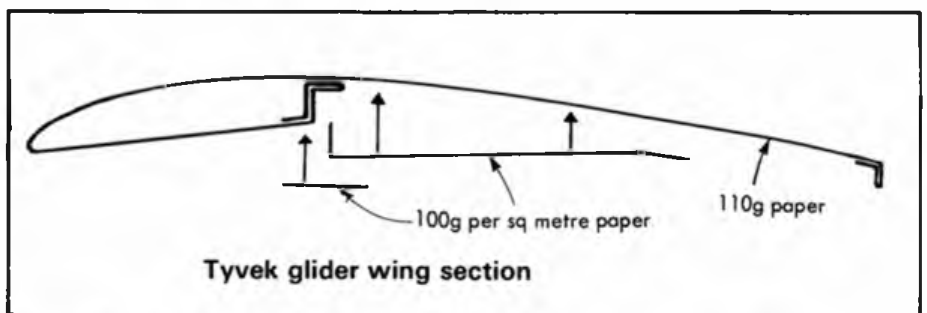
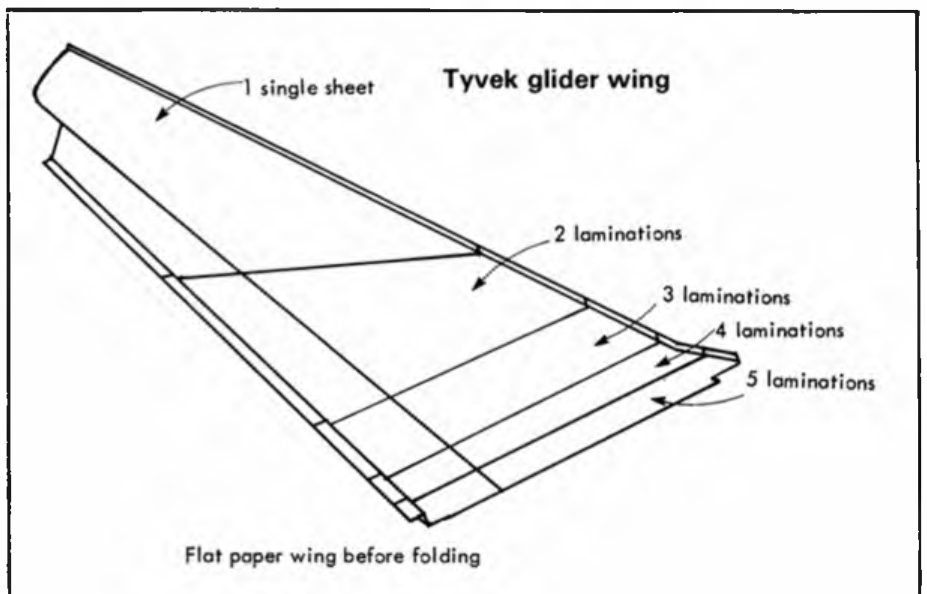
On taking it a stage further I decided it might be a better idea to make the gliders out of the book itself by pressing them out of the pages. These were not to be glider designs of the folded paper dart type, but were based on the designs I had worked



Tyvek A/2 glider from synthetic paper



Heading: The Rainbow Magritte and Dragonflyer from Fantastic Paper Gliders formate upon a larger derivative. Above: Paper wing is developed from a simple balsa structure. Note TE step.



Above: Details of Tyvek A/2. Scope for more F/F experiments here...

out in balsa, adapted to paper techniques. A format and page size was decided: 305mm x 288mm or 12 x 9in. For simplicity, wings were restricted to V-dihedral (one centre joint only) so one wing half of the larger models would fit diagonally across the page, corner to corner, giving the largest total wing span of about 600mm or 24 inches.

It was decided that precision die cut pages would be a great help, not only in respect of the accuracy of the cut out parts, but also from the commercial point of view. More people are prepared to press out parts rather than take up knife and scissors to cut out the sometimes quite complicated shapes.

About 30 prototypes were made up in various paper thicknesses and weights, from 256 to 150 grams per sq. metre, and then tested (in some cases to destruction!). A standard format was then worked out as follows.

Fuselages

Paper is rolled around dowels or knitting needles (see overleaf) using only enough paper to give sufficient rigidity.

Wings and tails

These are developed from earlier wooden wings. The paper version is folded and glued to form a box section span under the leading edge, stopping short of the tip to save weight.

The turned down lip of the trailing edge not only gives a stiffer and straighter edge, but also gives better glide and stall characteristics. The centre joint is by means of tabs glued alternately 'under and over' (see diagram); the curved joint

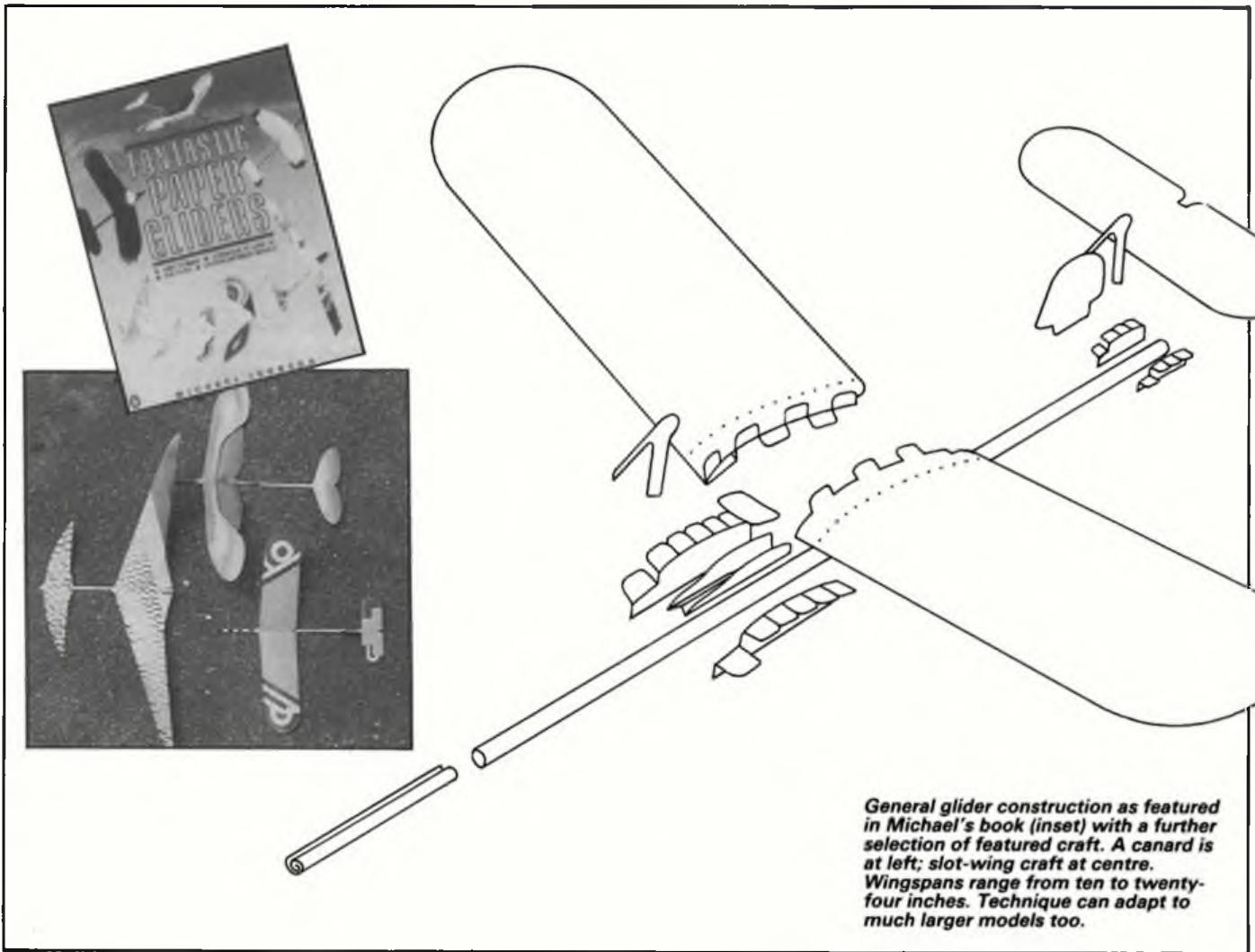
line forms the wing section and the dihedral angle at the same time.

Tailplanes are made in a similar way to wings but - obviously - on a smaller scale.

The diagram on the following page shows the general construction.

In all, 16 gliders were designed to give the book as much variation to type and plan forms to make it as interesting as possible.

Finally, all the colour artwork was completed and again I tried to get not only



General glider construction as featured in Michael's book (inset) with a further selection of featured craft. A canard is at left; slot-wing craft at centre. Wingspans range from ten to twenty-four inches. Technique can adapt to much larger models too.

a good combination of colours and patterns for each individual glider, but also to make sure that all 16 were compatible with each other.

The book was finally published using an ordinary commercial paper of 110gm per sq. metre. Special lightweight paper could not be used for cost reasons. (As it turned out a lighter paper could possibly have been used!). Nevertheless, try to make a glider, of say 24in. span out of 65gm. per sq. metre Photocopy paper (it flies beautifully but it is a bit fragile).

Larger projects

Following the publication of *Fantastic Paper Gliders*, Penguin Books arranged for me to appear on children's television. The T.V. company then asked me to make the largest paper glider possible which would be filmed, launched from a hill and flown in a local park.

Having approached various paper companies for special paper, Wiggins Teape came up with a synthetic paper called Tyvek, which is lighter than normal

paper, possesses good rigidity and is waterproof (important in this damp English climate!).

Eventually I completed what in reality was near enough an A/2 size 6ft 9in span glider, made from 110 gram synthetic paper of the same paper weight as the Paper Glider book. Total weight is 215gm (7.1/2oz).

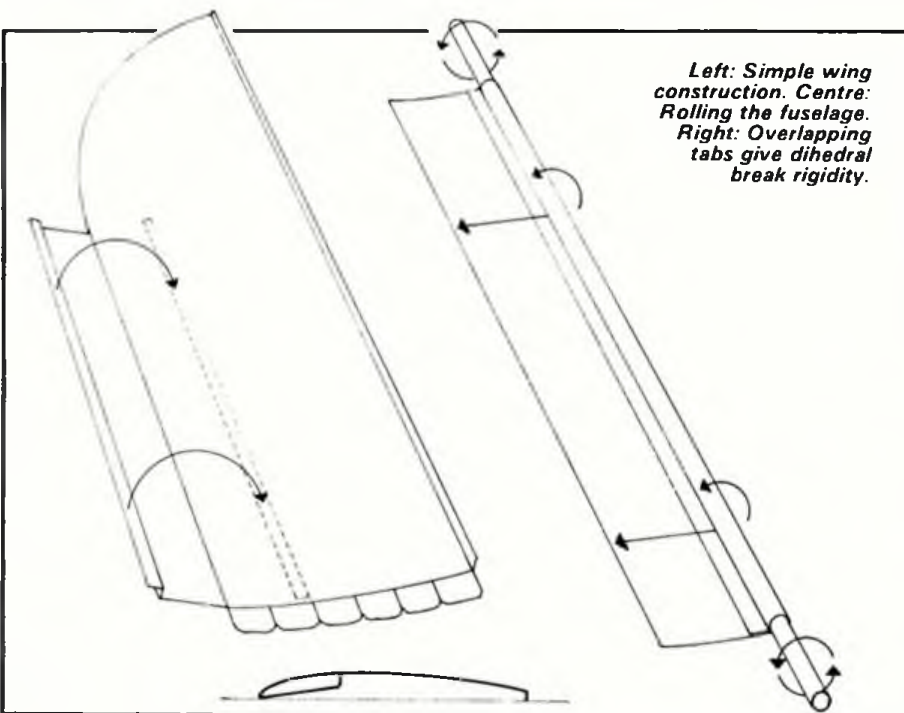
The finished glider was constructed in three days (30 hours exactly).

Epoxy was used throughout and the only non-paper additions were the aluminium tube wing joiners and the small adjusting screw for the tailplane.

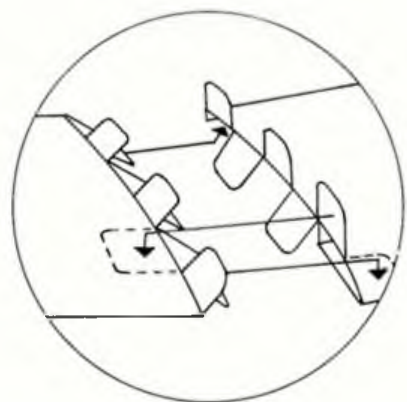
It flew beautifully for the film (thank goodness!) and everybody was perfectly happy.

The fuselage was made from paper rolled around a Tchop-sized Ronytube, actually shorter to save weight. Wings and tail were as per drawings.

Why not try paper construction for yourself?



Left: Simple wing construction. Centre: Rolling the fuselage. Right: Overlapping tabs give dihedral break rigidity.



FROM THE HANDLE

Amongst our miscellany Claus Maikis concentrates on Stunt practise flying

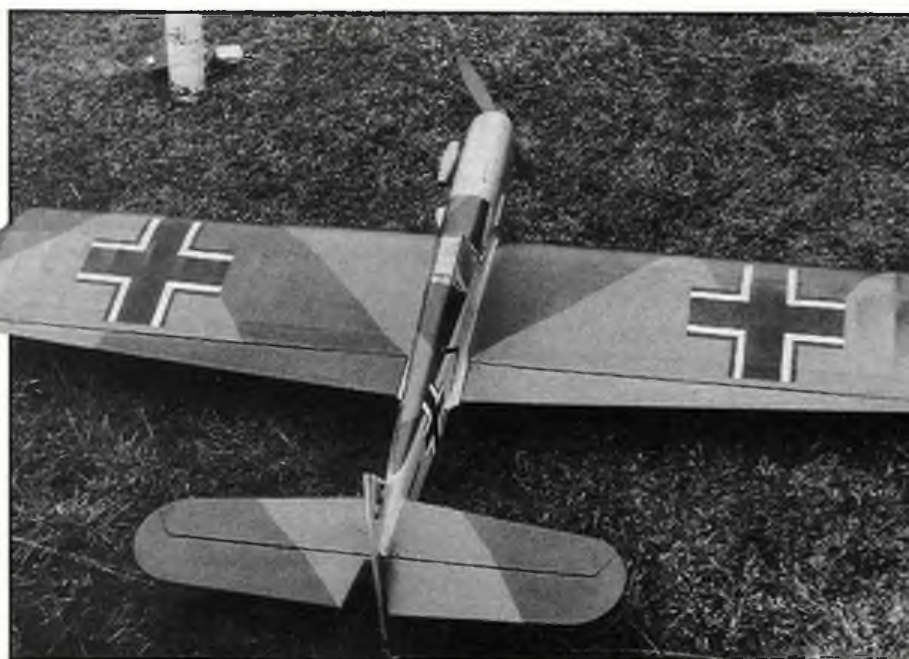
LAST MONTH we talked about a general approach to practise flying. Let's continue some thoughts about flying itself.

It's not usually advisable to practise each manoeuvre on its own. The schedule is a complete unit and should be practised as such. During a flight there are so many things to watch and evaluate which are equally important to the execution of manoeuvres. For example, many pilots have difficulties obtaining a true 'five feet level' flight when there is no uniform, even horizon, or when the flying circle is on a slope. Learn to use your horizontally outstretched arm as a reference and try to forget the background. On heavily banked sites you have to compromise somehow, so learn to fly in an inclined plane. You also should get some feel for lap times, flight time, and engine behaviour during particular manoeuvres or during the flight itself. There are so many things to watch - let alone airplane trim - that practising manoeuvres separately means gaining an advantage in one area at the expense of another. Only if you are completely rusty - or if the airplane is reluctant to perform a certain manoeuvre and you want to find out why - should you give that certain manoeuvre some extra attention. After all, we're not performing a number of separate manoeuvres, but a complete schedule, which is to be judged. An experienced judge will notice the difference. If you don't believe this, try to assist as a judge yourself now and then. It will not only convince you, it will also help your flying considerably.

Keep off the booze

But don't overdo it! More than three back-to-back flights will exceed the capabilities of most flyers. Concentration wanes, and you won't win anything. Moreover - your engine doesn't like it. Have a break, a chat, or a drink. Alcohol is not advised here, except when you feel your model is too old and too ugly anyway! In recent years I've used a different approach which might be a slight deviation from the 'best' practise method. Since strict practise flying can soon become boring I use them as test flights to check out props, tanks, plugs, fuel, trim changes and so on. I concentrate on as few items as possible; say, two tanks or three props. Don't experiment too much in one session. Try to come to a conclusion, and to have at least two satisfactory flights at the end of the day.

I can be aware of several things during my flight. For example: people moving about, noise, shouts and my own comfort. While this may be an advantage in some cases, at the same time it's a hindrance. All these things can disturb me strongly. To fly on a highly-populated R/C field with soaring models over my head is impossible for me. I'd prefer to give up practising - and write a story for *Aeromodeller* instead. I feel greatly disturbed by howling speed or team race engines in the nearby circle. Also, flying on uneven ground makes me nervous. On the cabbage-patch



Two from the '87 Nats - John Smith's black and white APS Europa and Bill Dalby's Me109 (actually an APS Kittyhawk in disguise!)

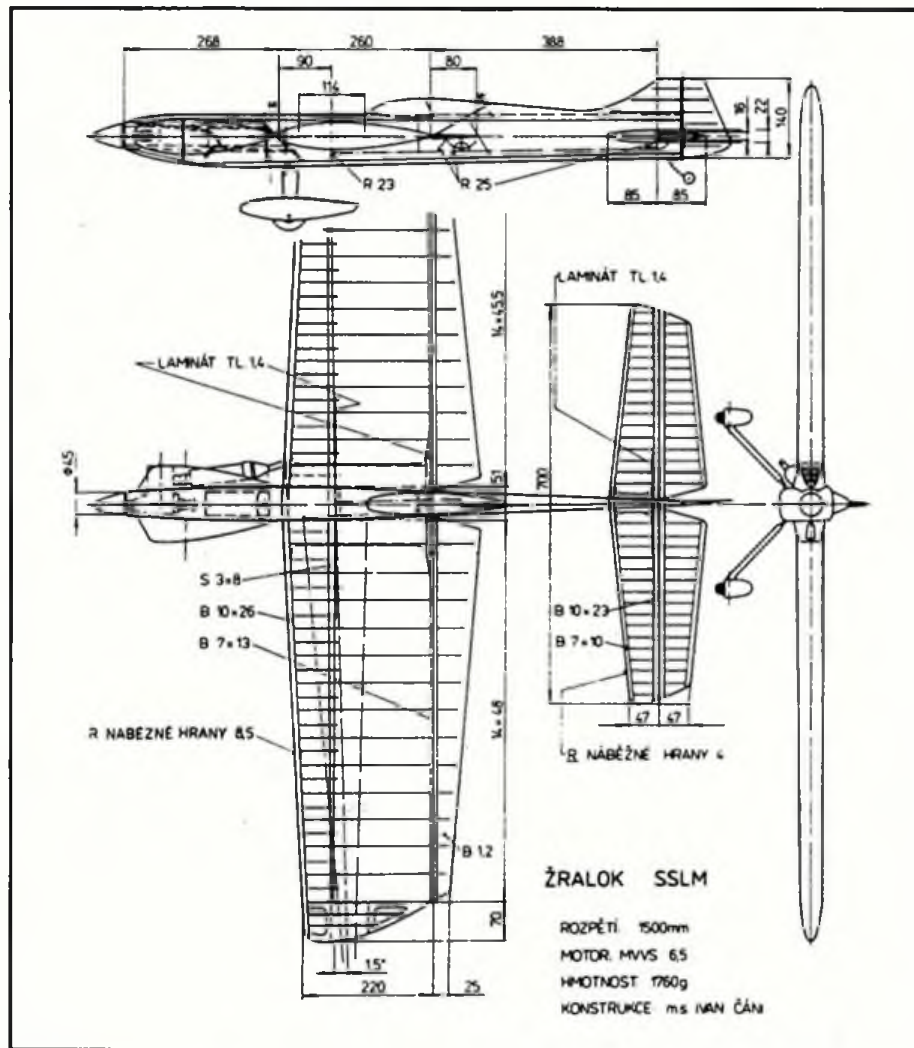
field I mentioned last time I carefully look for an even spot on which to stand comfortably. Clumps of grass under the soles of my feet rob my concentration. Ted Fancher recommends solid jogging shoes which give you a safe stance. You should wear the same shoes at the contest as you did during practise. Those clogs into which you just slip your feet are an absolute nonsense. While on this topic I'll touch on the question of wardrobe. I'm always tempted to write a

satirical essay about the aesthetic aspect of this theme (which clothes for which airplane) but here I'll just mention the importance of comfortable clothing. Have a selection of suitable clothing ready for use in the case of drastic weather changes.

Secure footing is one half of your life in the circle. The other half is easy, efficient movement. This aspect is often overlooked. When you walk around during a manoeuvre the chances are - you blow it. Apart from

an extreme situation, where you have to assist your airplane in high winds, moving about during manoeuvres should be avoided. Firstly, our stance gives us the only reference as to where to put an overhead manoeuvre. Where is the intersection point of the overhead eight when you're walking around? Secondly, any movement detracts from the concentration. You won't be aware of this, but it is so. The best solution is to think about manoeuvres; how to fly them and how to move, before you fly. Spend some thoughts on the order of the steps and the movements you have to make during take off, wing over, inverted flight, overhead eight and so on. Try it, find out, decide, and then practise your favourite method. You'll be amazed at how much this will help your flying. The same system is quite practical for flying sites which are critical with regard to line length. On the continent two of our major contests are held on circles which don't allow full line length. If you want to fly on lines as long as possible you must be sure never to leave the centre, otherwise the fence will find a way to limit your flight score!

To make certain of staying in the centre, a certain routine is helpful. I've learned to stand and turn on my right heel, walking backwards with the left leg. This way I never leave the centre. Try out what you think will suit you best. For the wing over, I turn ahead of the airplane to have my shoulders parallel to the wind direction before I start the manoeuvre. Standing with feet apart, I can fly the first wingover, the inverted part, and



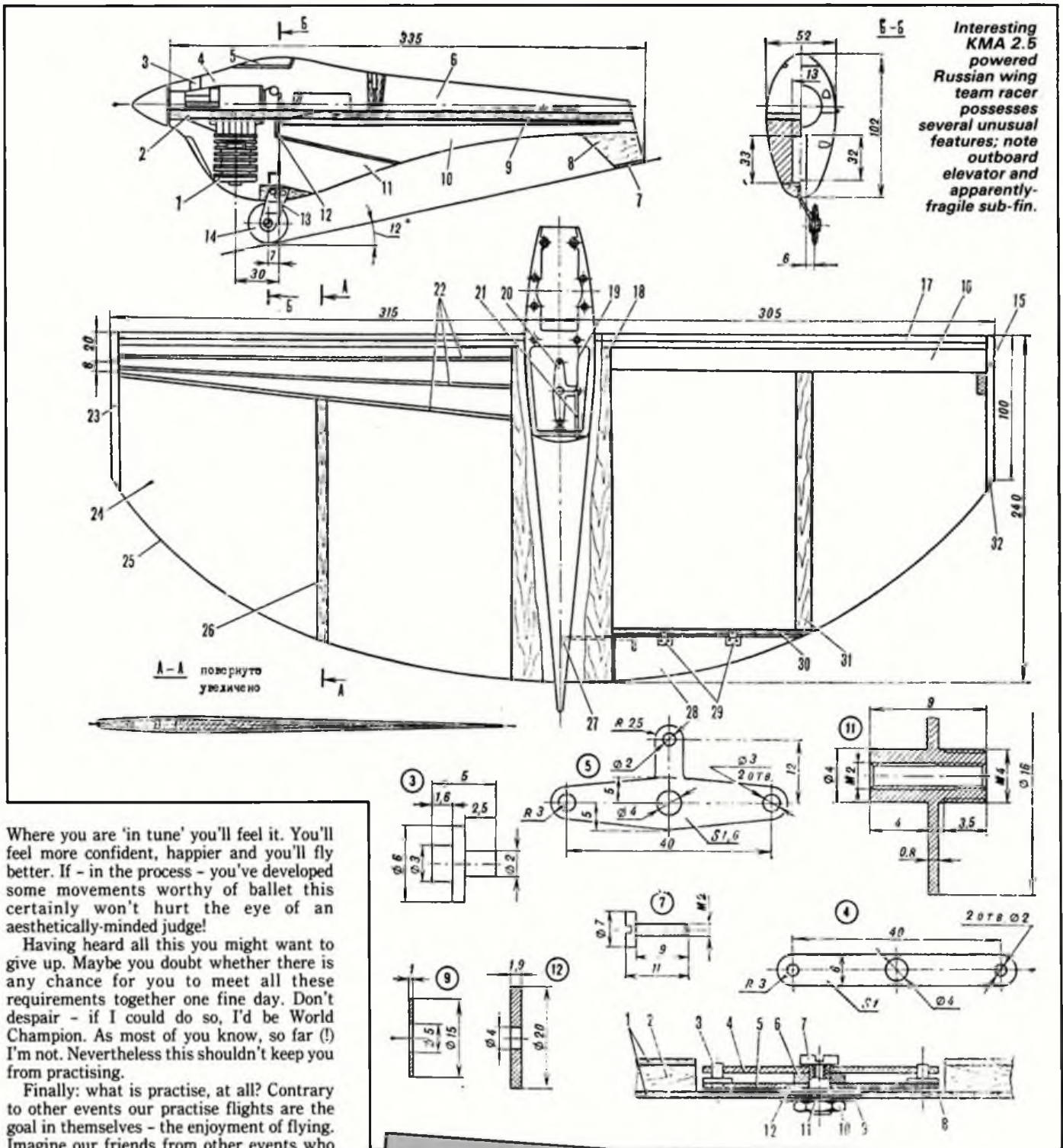
Above: Courtesy of *Modelar* magazine, here's Ivan Cani's oh-so-slim F2B for a piped MVVS 6.5. Motor cooling not a problem...

Away! Ken Miles gives the heave-ho to Chris Ryder's Rossi-powered 'foamie' at last year's Nats. Martin Morris was there with camera...

the second wingover without having to walk. I just follow the airplane with my right arm and my head. Before the final pullout I shift the weight of my body on my right leg. After the pull out, a quick step back with my left leg brings me back in front of the airplane. Similar movements can be found for each manoeuvre. Once you've found a suitable method and have become accustomed to it, you won't have to waste further concentration. Of course you'll have to practise this, too. Flying carelessly every day without any system will not help you on contest day. It might be helpful to practise these movements 'dry'; that is without an airplane. You should be used to them before you grab the handle, so you can do them automatically. Do it at home - and shut the curtain. Neighbours might doubt your sanity.

Art and aerobatics

Don't be afraid; sticking to a system will not necessarily cause boredom. With a purposeful and harmonic system your whole presentation improves and you'll enjoy it. Those of you who take the dance floor know what I mean. It's a great feeling once you've mastered the order and execution of dancing steps. In dancing, both partners do different, sometimes even opposite movements. When he steps forward she steps back. Both of them play together, are tuned to each other, and the combined efforts produce beauty. Maybe aerobatic flying is a similar art. Airplane and pilot are one unit, and the pilot should feel like a part of it. I think the best pilots actually do. Your steps and movements should be tuned to the movements of the airplane.



Interesting KMA 2.5 powered Russian wing team racer possesses several unusual features; note outboard elevator and apparently-fragile sub-fin.

Where you are 'in tune' you'll feel it. You'll feel more confident, happier and you'll fly better. If - in the process - you've developed some movements worthy of ballet this certainly won't hurt the eye of an aesthetically-minded judge!

Having heard all this you might want to give up. Maybe you doubt whether there is any chance for you to meet all these requirements together one fine day. Don't despair - if I could do so, I'd be World Champion. As most of you know, so far (!) I'm not. Nevertheless this shouldn't keep you from practising.

Finally: what is practise, at all? Contrary to other events our practise flights are the goal in themselves - the enjoyment of flying. Imagine our friends from other events who have to spend endless hours of work in the basement, or make hundreds of flights, just to find a few hundred RPM or a needle setting! They don't have fun in the flying itself, except for the contest flights of course. Now think of our happy situation; we can have fun even during the practise flights. When you have fun, you have learned too. Fun is very often the result of successful learning; watch your children (or pet dogs). Ask commercial managers, politicians, or psychologists when and how man can be influenced most or learns best: it's when he's happy! So I try to find an acceptable compromise between serious practising and frivolous life; I mean, rather, an easy mood. I think this mixture helps more than trying with dogged obstinacy. The fantastic paint jobs, the white trousers, and the friendly grin of the serious stunt flyer should be seen in the same light - so take it easy!

The Peterborough effect

Dear Sir,

I was interested to read Paul Stanley's views on the current Combat scene in the March article accompanying his Vae Victis design. Whilst there may be some justification in his assertion that the SMAE does little to encourage Diesel 'A' Combat, what a pity he did not mention the events that are regularly run - in particular the British Diesel 'A' Combat Championships, three rounds of which are organised every year by Peterborough MFC. I think it true to say that these events have done more than most to maintain interest in this class in recent years and thus maintain a progressive pathway through to F2D for the

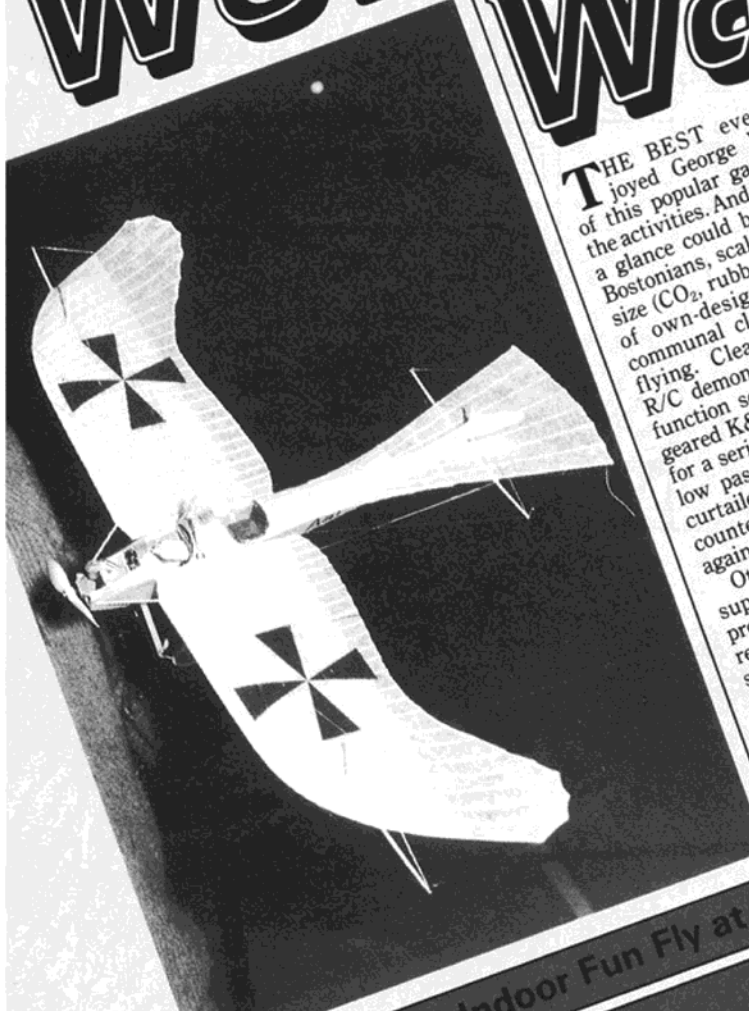
keen newcomer, although regrettably newcomers to Combat are a bit thin on the ground these days. Maybe we do too much and are doing the SMAE's job for it!

Two points of interest concerning the Peterborough Club's involvement with Combat. Firstly, Combat is in fact very much a minority interest within the Club, which has on occasions left the organisers a bit thin on the ground. Secondly, the recently announced Amsterdam Daedalus 25th Anniversary meeting at Genk in June has adopted the 'Peterborough Rules' for their Diesel 'A' Combat event; maybe a tentative step towards the International status suggested by Paul.

C/L Comp. Sec,
Peterborough MFC

Mick Taylor

Wonderful Watford!



THE BEST ever! grinned an over-joyed George Wallbridge, mainspring of this popular gathering, at the height of the activities. And who could doubt it? Within a glance could be captured airborne EZBs, Bostonians, scale models of every shape and size (CO₂, rubber and electric) and a variety of own-design and quirky craft whose communal claim to fame was Indoor fun-flying. Clearest in the memory are the R/C demonstrations by Robin James' four-function semi-scale Tiger Moth, its double-g geared K&P electric unit providing the urge for a series of wall-defying pylon-turn flicks, low passes and even a loop, all unhappily curtailed by collision with a basketball net counterbalance weight. But we'll see this one again...

Other highlights were Andy Sephton's super adaptable CO₂/Rubber ABC Robin, produced from his own drawings via lots of research. Airmail paper fuselage covering simulated the original's plywood; look out for this one as a future *Aeromodeller* plan.

Variety!

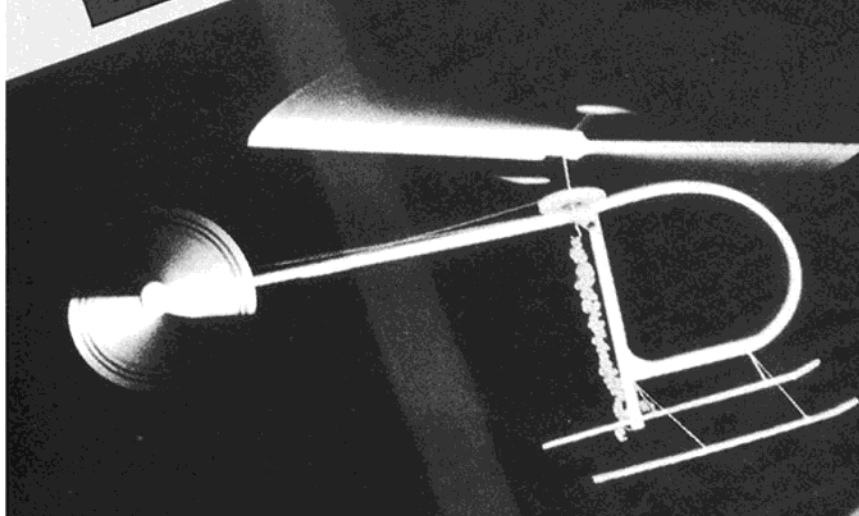
Peter Smart's gorgeous Telco-powered Etrich Taube made everyone look up. Six months' work has produced an absolute jewel; intricate wing construction of cap ribs over spar with single-surface bamboo ribs at tip and tail meant this distinctive shape had to be rigged before covering to prevent warps. Tricky...

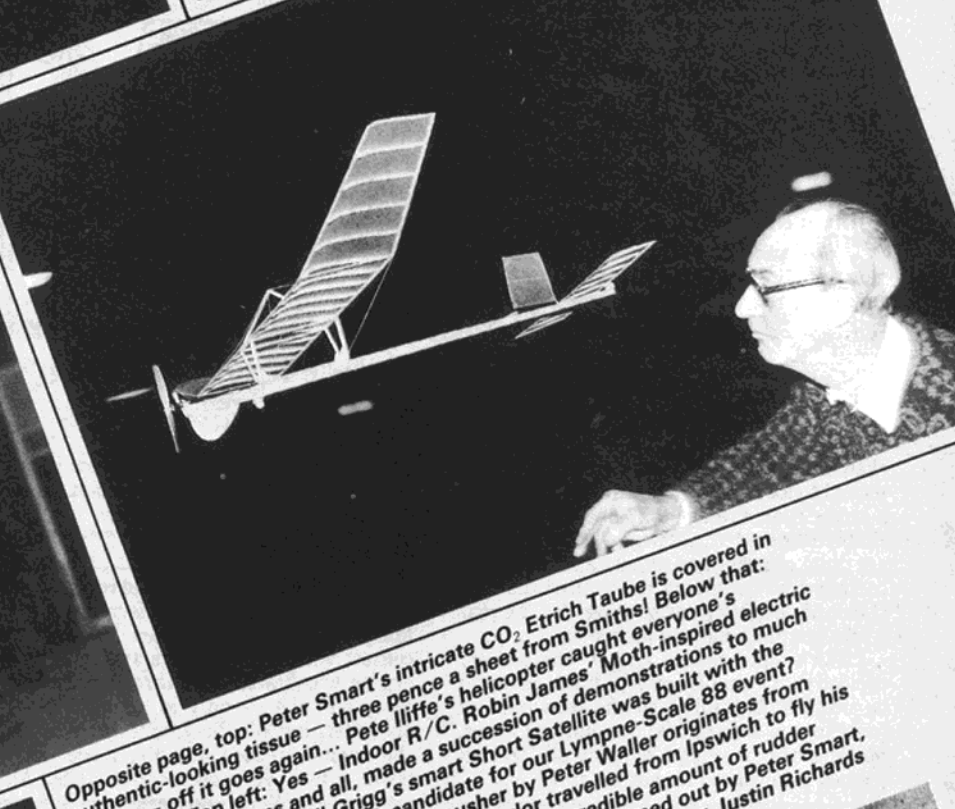
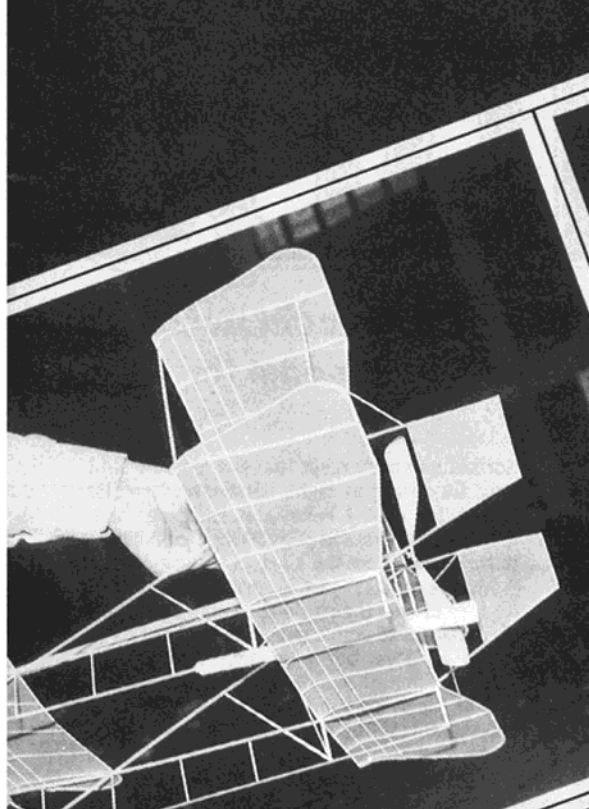
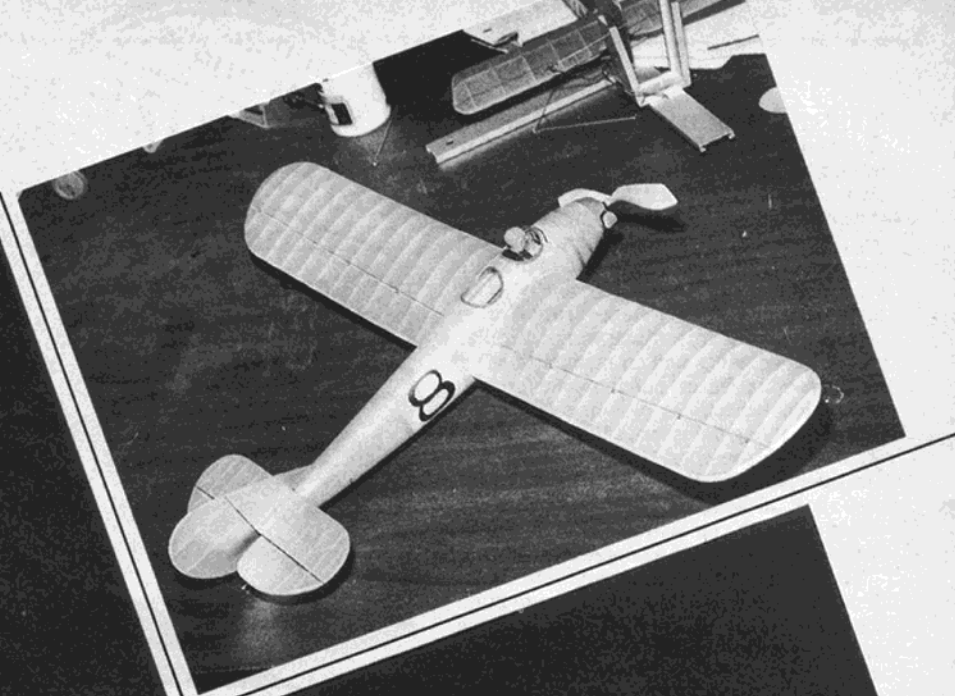
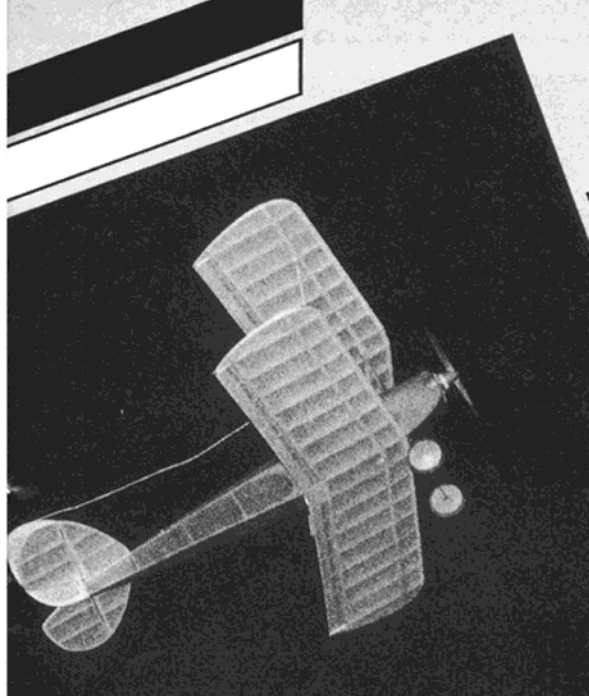
It was a crowded afternoon, full not only around the sides of the hall but in the air too. Twin props flickering, Chris Strachan's Peabody Pay Packet - a Walt Mooney Bostonian - provided diversion by flying through the basketball pylons. But it was Pete Iliffe's rubber-powered helicopter, complete with nylon monofilament drive to rear rotor, that amazed with a succession of reliable flights. Only once did it bite, when its nifty ascent took an unfortunate EZB with it.

A large, slow and floating Wright-style pusher defied exact identification until Peter Waller printed out that it was a 'freelance' design from the 1910 Boys' Book of Hobbies, if you please, with balsa replacing the original's all-bamboo for ease of building and greater performance. Large area and skid U/C meant minimal clearance and noticeable ground cushion effect on descent. And how pleasant to see again the youngsters from Chigwell School - they also appear elsewhere in this issue - and the RAE-Hurricane-flying duo of Justin and Dafyd Richards whose rubber winder, adapted that morning from an ancient coil-winding apparatus, deserved a place in a museum of industrial antiquities! Incidentally, these two confided that their uncle, Richard Riding of Aeroplane Monthly editorship, has yet to build the Comper Swift kit he won in the last Scale Nats Raffle. Get on with it, Richard!

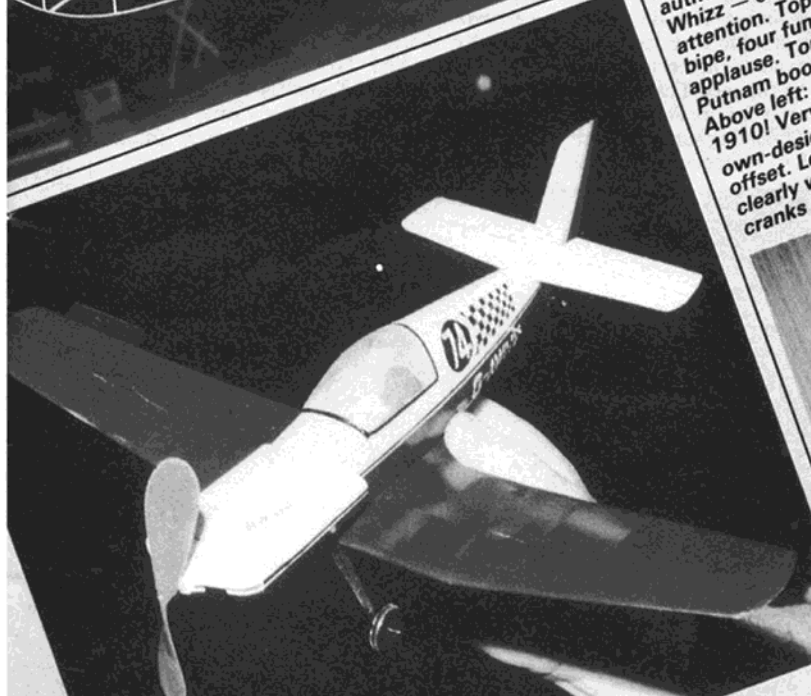
A most enjoyable kaleidoscope, thanks to George Wallbridge's continuing efforts. If you missed it, you missed a good 'un. Never mind - look out for the next. You'll love it!

We were at the SAMS Indoor Fun Fly at Watford on 6th March. . .





Opposite page, top: Peter Smart's intricate CO₂ Etrich Taube is covered in authentic-looking tissue — three pence a sheet from Smiths! Below that: Whizz — off it goes again... Pete Iliffe's helicopter caught everyone's attention. Top left: Yes — Indoor R/C. Robin James' Moth-inspired electric biplane, four functions and all, made a succession of demonstrations to much applause. Top right: Bill Grigg's smart Short Satellite was built with the Putnam book as reference. A candidate for our Lympe-Scale 88 event? Above left: this large, light rubber pusher by Peter Waller originates from 1910! Very slow... Above right: Stan Taylor travelled from Ipswich to fly his own-design Telco model which featured an incredible amount of rudder offset. Left: This neat Rollason Beta was being trimmed out by Peter Smart, clearly with the Alumwell Air Race event in view ... Below: Justin Richards cranks on the turns as Dafyd holds their loaned RAE Hurricane



IFIRST STARTED to build model aircraft seriously about three years ago after leaving home, getting married and buying my own house - which just happened to have three bedrooms. This meant that after fitting out the main bedroom and a spare there was one left; a situation which had immediate possibilities. I say 'building seriously' a bit tongue in cheek as I have always been fascinated by canards, flying wings, annular wings, joined wings and all manner of other unlikely craft. After building one or two conventional machines plus one of Colonel Bowden's flying dinosaurs I began to design my own monstrosities. The only thing that can safely be said about my designs is that they all fly, although in a beauty contest they would probably run last. See Back to Front, November 1986, for an example of this.

The main reason behind anything that I design is a need to be noticed. I like to build something just a bit different because nowadays most designs seem to have been tried before. I don't say this to be controversial but just to make the point that I like to be seen as an enthusiast trying to push back the boundaries (some might say decency) and an experimenter; and at the end of the day, provided enjoyment is gained, then that in itself is reason enough for doing whatever we do. Basically, though, my type of models are fun!

That's enough excuses...

The inspiration for this model was the Howard Boys Memorial event in 1987. Already aired the previous year I felt that both my Back to Front and Wright Now (plans for which are with the editor, hint, hint) were by now lacking the initial impact to impress the judges! With this in mind I decided that a tandem-winged aircraft would be unusual enough to fit the bill. Early sketches did not really please me as they all tended to look like a very ordinary craft with a larger than average tailplane. It was then that I remembered that negative sweep wings are quite efficient and almost always arouse comment on the flying field. After that the choice of positively swept wings for the rear wings seemed a natural inclusion.

I like simple models and so had already decided that a simple box type fuselage would be utilised, but this has the drawback of inducing a substantial amount of drag. Making the fuselage of aerofoil section seemed to be a good idea at the time!

Ready, steady, glue!

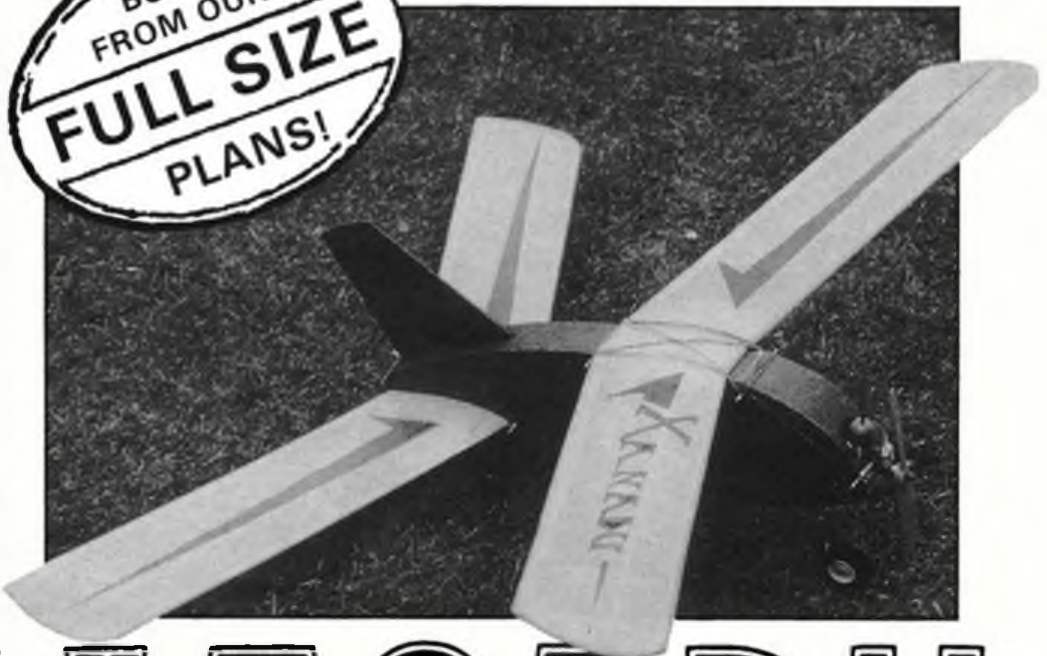
The fuselage is a non-tapered box of 1/16in. sheet with doublers where shown. The engine bearers are stuck directly onto the fuselage sides and the engine is mounted on a separate 1/8in. paxolin plate. The hatch on my model will be unnecessary if cutouts are made to allow access to the fuel tank and controls where necessary.

The wings pose no problems but remember the front ones sweep forward and rear set sweep backward. Dihedral is on the front wings only. The rest of the construction is unremarkable, but note the grain direction on the fins.

Assembly is quick, and pleasingly the result appeared to resemble something which

At just under 30in. span performance is lively with a Quickstart Dart. Model was built for the '87 Howard Boys Memorial event; this year's is at Golden Era Day on 10th July. Why not have a go?

BUILD FROM OUR FULL SIZE PLANS!



XANADU

With the Howard Boys Memorial event in mind, here's Kevin Wallace's X-Wing F/F model for 0.5cc engines

would not have looked out of place in a low budget Hammer Horror production. The big question now was - would it fly?

It flies!

A trip to the local flying field revealed more breeze than I would have preferred, but I have faith in my designs (added to which the contest was only two days away). Duly the engine was started and throttled back, and away she went - only to turn sharp right about ten feet off the ground. At this point the engine stopped and the model settled down into a very respectable glide. After retrieval the flying surfaces were adjusted, hopefully to give a left circuit. This time after launch the model did start to turn left; then disaster! This left hand turn, normally so safe, tightened up and the model came back to earth quicker than it went up. Fortunately no damage resulted. The flying surfaces were re-aligned and test flying progressed in the

normal manner except that the model would only fly safely in right hand circuits. The reason for this, I believe, is the large side area coupled to the lifting fuselage (the reason it turns right in the first place is because I inadvertently put approximately ten degrees of side thrust on the engine!). In fact the model is so stable in this trim that I have left it as it is, but I imagine that with a sensible amount of side thrust it will fly left just as nicely so you have my permission to experiment. After all, isn't that what this game is all about?

Why did I choose the name Xanadu? As you may have gathered I am a fan of the unorthodox because they always promote a healthy discussion on the flying field, such as 'Does it fly?' 'Why did you build it like that?' 'What is it?' and 'Is that really what happens when a bottle of cyano explodes?' That to me is paradise, or rather Xanadu, to quote Olivia Newton-John...



BALSA CUTTINGS

Cyano de Bergerac reflects upon our Vintage Weekend - and plaintively promulgates pastoral purchase

Not so old Warden

Just because the flavour of the month at Old Warden is generally Nostalgia with a minty topping of Reminiscence, pray do not run away with the idea that time there always stands still. It is in fact a fortress of technology, as just two examples will show.

Five days after the main Look-Back event, the story is the same in doctors' surgeries up and down the country. All the patients are middle-aged men horrified by outbreaks of half-inch squares of crinkly dead skin on the shoulders of their office suits. 'Doctor, Doctor, am I going to be all right?'

Ghastly silence. Then: 'Well, you have a disease which strikes hatless gentlemen with thinning hair whose scalps are not accustomed to two days' continuous exposure to the fierce Vintage Weekend sun. I'm afraid you have got what medical science terms Old Warden Dandruff.'

'But is there no cure?'

'None. The condition will subside but you must be prepared for it to flare up annually. Although I'm surprised that someone with your medical record hasn't copped it before. Look at you! Fingers cut, drilled, sliced and bandsawn. Fear of Northern heights. Cyano adhesions. Wrinkling of the tissues. Dope user. You're always coming here. In and out like a fiddler's elbow, you are. Anyway, take this prescription round to your nearest model shop; it will get you 10% off a Quaker Flash kit, which you can fly whilst you're getting another dose next year. Meanwhile, to keep the symptoms under control I suggest you treat yourself to a good stiff -'

'Yes?'

'- clothes brush.'

Then there is the international research scene; at last year's Vintage, two of our many foreign visitors, Herr Bert Lipke and his charming wife Lucia from Hamelin, made an incalculable contribution to the development of an entirely new fuel for aeromodellers. Immediately upon arrival at the caravan park the British and German elements of the team set up their laboratory and got down to the difficult business of formulation, which had to be conducted with a minimum of equipment. Pioneer work like this, carried out on a shoe-string budget far from the sophisticated yoghurt pots and graduated lemonade bottles available to Peter Chinn, is rewarding and exciting. Before the last light winked out on the site that Friday night, the basic formula had been agreed on, and despite the lateness of the hour, put under rudimentary test. Hugging that

instinctive knowledge that they were on the right track, the researchers at last curled up in their bunks, flushed and happy. Almost too elated to sleep, they finally fell into dreams of what the next day promised to bring. As soon as dusk put an end to Saturday's flying they were back on the job, poring over mixtures, blends, calculations and theories. Without thought of food they pressed on as the hours ticked away, for they realised they were close. All they lacked was the last magic ingredient to turn a great piece of work into a work of genius. It is to Bert Lipke that the honour of making the breakthrough must go, for hitting on the precisely-correct substitute for nitro. To our blend of 60% Inch's Vintage Scrumpy and 30% red Bulgarian wine he added an exotic 10% of Bismark Schnapps - and we were there! It was fantastic! Nothing could be more appropriate than to quote the simple instructions promoted by Herr Lipke himself - 'Place this fuel in the aeromodeller, and tomorrow - goot he vill fly!' And by Jove, he was right. Goot ve did! So vill you. Mind you, you want to drink the last half-pint sitting on the edge of the bed.

Consider the lolly of the field

Few can have forgotten the eloquence with which this column urged its readership to think about the desirability of purchasing, through clubs, fields for

model aircraft flying. Indeed, well over a year later, the great surge of indifference has still not died away and everywhere interest in this subject is riding high on a crest of apathy. Well, try to remember this. We are in a process of change (when are we not!) and the movement is towards conditions which favour such a scheme. Nay, were the aeromodelling community less of a fragmented bunch of opportunity-missers, we would even now, as a body, be looking seriously at ideas for buying and working big sites whose main purpose would be to provide permanent area and national venues. According to Old Moore de Bergerac, that, alas, we are unlikely to see, for we lack a D.A. Russell and, as the poet saith, Earth cannot soon his like afford again. You might say that from the Planning Permission point of view, that's just as well! Yes, okay, DAR was never a chap to let tiresome details stand in his path, but these days there is established routine for dealing with that sort of thing and there is no reason for anyone to be daunted by the paperwork. Nor, if you set about it sensibly, by the cost. It has been said before, and may yet be said again: the kind of subscription increase wanted to build up the needful over the course of a few years is not crippling. It may even be good for you. And how those few years will slip away if you let them! Try giving this some thought, and try talking about it. You will find this an urgently interesting topic on the day your big chance comes up.



'Mark my words - the day the Fairy Queen hears about it, a certain Evander is going to need the biggest thermal in the history of meteorology.'

VINTAGE CORNER



Alex Imrie examines a new-found relic and ponders more paper planes

AS BRIEFLY recounted in Motor Mart in this magazine last month model enthusiast Barry Shaw recently came into possession of an ancient open cockpit, petrol-driven parasol monoplane of seven foot wingspan, about whose origin nothing was known. During its storage, apparently in various locations over a period of many years, the model's silk covering had long since deteriorated to a few rotting shreds of fabric and the model had sustained some structural damage. Unfortunately, the wing bracing struts, engine cowling, and undercarriage assembly were missing. Its Loutrel 8.5cc engine, adorned with a fourteen-inch diameter aluminium left-hand tractor propeller also showed the ravages of time in that the contact breaker casting was broken and all the spoke fins on the cylinder head had been trimmed off. Booster sockets, master switch, battery box for a 4.5 volt flat torch battery and clockwork timer made from a Woolworths clock fitted with an air brake were mounted on a balsa fuselage bulkhead and were all accessible via the large cockpit opening.

Barry brought his prize to the *Aeromodeller* offices where I was privileged to examine it. Being one of the Oily Fingered Brethren, I naturally paid a lot of attention to the engine. Had I not sweated countless hours over the last thirty-odd years on reluctant, compressionless GHQs whose forbear this was? Amazingly, here at last was a Loutrel, long recognised as being a rare engine. Total production run is not known but Barry's engine is numbered 155 which is close to the serial numbers of other Loutrels that have surfaced in the last few decades during which interest in engine collecting has resulted in the assembly of much historical data on engine manufacturers. It is doubtful if that more than a hundred Loutrels were ever made (*Perhaps numbering began at 100? GC*). Later I was allowed to run the engine which starts easily, helped by the momentum of the metal propeller. It performs well despite no longer having great compression. The cylinder remains quite cool even after protracted operation, and it turns the aluminium propeller of approx. eight-inch pitch at some 4000 rpm. The model itself looked familiar; its style of construction eventually caused attention to be focussed on the pre-war designs of Wembley enthusiast Dick Sharvell. Comparing photographs of his models revealed the same features on his Ohlsson Gold Seal powered seven-foot 1938 biplane as our parasol discovery. In fact, some of Sharvell's models looked as if they could be flown with or without the bottom wing, as monoplane or

biplane, without any further changes.

It is all very well to make history fit by combing all available contemporary books and magazines, which was done here, but more satisfactory is to find personal confirmation of one's findings. Thanks to Denis Fairlie, more is shown of Dick Sharvell and his models...

Sharvell was a brilliant model engineer who took infinite care in the construction of his models, a hallmark of which was the semi-monocoque type of fuselage employed on his power models. Plywood formers of narrow section were located on a central fore-and-aft member and then completely planked with 1/8in.sq. balsa strips using that wonderful adhesive, Rawlplug Durofix. The fixed centre-section, built integrally with the fuselage, was immensely strong, 'knock-off' wing panels located on dowels being retained by light rubber bands. Much hardwood was used in the construction. Unusually, the tail unit outlines were fretted out of one piece of 1/8in. plywood. Wing ribs, also of 1/8in. ply were fretted out for lightness and a notably quirky practice was that all the sheeting on the flying surfaces was inlaid between the ribs.

Dick Sharvell's time-consuming work has to be seen to be appreciated, for it approaches mosaic work of the highest standard. The

fuselage would have been clear lacquered; silk-covered flying surfaces were doped aluminium and some colour trim seems to have been applied. In addition, many of Sharvell's models carried the designation 'Sharvell - Wembley' above the figure of a rampant lion on the fin.

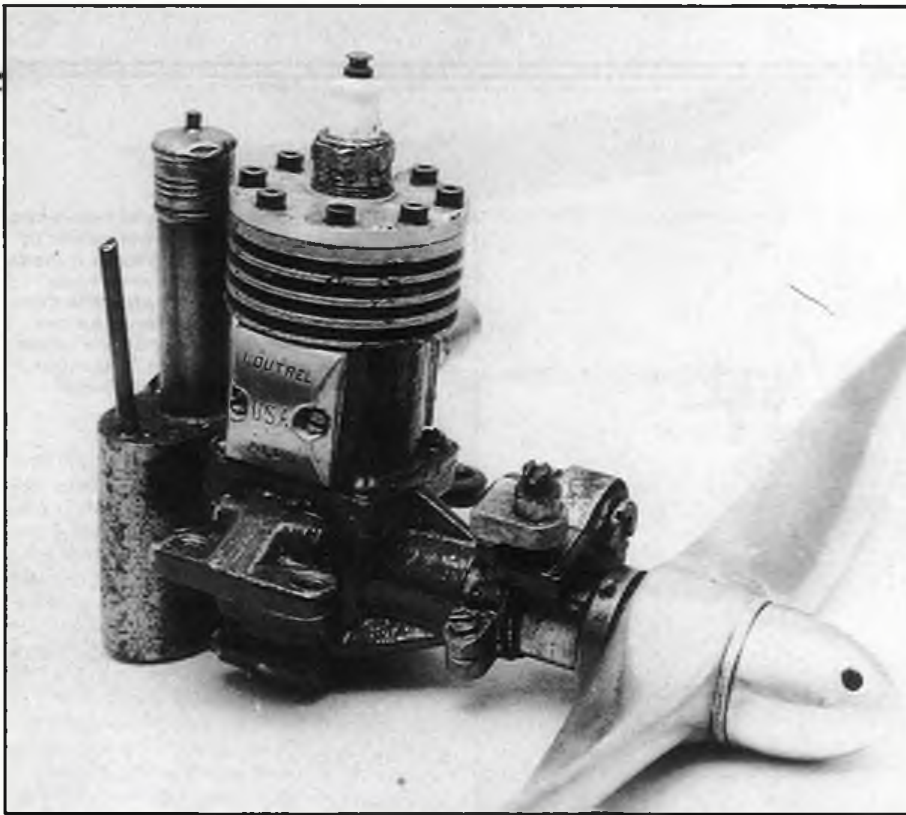
So in the remnants of this machine, in her wood and metal is the spirit of the air well worth careful renovation. Before this is done some research is called for as regards the missing components, and while this is being undertaken, a full-size working drawing of the model will be made in order that vintage enthusiasts can reproduce Dick Sharvell's old model.

Pre-war Power at Wembley

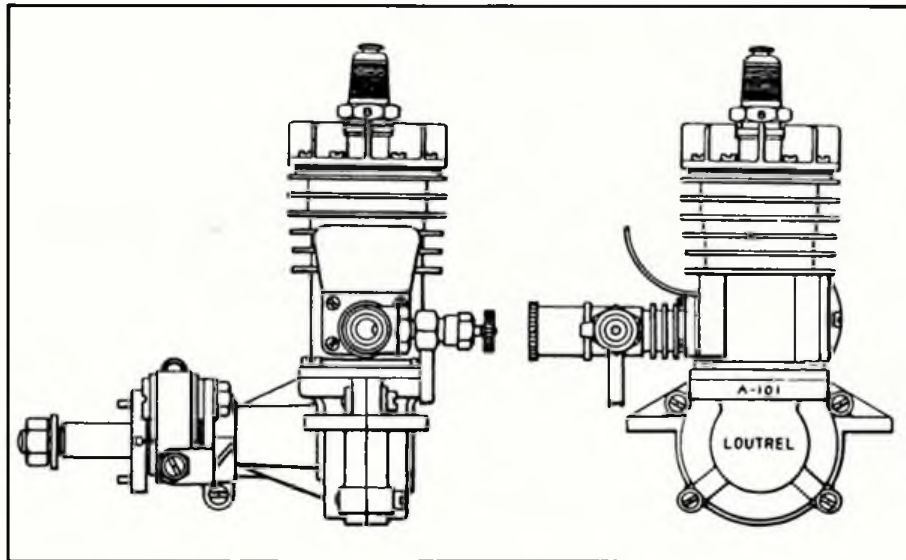
The Loutrel engine was popular in the Wembley Model Aero Club around 1935. As well as use in Dick Sharvell's model, this motor was used to power B K Johnson's large, deep-bellied model; and another was used by Mr Berryman and his son Jack in the large modified, eight-foot model, built by R Galloway, that was described by Denis Fairlie in the December 1935 *Aero Modeller*. In this account the capacity of the Loutrel is incorrectly given as 10cc (an error perpetuated in the recent publication 'Fifty Years of Aeromodeller'). Denis tells us:

Heading: Dick Sharvell's Ohlsson Gold Seal powered biplane at the 1938 Northern Heights Gala where it won the patrol model Concours d'Elegance. Many features were also present on the earlier parasol monoplane. In 1939 Sharvell won the Model Engineer Cup for the third consecutive year. Below: Barry Shaw with the recently-discovered seven-foot monoplane built over fifty years ago by Dick Sharvell.



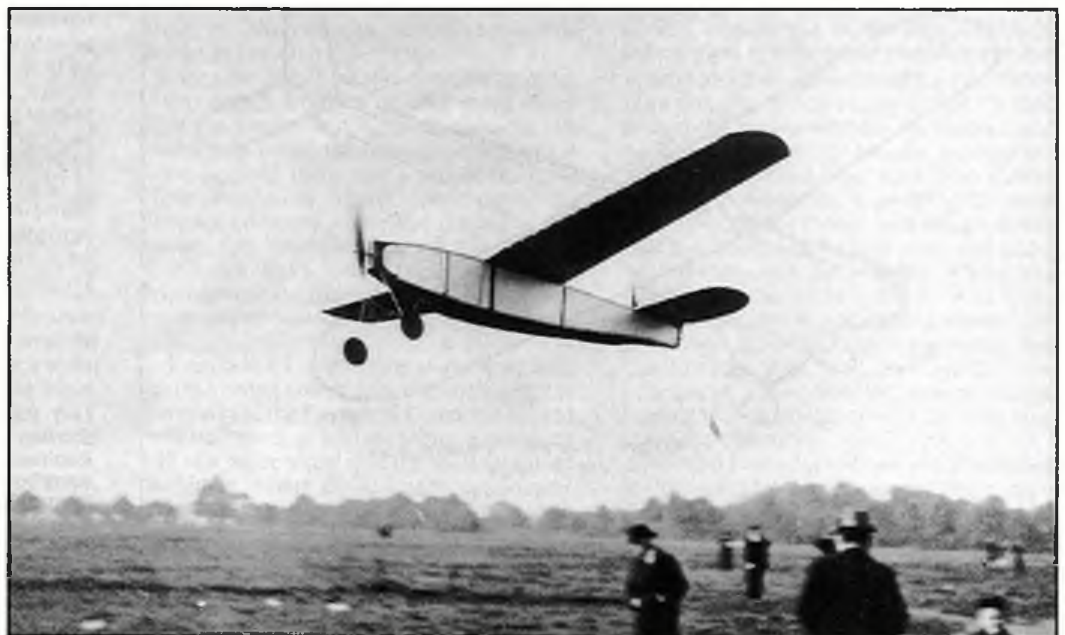


Above, the Monoplane's Loutrel spark ignition engine, serial number 155, showing the lack of 'spoke' fins on cylinder head and the extended tank filler cap to clear the top of the cowling originally fitted.



Above: A two-view drawing of the Loutrel by Bill Bintliff. Note the aluminium exhaust deflector above the air intake, the spoke fins on the cylinder head and the Bintliff spark plug whose insulator was made of mica discs.

Right: R. Galloway's 81in. four-g geared heavyweight rubber model flying at Wimbledon Common. This model won the Victoria Cup on 15th May 1933. Galloway did not like balsa/tissue models but specialised in large spruce/silk craft like this.

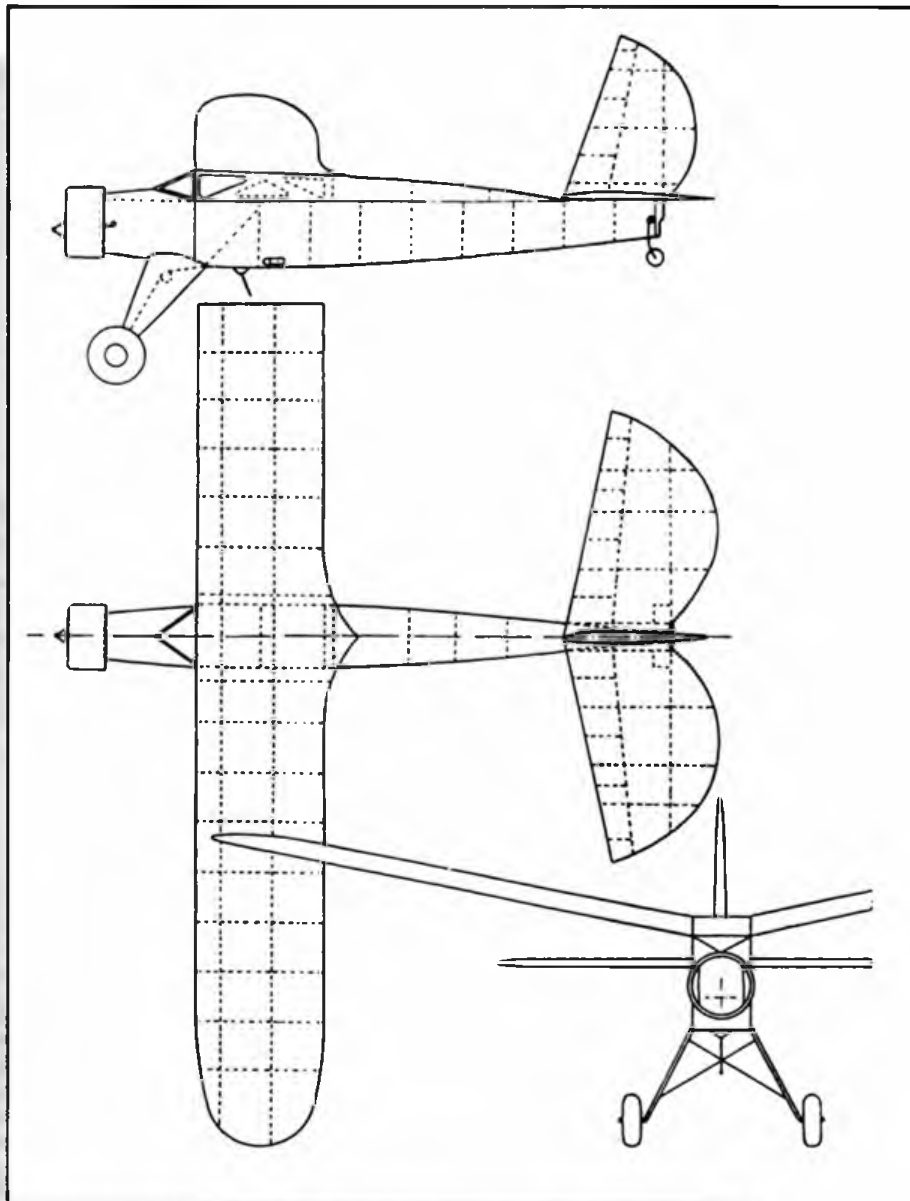


'Neither Berryman built models; the father felt he'd not the skill and son Jack was too busy swotting school exams to obtain a permanent commission in the RAF (Jack was killed in Norway flying a Gladiator in 1940). They bought their models from Mr Galloway who built entirely in birch and spruce with silk covering and used multiple skeins of rubber driving a gearbox of minimum four gears design. In size these models went in nice easy stages of six, eight, nine, twelve and eventually a gigantic fourteen-foot wingspan... The outstanding engine of this period was without doubt the 10cc Brown Junior, to be rapidly followed by further very successful American designs, the Tlush, the Baby Cyclone and various sizes of Ohlsson...'

The Loutrel Engine

The engine that became known as the Loutrel was, apparently, originally made by a model engineer called Redfield, but Louis P Loutrel introduced changes to it that were said to facilitate its production. The engine was hand-made in the back of the Loutrel Speciality Company's Brooklyn store at 785 Prospect Place by a small number of workers. Foremost amongst these was William T Bintliff, not only a talented machinist who developed the Loutrel into a powerful, reliable motor, but a knowledgeable electrician who made the sparking plugs and the ignition coils.

The engine was available from mid-1932. Claimed to develop 1/8 HP, it was of 3/4in. bore and stroke which resulted in a capacity of 5.5cc or .33 cubic inches. Total weight was quoted as one pound. Capable of 3200 rpm initially, this figure increased during the engine's production life, and by the end of 1933, the bore had been increased to 7/8in. resulting in a capacity of 7.36cc or .45 cubic inches. 3500 rpm were then possible driving a fourteen-inch diameter propeller, which was a left-hand tractor (rotating clockwise from the front), and the power delivered was now said to be 1/6 HP. The weight had also been reduced to ten ounces, making the engine a more practical proposition as a model aeroplane power unit. There was a waiting list for the engine despite the price of \$35:00 and the prevailing doldrums of the



Left: This Galloway-built eight foot rubber model was modified to Loutrel power by Mr Berryman and son. Eventually it made many successful flights of up to eight minutes duration, but only after the thin-section wing had been replaced by one with Clark Y profile. A description of the conversion was given in the December 1935 Aero Modeller by Denis Fairlie.

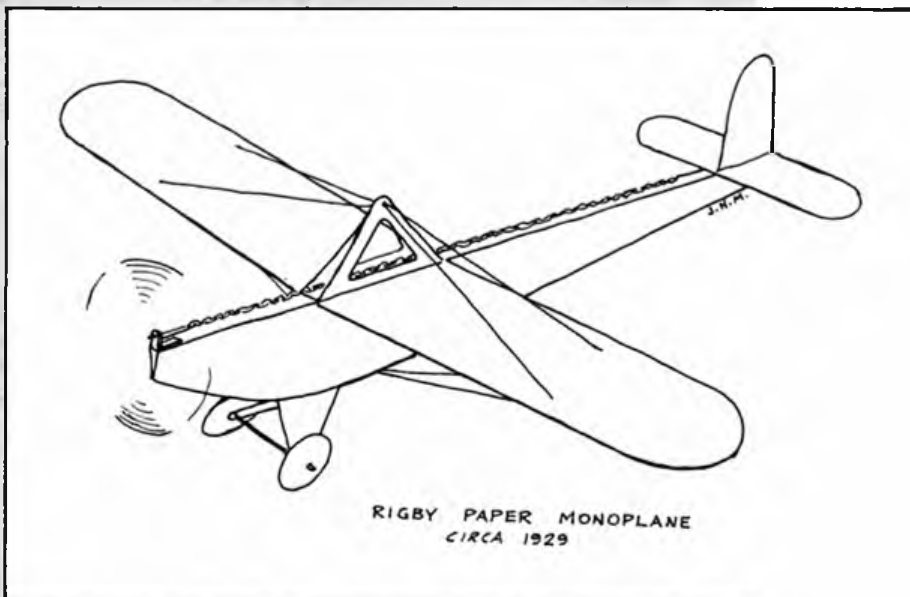
Depression.

Components were sand cast. Aluminium was used for the crankcase and cylinder head and electric furnace cast iron for the cylinder. Tool steel and chrome vanadium steel were employed for the crankshaft and other internal parts, while the main bearing was made from 'hi-speed' bronze. All engines, which were run on the premises before shipment, had to produce satisfactory thrust measured by a spring balance.

The most remarkable thing about the Loutrel was its very small size. When it first appeared, it must have been one of the smallest internal combustion engines in existence. Capacity varied between 5.5cc and 8.5cc (.518 cubic inches) depending on the bore of the cylinder, which on the final engines was 15/16in. During these changes the stroke remained constant and the physical size of the engine was the same. The engine cleverly utilised a make-and-break timer from a motor car (said to have been that fitted to the Ford V8) - a robust component that gave trouble-free service.

Much of the Loutrel's success was due to the high standard of the ignition system. Bintliff's 3/8in. sparking plugs, one inch long, threaded in SAE size of 24 threads per inch, used mica discs for insulation. The coils, wired for three to six volts, were surprisingly compact for the time. The standard size (K-15) weighed five ounces, but the aircraft version (K-12) were one ounce less. These coils were tested up to an equivalent operating speed of 16,000rpm. and to special order coils for both twin-cylinder and four-cylinder engines could be produced.

There is no doubt that Bintliff's development work, resulting in increased power and reduced weight, made the Loutrel appeal to model aeroplane builders, but the price was prohibitive for most and the appearance of the more powerful Brown Junior at less than half the price in 1934 must have seriously affected sales. Reducing the price to the same as the Brown Junior (\$15:00) early in 1935 and calling their 15/16in. bore version the '1935 Model' could not have greatly altered the situation and it must have been at this time that negotiations were entered into to sell the Loutrel engine rights to GHQ, a large model aircraft kit producer. Manufacturing tools and production equipment were taken over and GHQ employees were trained to operate these by Loutrel staff. The engine that appeared from



Left: Veteran modeller Joe Maxwell of Stirling drew this early Rigby model from memory. Every feature was subsequently corroborated by Josh Marshall (see text). It's not only elephants which never forget...



Coming to Vintage Weekend this year? This PAW powered yellow and blue Slicker 50, the work of Tony Husband from Cambridge, was caught by the camera at 1987's meeting.

mid-1936 was known at first as the GHQ-Loutrel. Early examples were doubtless good engines of similar standing to the original Loutrels. However, from the beginning of this enterprise the emphasis was on mass-production and despite obvious improvements, like the introduction of die-cast components, the quality of the motor decreased. The Loutrel name was soon dropped, and over the next ten years the GHQ, selling as a kit that screwdriver-only assembly could build in thirty minutes, became one of the cheapest and most infamous engines of them all... but that is another story!

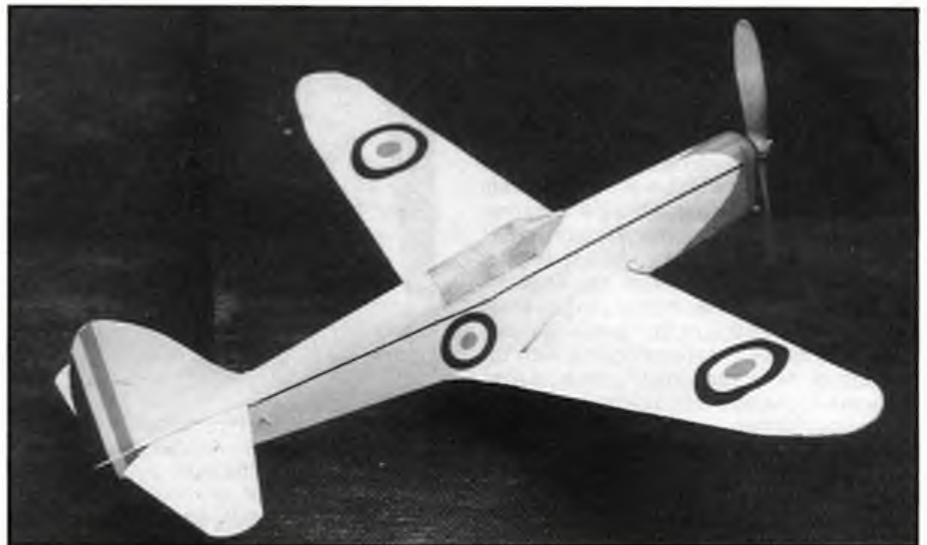
Rigby update

J H Maxwell is a name not unknown to most of us, for Joe wrote for *Aeromodeller* on a variety of aspects for many years, and his custom-built components and accessories are familiar to present-day F/F enthusiasts. Informative snippets from his pen have appeared in Vintage Corner before; now he tells us of a Rigby model that we missed in our March survey:

'My very first flying model was a Rigby design which, I think, was probably earlier than any of those mentioned in your article. It was given away in *The Modern Boy* in 1928 or '29, in exactly the way you describe, with the stiff paper sheet, printed in colour, in one issue, and the envelope of hardware in the next.

'The model was a shoulder wing monoplane, with thread bracing. The threads from the underside of the wing ran to the bottom edge of the triangular section fuselage, while those on the upper side went to a cabane over the fuselage. The propeller bearing was a metal bracket on top of the fuselage, and the motor ran back through the cabane.

'On my model, the tension of the external motor caused the fuselage to break its back. This was repaired, but the repair was heavy, and probably played havoc with the CG. At any rate, I never did get any decent flights



This double-size Rigby Comet Junior (26in. span) by Norman Peacock is made from 70lb. cartridge paper. Fitted with a Bantom gearbox it weighs 3. 1/4 ounces less rubber.

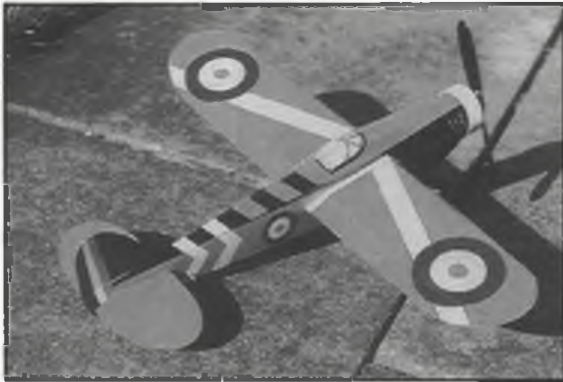
from it. The enclosed sketch shows this model as I recall it.

'Soon after that I bought a kit for another Rigby design. I can't remember much about this one, except that it had a low wing, the motor was inside the fuselage with a metal nose cap, and there was a pair of beautiful little aluminium wheels. Once again the fuselage collapsed under the tension of the motor, this time like a concertina. Clearly I did not have much luck with paper fuselages, or maybe, even then, I was piling on too many turns!

Even before I received the above letter with its interesting sketch, Josh Marshall, long the Secretary of the Hayes and District MAC and now its President, told me during a telephone call of a paper model that his father obtained for him in the late 1920s. This model too came in a boy's paper, the name of which Josh cannot remember; but since his description

mirrors exactly the model shown in Joe's sketch there is little doubt that this was the same model. Josh remembered the two-bladed fibre propeller which had eyelets at the root ends of the blades, whereby the blades could be bound together to become a propeller; however, the pitch was such that it was difficult to determine how it really went together to obtain thrust! Josh also mentions that the model was built at home and taken to Bournemouth on holiday where the following magazine issue with the 'mechanism' details was eagerly awaited. He remembers that the wings were orange and the fuselage blue, and also recalls how strange he considered the cabane thread bracing, which looked, even in 1928, nothing short of prehistoric!

Norman Peacock of Merseyside is another enthusiast who has responded with more Rigby information, and while we can't use it all on this occasion, we must at least



Above: Norman Peacock's twice-size Rigby Co-Op Condor of 21in. span was made from carton card which gave a wing loading of eight ounces per square foot!

Right: This full-page announcement in *The Modern Boy* on 31st August 1935 stated that the DH Company had given this Rigby model exhaustive trials; had sanctioned the name (based on the DH88) and claimed that it was capable of climbing to 40ft and travelling 75 yards.

mention that he brought our attention to another Rigby design. This was the 13in. Comet Junior which was available from *The Modern Boy* in September 1935 for three tokens cut from that paper and sixpence (2.1/2p) in stamps. It was based on the lines of the DH 88 Comet that won the England-Australia air race but was, of course, fitted with a single central rubber motor. Norman has made a double-size version and with the benefit of experience gained with earlier, enlarged Rigby models (which generally were made from heavier card than necessary and thus possessed of higher wing loading than need be) has made the Comet Junior from 70lb cartridge paper with some internal reinforcement. It is fitted with the smaller-size Bantom gearbox and weighs 3 1/4oz. without rubber. Norman considers that at this size (26 inches span) a maximum of 6oz/sq.ft. should be the aim. To assist others who

SENSATIONAL OFFER to "MODERN BOY" READERS!

The "COMET JUNIOR" MODEL AEROPLANE for 6d.!

Flies 75 YARDS
Climbs 40 FEET

Length 9 1/2 INCHES
Wing-span 13 INCHES

Very easy to fly—
and will take-off
from a smooth
surface!

Colours—
RED, BLUE, and
SILVER

THIS COMET JUNIOR is a magnificent model of a RACING AIRCRAFT, specially designed for *Modern Boy* by W. RIGBY. It has a central motor, but is otherwise based on the lines of the famous De Havilland COMET which won the England-Australia air-race.

The De Havilland Company's officials have given this Model exhaustive trials. They expressed great admiration for the COMET JUNIOR—after its larger brother, the COMET. A new and very useful feature of this REMARKABLE Model is the introduction of WING FLAPS which actually operate to prevent stalling, diving, or side-slipping.

WHAT YOU HAVE TO DO TO GET THIS PLANE

On the right is a special COUPON, and one of these will appear in *Modern Boy* every week until further notice. When you have collected THREE of these *Modern Boy* AEROPLANE TOKENS fill in the APPLICATION FORM.

It is regretted that this offer cannot be extended to Overseas readers. Readers residing in the Irish Free State who wish to take advantage of this offer must be responsible for any duty involved.

THE ACTUAL VALUE OF THIS PLANE, ready for flight, is 5s. 1. The cost to YOU is 6d. in stamps and THREE TOKENS. This COMET JUNIOR will reach you in an envelope complete with mechanism and simple instructions for assembling.

MODERN BOY, Aeroplane Offer,
The Amalgamated Press, Ltd., Bear Alley,
Farringdon Street, London, E.C.4.

POINTS TO REMEMBER—
You must first collect THREE TOKENS from *Modern Boy* before sending in your application. . . . 1 1/2 stamps only must be sent . . . and the stamps must be PINNED to the Application Form and NOT stuck.

Cut this out and keep it by you. There will be another Token in next Week's *MODERN BOY*.

"MODERN BOY" AEROPLANE TOKEN
31/8/35

APPLICATION FORM MODERN BOY 31/8/35

Please send me a COMET JUNIOR Aeroplane, for which I enclose three "Modern Boy" Tokens and 6d. in stamps.

Name (in block letters) _____
Address _____

FRAGILE If Undelivered, Return to Bear Alley, Farringdon Street, London, E.C.4.

The Modern Boy 25

PIN 4
1 1/2d. STAMPS
HERE.

31/8/35

wish to build Rigby type models Norman says 'My current views on suitable paper for folded card models are as follows:

30 to 36 inches span: use Carton Card, 365 microns thick from Elliott Whitman.

20 to 30 inches: 90lb Watman paper or 70lb cartridge paper from any art-shop.

10 to 20 inches: 70lb cartridge paper.

'Rigby wings are single-surfaced. This is torsionally not rigid enough in my opinion, unless an inboard rib bay is double surfaced. In fairness to Rigby, all his designs were "one piece" which would help keep the structure rigid. All mine, except the standard size Swallow, have removeable wing panels; some have removeable fin/tailplane units'.

Freddie

Fredrick Stenning White, the artist well known to aeromodellers for his amusing cartoons under the name of Freddie, died on 19th February at the age of 76. Associated with cinema interior design in the 1930s he was with Hawker Aircraft Ltd during the war, returning afterwards to the world of commercial art when he was involved with film work including set design and animation procedures. His art graced the pages of *The Model Aeroplane Constructor*, *Aeromodeller* and the *Harborough* books for some ten years until the late 1940s. He is thus an integral part of the vintage scene, and although Donald Robert Jamieson McDougall invented that crafty old Scot McGillicuddy it was Freddie's portrayal of the Maestro that made the impression upon us that we retain today.



A typical Freddie Aeromodeller cartoon. This was No. 113 which appeared in August 1946. Prof. Knob is saying: 'This Bump suggests an Interest in Aviation'.



Model Flight

by Martin Simons (Argus Books, £6.95. ISBN 0 85242 938 X).

It is quite simple to get a model aeroplane of established layout to fly. Add weight until it balances where experience or a similar design tells you it ought, then add packing to alter the rigging until it performs. Hardly any understanding of aerodynamics is needed. To make the model fly efficiently is another matter, and here a grasp of the fundamentals of flight is important. The pathway to such knowledge is traditionally regarded as difficult, but here is a volume which smooths the journey thanks to straightforward thinking, simple language and clear diagrams. There is a welcome lack of those indigestible offerings, maths and higher physics.

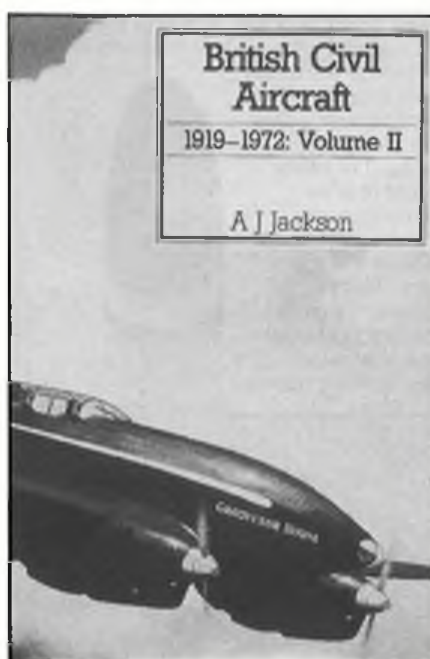
Quite apart from flight theory and analysis of control functions there is much on aerofoils to command attention. Relatively neglected facets, such as the desirability of establishing individual mean lines of camber rather than categorising into broad and possibly misleading divisions according to aerofoil outline are emphasised. The author's recommendation is actually 'what has to be discovered is the exact shape of the "thin" wing trying to get out of the "thick" one!' It is acknowledged that much of the subject is empirical - even matters of such consequence as turbulators and invigorators. Interestingly, we are told that turbulators 'may be worthwhile on upper and lower wing surfaces' (our italics).

Take no notice of the foreword comment which states that the book is primarily intended for R/C aeroplane fliers. Basic aerodynamics is for everyone, and this book, written by an aeromodeller who is not only an aerodynamics lecturer but a noted glider pilot, clarifies much. GC

British Civil Aircraft 1919-1972: Volume II

by A.J. Jackson (Putnam, £20. ISBN 0 85177 813 5).

Regular readers will know that we have commented favourably upon every Putnam book re-issued by Conway Maritime Press - a move which (apart from anything else) has saved many enthusiasts from paying so-called collectors' high prices! Latest to appear is



the second part of the three-volume series British Civil Aircraft. Minor revisions by R.T. Jackson, son of the late author, have been incorporated but of course the scope of the book is 1919 to 1972; anyone seeking later information will have to look elsewhere. The series is an invaluable reference for all enthusiasts of British aviation. Full illustration and many clear line drawings which take us from Chrislea to Hawker Siddeley will inspire many a project, and substantial appendices give potted histories of every British-registered craft. Much enjoyable armchair browsing here. Roll on Volume III! GC

The Rise and Fall of the German Air Force 1933-1945

by Air Ministry Intelligence (£14.95: Arms and Armour Press Ltd, Link House, West Street, Poole, Dorset BH15 1LL).

This excellent book is a facsimile reprint of what was originally the restricted Air Ministry Pamphlet No 248 published in 1948. It recounts the secret beginnings of the German Air Force, its involvement in the Spanish Civil War, the Force's operations history during WWII and its



demise. Work on this volume was started immediately after the end of the war in 1945 by the personnel of the Air Ministry Intelligence Branch who were already familiar with the Luftwaffe and were able to supplement their knowledge via a mass of captured documents and by interrogating thousands of Luftwaffe personnel. The introduction to the present book states '...As one would expect of intelligence officers, they worked with great care, and the facts and statistics quoted are as accurate as any that can be calculated today. As a reliable contemporary account put together by experts, this book therefore has a lasting value...' This is a prime source of reference and although since it was written other books on the Luftwaffe may have gone into greater detail on specific subjects it remains a clear concise narrative on the operational history of the Luftwaffe that I recommend to all interested in this fascinating topic.

The reader should not expect this to be the whole story, and that there are 'slips' as admitted by stating, for example that the Fleet Air Arm 'bombing' attack on Taranto should have read 'torpedo'. I found an error myself that shows even intelligence officers could make mistakes when working outside their own area of knowledge...a photograph of 'Goering as a squadron commander in the Richthofen Geschwader in 1917' actually shows him as a pupil pilot in an Aviatik training biplane in 1915. In any case Goering did not join the Richthofen Circus until July 1918. But such criticism is indeed 'small beer' in such a fine reference document. AI

THE SKY'S THE

With the legality of UK model rocketry established we reintroduce a regular column. Paul Clark looks at Estes rockets

AFTER A LONG wait model rocketry kits are now on sale in Great Britain for the first time; namely a selection from the range made by the Estes Company in the USA where they are the pre-eminent manufacturer of model rocket kits, components and model engines. Indeed they are almost certainly the largest in the world, for they export to many countries. Estes have not previously attempted to market their products in the UK but the recent legitimisation of their propellants for importation (see *Aeromodeller*, April 1988) means that British modellers now have a chance to experience what we have been denied for so long.

What does the hobby have to offer? One of its great attractions is that there are opportunities for a wide range of skills, from fumbling beginner to experienced modeller. Space modelling can be an application of scientific principles, a sport, or just the satisfaction of seeing a model you have built zoom up into the sky. It can be a pastime for individual, group or club activity. This

scope makes it appropriate for a wide age range. In the USA the age of 10 years is recommended as a minimum and, as in aeromodelling, there is really no upper limit!

Compared to some other hobbies it is not expensive. Although a single flight costs about 80p for a typical engine the actual model is much cheaper than, say, a diesel-powered craft. One can, of course, spend many hours building elaborate models but the material costs are still relatively low.

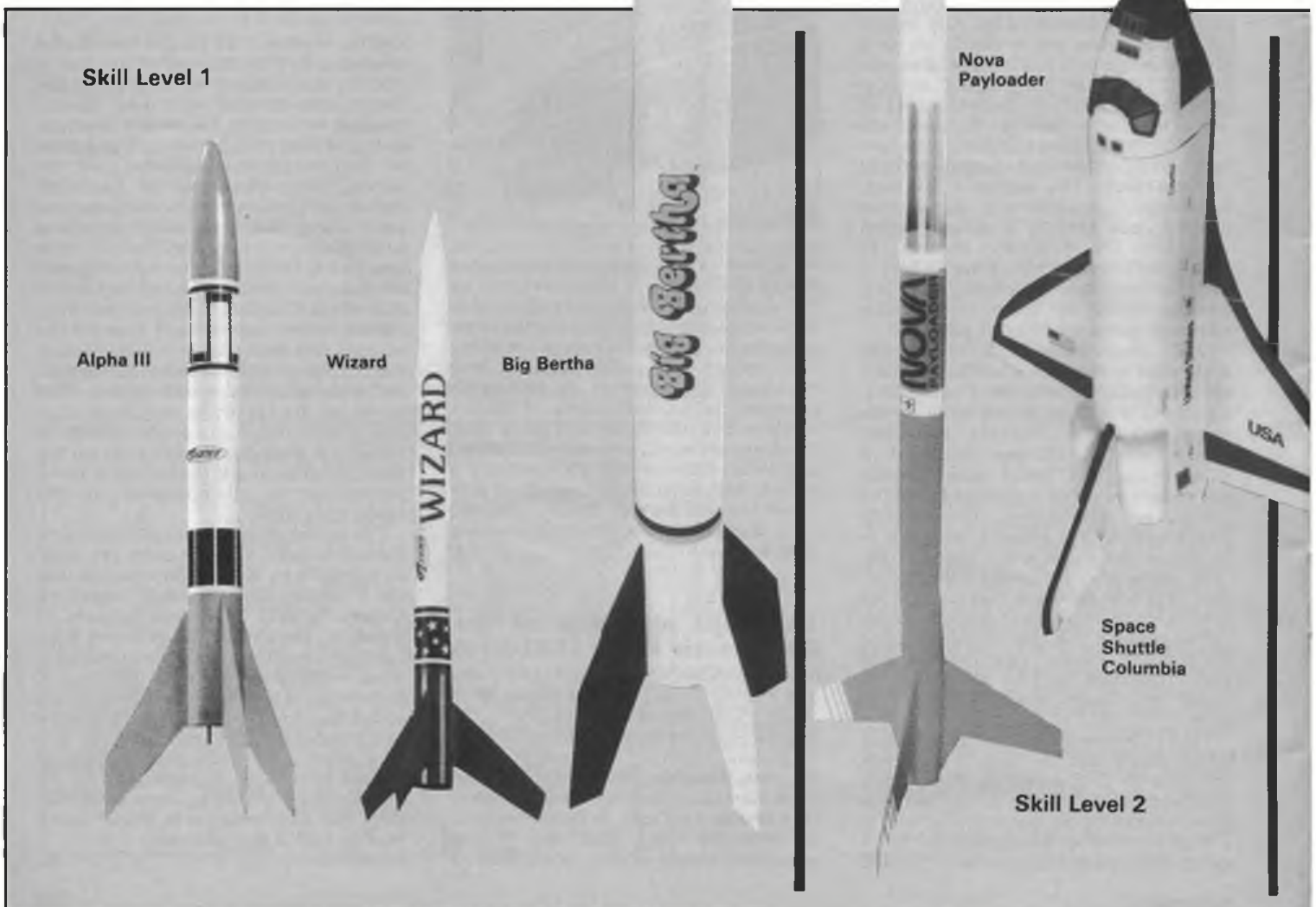
Perhaps one of the most important facts to emphasise is that it is a very safe hobby. The safety record in other countries is one which many hobbies and sports envy. This is because the models are very lightweight and, most importantly, they deploy a recovery

system on descent. They are certainly not ballistic missiles. Also, there is a commonsense safety code which all model rocketeers are expected to follow. The importers of the new kits have come to an agreement on safety with the Health and Safety Executive, and the British Space Modelling Association has its own regulations which draw on the practical experience of several countries. Most importantly, the models are ignited electrically from a safe distance: there are no blue touch-papers. The person responsible for the launch, and any onlookers, must be at least five metres from the launch pad.

How to start

To get to grips with the principles involved it is advisable to obtain first experience with a simple model. A lot of expertise has gone into Estes kits over the years, and they are well-tryed and tested. The kits contain everything you will need except glue and paint. Full instructions are given and the finish can be embellished with the decals provided. Although there are recommended finishes, and some kits are self-coloured, you are of course free to create your own paint schemes.

Fluorescents are a great aid to the

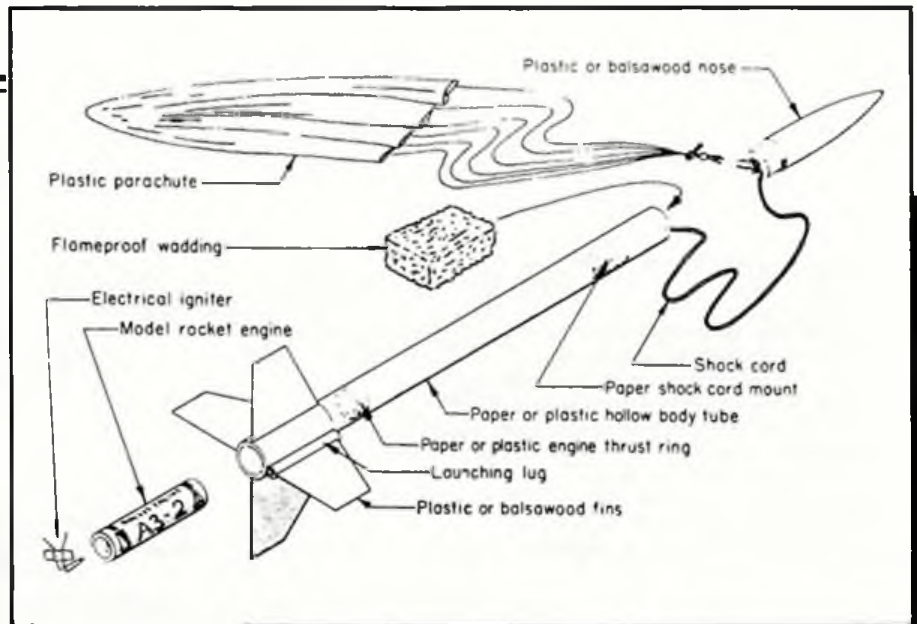


LIMIT!

recovery of your model.

The Estes kits coming into the country offer four Skill Levels. Skill Level One is for beginners. These are easy-to-assemble models with pre-formed plastic fins or die-cut parts that can be put together in half an hour. The designs are pretty basic but they will give impressive and reliable performance. All descend on either a parachute or streamer. The latter is recommended for lightweight models; if there is a light breeze it will bring the model down near the launch point. Prices start at about £3.00 per kit.

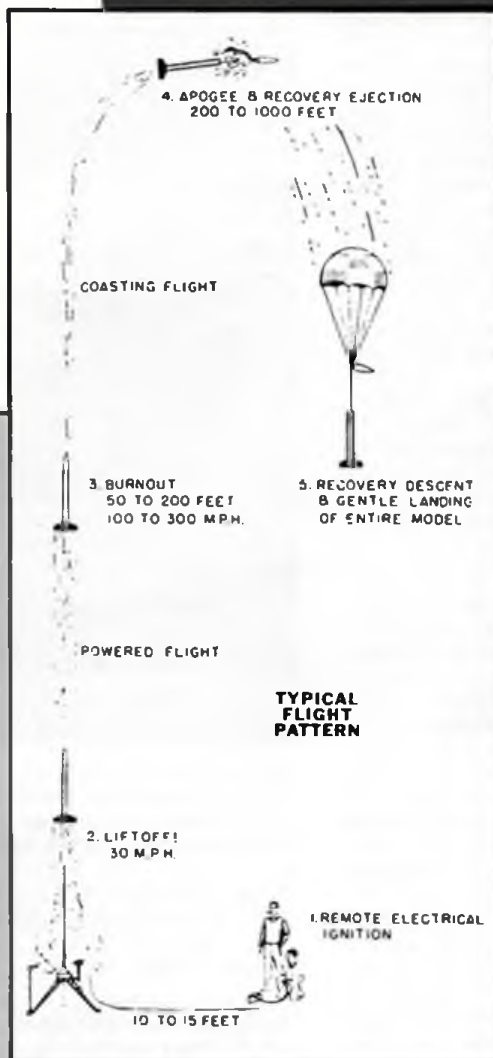
Then you can move on to Skill Level Two kits. These offer more varied range of designs and a different recovery possibility, namely, a helicopter-style descent. One of the range is a semi-scale model of the Shuttle Columbia. Another offers a nose cone 'payload bay' that can accommodate an egg. Egg lofting is a long-



Skill Level 3

Stealth

SR-71
Blackbird



Fundamental rocket structure and typical flight pattern (thanks to The Model Rocketry Manual by G. Harry Stine; recommended). Below: Useful data for intending scratch-builders — Estes engine specifications. One pound of force = 4.45 Newtons; therefore One pound, second = 4.45 Newton-seconds. These are the units of power measurement — the product of 'thrust x duration'

Engine Specifications

Engine Type	Total impulse		Time Delay (15%)	Max. Lift Wt.	Max. Thrust	Thrust Duration	Initial Weight		Propellant Weight	
	Lb. sec.	N-sec					Oz.	G.	Oz.	G.
1/2A6-2*	0.28	1.25	2sec.	70.87grams	12.79 newtons	0.20sec.	0.53	15.0	0.055	1.56
A8-3	0.56	2.50	3sec.	113.40grams	13.35newtons	0.32sec.	0.57	16.2	0.110	3.12
A8-5	0.56	2.50	5sec.	56.70grams	13.35newtons	0.32sec.	0.62	17.6	0.110	3.12
B4-2	1.12	5.00	2sec.	113.40grams	13.35newtons	1.20sec.	0.70	19.8	0.294	8.33
C6-5	2.25	10.00	5sec.	113.50grams	13.35newtons	1.70sec.	0.91	25.8	0.440	12.48
C6-7	2.25	10.00	7sec.	70.87grams	13.35newtons	1.70sec.	0.95	26.9	0.440	12.48

Complete sets

Alpha III

Sizzler

Space Shuttle

Skill Level 1

Skill Level 1

Skill Level 2

Also available: motors, launch pad, ignition controller, igniters, wadding and parachutes.

popular competition event. The payload means that you will have limited altitude; the skilful part is to get your egg back in one piece! The temptation is to reduce on the packing to gain altitude. To find the optimum size of parachute demands experiment. Like many other competition events it does not require accurate altitude measurements but can be judged on duration time (and the safe return of the egg to earth). The most expensive kit of this range is the Astro Cam 110. This gives modellers the exciting possibility of taking aerial photographs. Built into the nose cone is a camera with a 1/500 sec. shutter which takes a standard Kodak 110 colour print film. The shutter is activated just before the parachute ejection as the rocket turns after its apogee. Most of this range cost about £6.00 but the Astro Cam kit is closer to £40.00...

Skill Level Three (for 'advanced' modellers) offers a range of scale and fantasy models. The former is represented by the SR-71 Blackbird, impressive both as an aeroplane and as a model, at 19 inches (48cm) long. Others are fanciful models of hypothetical craft such as a Stealth plane (interestingly, this does not resemble the plastic kits available); the Ram Jet, and an S.F. inspired craft, the Corsair. Prices range from about £7.00 to £12.00.

Skill Level Four has only one offering at present, the Geo Sat LV. This is an impressive 28 inch tall (71cm.) model which represents a heavy-lift satellite launch vehicle. It features dummy strap-on solid boosters, a satellite and 'realistic' decals.

Ignition!

Every model has recommended engine types. A less powerful one is always recommended for the first flight to give a low altitude flight to get you accustomed to the model's performance. The model engines come in three power ratings; A, B and C. The A's have a maximum power output of 2.5 Newton-seconds; the B's 5, and the C's 10 Newton-seconds. They are also given two numerical codes. The first relates to the average thrust and the second to the delay time. Advice and experience will enable you to gauge which engine is suitable for a particular model in particular conditions and give you the scope to plan your model's performance. Although described as 'engines' they are truly miniature solid-fuelled motors, the propellant being black powder. Although simple in principle the engineering which goes into the making of the engines is sophisticated. The grain of the powered has to be very carefully controlled and the charge must be well pressed without distorting the outer card case. The tolerances on the ceramic nozzle throat diameter are very critical to achieve the correct thrust rating. Well, how high do they go? The inevitable question! To give you an indication Estes give the following approximate guide for the altitudes for that could be reached with a 30 gram (1oz.) model:

AB-3 engine:	240 metres (450 feet)
B6-4 engine:	230 metres (750 feet)
C6-5:	300 metres (1000 feet)

A heavier model, or one with any drag-inducing features will reach much lower altitudes than these.

In addition to the models themselves you will of course also need the paraphernalia required to launch a model; that is, a launch rod, electric launch control, igniters and model engines. These can be bought individually or you can obtain a complete 'Starter' kit that includes all you will need. Five different starter kits are available in the Estes range. These are priced at about £25, depending on the model.

Initially there will be a limited range of



One we can't buy yet — The Estes Phoenix 'missile' lifts off. Note usual display safety measures including remote launch pad and spectator barriers.

models in the shops but any of those referred to above will be obtainable by mail order.

Full throttle!

Once you have absorbed the principles of the hobby there is nothing to stop you designing and building your own models or building scale and sports models from plans. To help you do this Estes also market a 'Designer's Special' pack which contains an assortment of 75 items such as body tubes, nose cones, parachutes in a variety of sizes, a manual and other useful components. The resourceful modeller will find it possible to incorporate many existing modelling products and recycle appropriate household items into his or her creative models. The principles for designing a stable model are straightforward and guidance is available in books and technical information sheets. If you want to get more deeply involved in the aerodynamics of model rocketry several

computer programmes available from the States will enable you to check the flight characteristics of a particular model.

When your model is ready you will then have to find an appropriate flying area and some reasonable weather, as model rockets cannot be flown in high winds. There is a lot to be said for flying in groups to gain experience, and hopefully local clubs will develop around the country as the hobby gains new enthusiasts. The British Space Modelling Association intends to encourage this and will inform its members of others in the area they live. When a group of modellers get together competition between them is very likely. Model rocketry lends itself to this and a variety of events are possible. While 'maximum altitude attained' would seem to be an aim it is difficult to measure accurately without special devices and some dedicated observers. As duration is easier to record, maximum flight time is much more convenient to measure and this can be the basis of competition for models of equal engine power or identical recovery method. Another simple event which can use models of varying types is spot landing. Competition rules drawn up by the FAI regulate the sport internationally and it is worth mentioning that no record for any class of event has yet been claimed within the UK so they are all up for grabs. Hopefully it will not be too long before there is a sufficient following for a UK Model Rocketry Nationals to be held.

If the hobby gets off to a good start (with no irresponsibility) we are promised that the Estes range will be extended to include more of the range that is available in the USA and other European countries. Model Rocketry is undergoing a revival at present in the States and with the minimum weight of a model being raised there from 500 grams to 1500 grams it should lead to some exciting new kits. These models will require more than a 'C' engine, or even a cluster of them, for a safe flight. Under-powered heavy models would obviously be hazardous. At present the 20 Newton-second 'D' is Estes' most powerful engine but other US manufacturers specialise in higher powered engines. Hopefully the weight increase will encourage Estes to revive some of its classic large-scale kits which were phased out a few years ago. Already news has reached us that the magnificent 1/100th. scale Saturn V is to become available again. This stands nearly four feet tall and is Skill Level 5! Let's hope that such wonders will one day grace our shores.

Interested in joining the SMAE-affiliated British Space Modelling Association? Send a SAE to The Secretary, BSMA, 179 Preston Drive, Brighton, Sussex, BN1 6FN.

STOP PRESS!
Our own samples
have arrived — watch
out for news of
Aeromodeller's
own efforts...

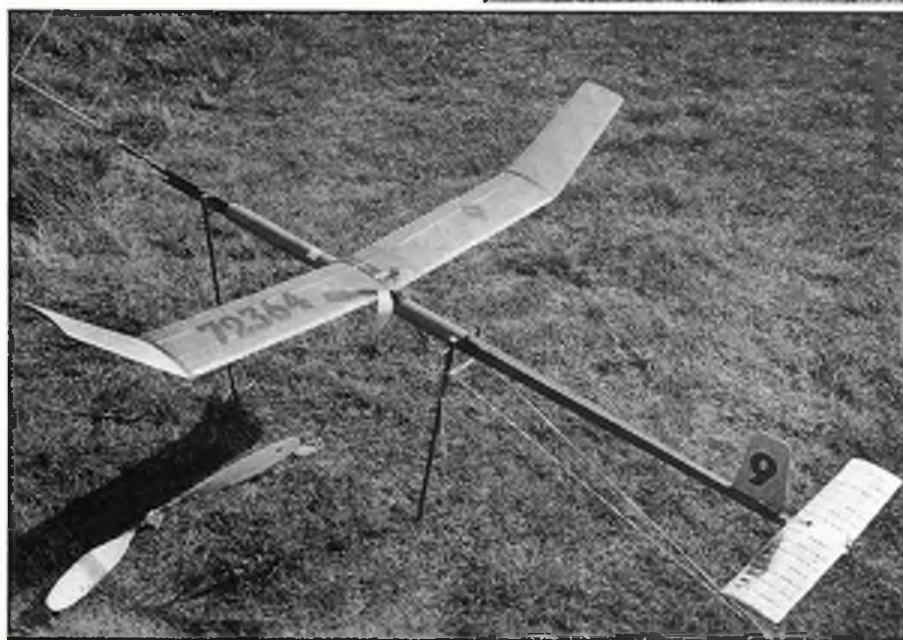
FREE FLIGHT SCENE

Bubble, bubble; toil and
— better performance?
New thoughts on
rubber motors: Dave
Hipperson comments

IN RECENT years I have become increasingly doubtful as to the benefits of 'running-in' rubber motors. Agreed, they stretch a bit after initial use but to induce this deliberately before contest flights seemed to go against the grain. Surely *any* use would wear the rubber out, rather than run it in? Recently I have been stranding-up new rubber to the required motor length, then re-stranding after a couple of contest flights. Increasing the number of strands by one or two would take up the permanent stretch and return the motor to its original, required length. Sadly, this tended to aggravate that mysterious effect of dry spots on the motors. Somehow the lubricant always needs a couple of runs to penetrate and evenly distribute



Above: enthusiastic launch on a check flight by Tony Hall at the Barkston Third Area Event. This Tikka kit — a prize, and Tony's first F1B, made three out of five maxes on a tricky day. A good first effort!
Left: Brian Lavis topped the Barkston F1B results with this attractive geodetic model.



itself over (and into?) the rubber no matter how much was applied in the first place.

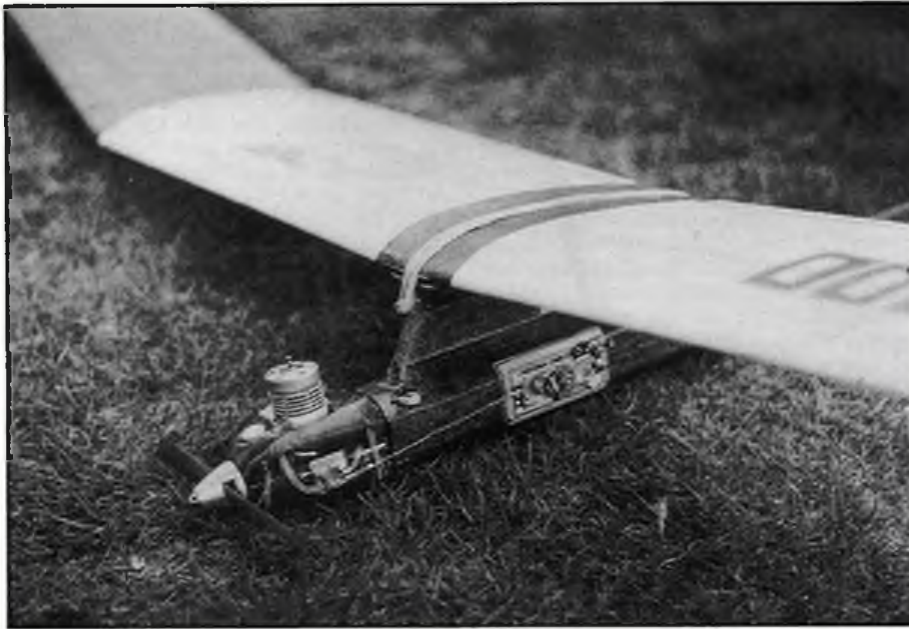
These problems - and many other gaps in my engineering knowledge regarding the behaviour of rubber strip - have been explained in a forty-page report from Ron New, D. Tech., C.Eng., F.I. Mech. Eng. Ron has been a Croydon Club member for many years; until recently he was Professor of Engineering at Brunel University, and he is well known in engineering circles for lectures on a variety of subjects. He had originally

intended this paper entitled 'The Physical Behaviour of Rubber Strip Motors - and the effects of heat treatment on performance', for the M.E. Exhibition Forum earlier this year but it was not quite finished in time.

All the data in the report concerns the testing of FAI rubber purchased since '84. Ron explains a great deal about tensile stretch and various causes of energy loss, energy output levels, composition of the rubber itself and the damaging effects of crystallisation. He also goes into detail on some very

interesting aspects of friction induced by those dry spots - pointing out the dangers inherent even in having the little elastic bands at either end too tight, especially if the motor is exposed to heat or left for long periods. The dry spots they create make a real contribution to shorter motor life and encourage fractures with heavy use. However, it is Ron's experiments into the realms of heat treatment (normalising), running in (pre-working) and special winding techniques that are of particular interest. His findings are a revelation to me; and many of my questions have been answered.

Ron believes that lubricant may well be absorbed into the crevices in the rubber; and the more complete this absorption the more chance of the motor surviving full winds with little damage. The number of maximum turns increases too. He explains that when



After demolishing his Open model John Binnington of the Walsall Club used this F1C to qualify for the White Cup flyoff at Barkston. Placed eighth.

rubber is subjected to strain (that's our sort of use) it tends to crystallize. The more strain, the more crystallisation. Some crystallisation can be inherent in new rubber anyway. Crystallisation has also been found to increase sharply with low temperature use; conversely, when the temperature is high crystallisation in winding is reduced. This goes a long way towards explaining why on cold days the maximum torque appears at lower turns than on warm days and the rubber busts if you go any further.

To impregnate the rubber with lubricant and reduce crystallisation Ron has discovered that the thing to do is to boil your motors in castor oil! That's a slight exaggeration - his favoured system is totally to immerse motors in a jar of castor oil which in turn is allowed to stand in a saucepan of water which is boiled. Hence the castor never gets above 100°C. The motors are boiled thus for half-an-hour and then left to cool down slowly. As this technique is rather messy, involving vast quantities of castor and time a short cut has been devised. Motors can be cooked in the oven at 80 to 100 degrees for twenty minutes and then allowed to cool naturally. It is vital that they be smothered in castor and wrapped tightly in cooking foil before this process is carried out, or the rubber will rapidly oxidise.

It has also been found beneficial to repeat this performance with used motors. Performance is improved and life lengthened. All it can't do is actually to weld together the nicks! It would appear that this 'normalisation' process returns the molecules to their original, random arrangement and away from the more regular formation caused by straining and the consequent crystallisation it produces. It is also suggested that a badly strained motor will give trouble later if it isn't normalised again before further use. A normalised motor will store well and may actually improve with time - as does new rubber. The possibilities for further experiment appear endless.

Running-in

Another part of the research concerns the value of running-in or pre-working. The stage I was about to phase out! Ron concludes that gentle running in with plenty of lube is most desirable if the rubber is to have a long and useful contest life. What is important is that any running in is done in the warm - preferably 20°C or hotter. No freezing garages, I'm afraid. What is more, modest stretching - a maximum of four times natural length - and a long time at this stretch is far more effective a method than excessive stretching over a short time, which just crystallises the rubber. Although Ron didn't pursue this subject any further, because of the shortage of time, it would appear that stretching to 3 - 4 times length and holding for at least four hours in a very warm room would be about ideal.

Winding

Tests would suggest it is not necessary to stretch rubber excessively when winding (as has become fashionable of late). In fact, to

do so is actually *counter-productive*, increasing the tendency for premature crystallisation even before any turns are applied! Ron would recommend a 'four-times' stretch; 'five' at an absolute maximum. Most gain is achieved in the winding technique itself. It has been found that halting the wind at frequent intervals 'on the way in' and allowing small and gentle movements in and out at those points allows the knotting to slip about and tidy itself up. Torque and strain on the rubber drops and hence more turns are available. I can vouch for this idea as I tried it under Ron's supervision at a Trials a few years ago. The claims are correct. More turns, more output, less bunching and less wear. (I got in the Team, too.)

It boils down to this...

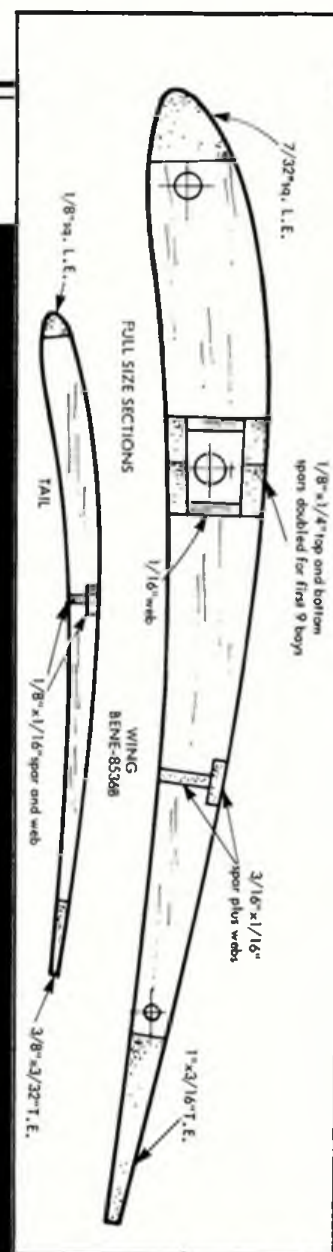
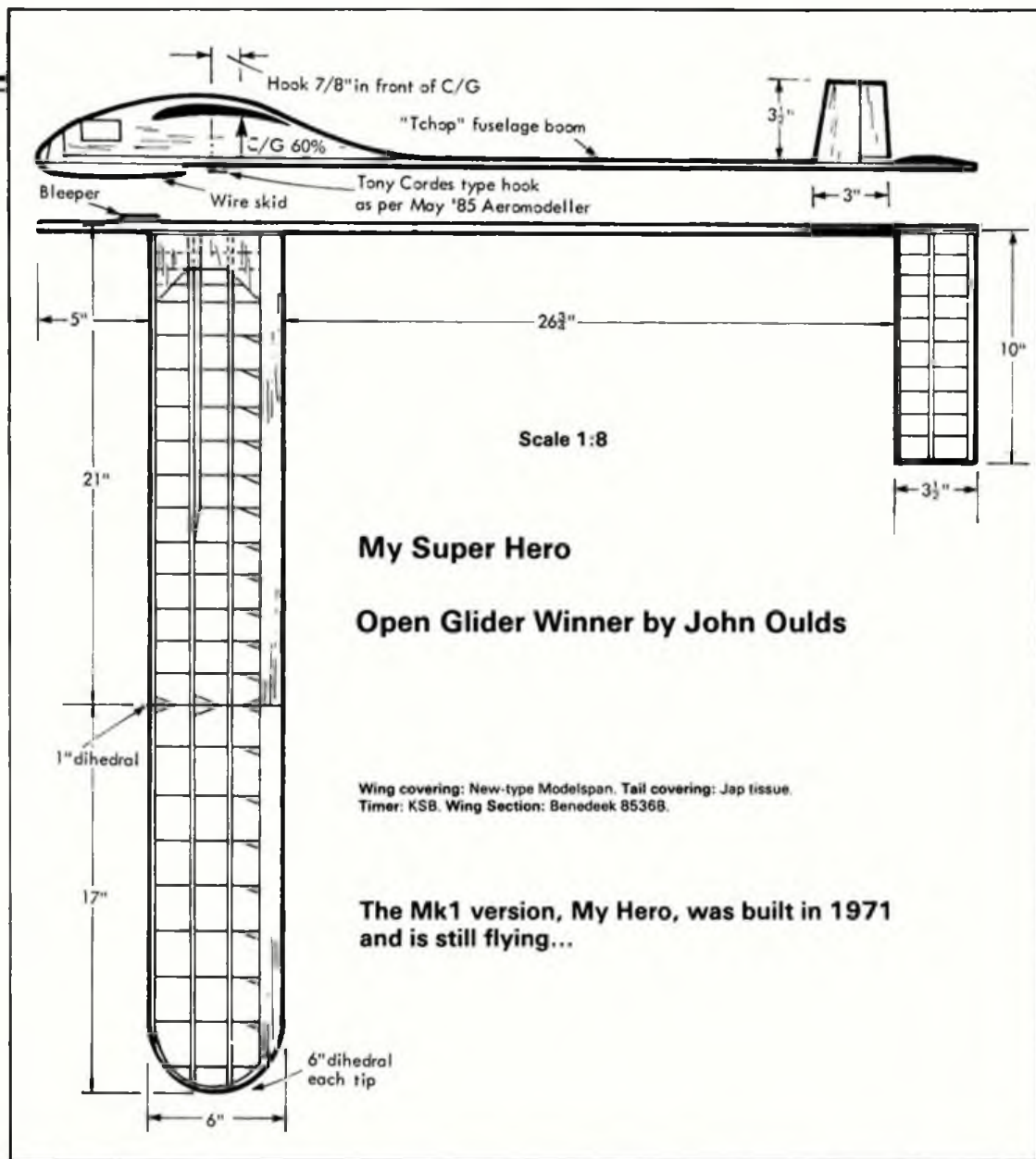
To summarise... Ron stresses the importance of lubricating well. The boiling (or cooking) technique seems the best way. He has found substantial gains in rubber life if it is normalised and then run-in gently in the warm. He has observed increased maximum turns and smoother torque output if the motor is 'wiggled' while being wound.

With our rubber supplies costing £13-£14 per pound it makes economical sense to get as much out of it as possible particularly when we find ourselves with a 'good batch'. As for 'wiggling' on the wind up, one may well consider such finesse worthwhile only on those occasions when the air is very stable and every bit of performance is required. Certainly this is often the case around our favourite October Trials period. Here careful winding could well be beneficial. However, it's time-consuming; and in the cut-and-thrust of thermal flying where often it is necessary to wind very quickly (or possibly hold the wound motor for up to twenty minutes) it may not be thought worthwhile. It is worth bearing in mind that fast winding might look impressive but it is less efficient and much harder on the rubber.

The detail in Ron's paper has only been touched upon here. It is hoped that he will be able to present it all to us at the Model Engineer Exhibition early next year. In the meantime I have a copy that interested modellers can borrow. It should be understood that this is a complicated and rather technical work, and some engineering knowledge is necessary if one is to appreciate it in all its detail.

Right, Russell Peers, holding prop, prepares for his final flight on Gamage Day. Placed third behind John O'Donnell and Phil Ball. Centre: Timer detail on Peers' model. Tomy unit is mounted firmly on ply/balsa sandwich. Right: Back to the Third Area Meeting - John Cooper attends to his aged Wakefield used for Weston Cup flights.





My Super Hero: John Ould's Open Glider winner

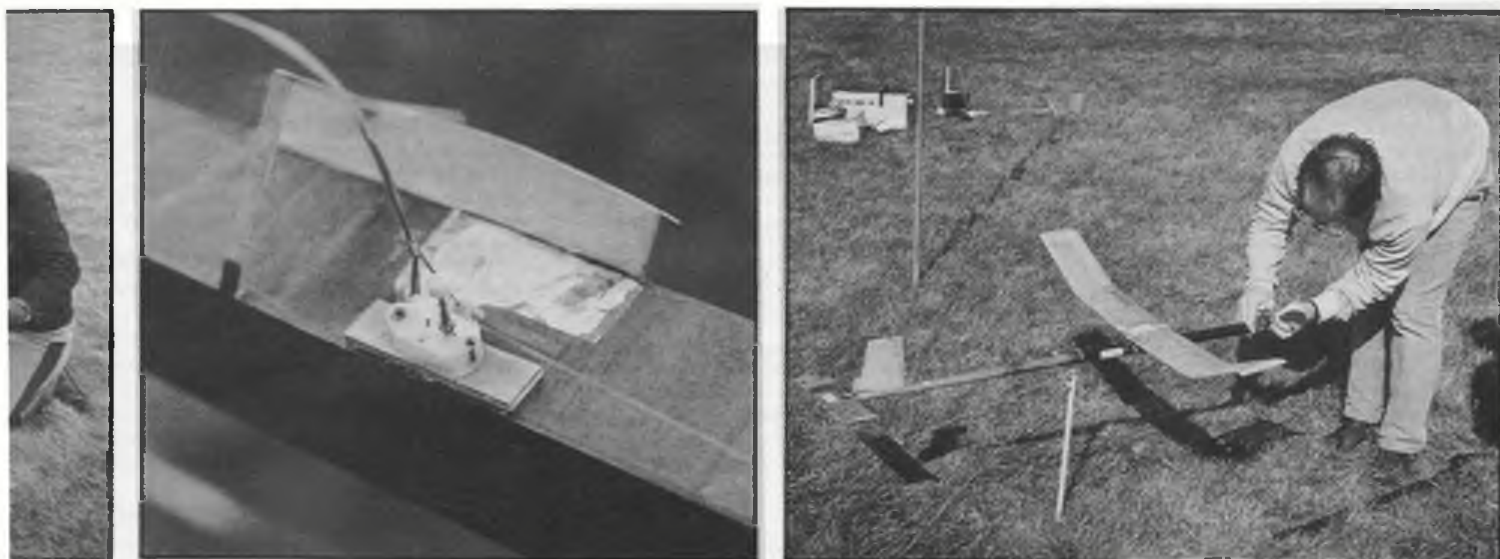
As mentioned in the SMAE Second Area contest report, it is no mean feat to top a National Glider event when flying at Ashdown Forest. John has developed this design since the first version in '71 (which is still flying). Unusual features include that

very old-fashioned but rugged wing section. Allied to a spar like this it must be the next thing to unbreakable.

John flies regularly at Ashdown where model location is by no means easy, so he has installed a Tandy bleeper unit in the fuselage to assist on those occasions when it's in woods or just hiding behind a bush. John's model also features in our forthcoming A/2 chart.

SMAE Second Area Centralised Meeting: 6th March

It was supposed to have been above average temperature but those who stood about for long on Gamage day were quickly reduced to cold in the strong, occasionally gale force winds. Most parts of the country had at least some rain during the day to make things



worse. Ashdown, like the other Eastern venues escaped with slightly less wind allowing Nigel Lee to reach the rubber flyoff and John Oulds the Glider. For John this was actually enough to win; nevertheless his flyoff was a great effort considering the terrain at this venue.

Plugge points tempted more out with their FICs than would have been likely had it been an isolated FIC event. Needless to say, Bristol & West at Merryfield gave it their best shot even though they were undermanned in the terribly windy weather. Their top flyer was George Fuller but Dick Johnson and Chris Chapman backed him up to amass more points than any other club once again. Birmingham, usually expected to romp home in this event, didn't return a score! Once again it was an East Coast venue that produced the individual winner with Bob Wells flying at Sculthorpe making a score that included only one duff flight - his last. He thus wins the Halifax Trophy.

Most entries were in Rubber for the Gamage Cup. It should be said that, considering the weather, this class produced some excellent flying. Although the winner didn't come from Barkston - the weather there was probably worse than anywhere - the standard and determination were really something. With winds often well above 30mph nine flew and recorded but a handful of sub-maxes. Most who didn't reach the flyoff simply either ran out of models or time. The four that finished with full scores at Barkston had spot-on trim all day - and were just a bit lucky where they landed.

John Bailey, the only FIC entry at Barkston was not so fortunate, losing his model after three maxes and spending the rest of the day in a fruitless search of the downwind wood. The model turned up a few days later, many fields further on. Actually, John's search was not all wasted. While hacking around in the jungle he found an A/2 he had lost two years ago! The prize for superhuman effort would have to go to D. Cox of Crookham, flying at Beaulieu, who managed to make a full complement of flights in Glider (including one max) as well as his second-place total in FIC. Even if it was not as windy there as in the Midlands and North it must still have involved a great deal of retrieving over terrain where bicycles are useless.

At Driffield, John O'Donnell (the sole entry in Rubber, and the only person in any class there to finish his flights) persevered in drift reaching 30 mph at times. He lost two models; one on the last flight taken very late in the day and the other in the flyoff immediately afterwards. This near five-minute winning flight was seen almost down to the ground. It was estimated to have travelled two-and-a-half miles or more. Meanwhile, those four qualifiers at Barkston had similar drift but rather darker skies. Some good flights were clocked off ages before they were down. Gaunt and Sharp had somehow survived all day with one model each virtually unscratched, but launching early in the flyoff both found indifferent air. Peers released a few minutes later after air-picking advice from various club mates and climbed well but disappeared still quite high and before four minutes. Phil Ball, seemingly having benefitted from recent extensive power



Top: Belt — but no braces yet! Mike Chilton clips his winder to a substantial belt around his waist when winding his Wakefield. Mike uses very short, powerful motors. The jig holding the model has to be anchored, too!
Above left: Stafford Screen concentrates during the White Cup event at the Third Area meeting. Placed third after motor trouble.
Above right: Who, what, when, where? A useful prize goes to the first reader to identify this delightful image. Not eligible: the flier, and photographer John O'Donnell!

trimming practice, flew a medium-sized model with a very zippy climb. His late flight - due to a last minute switch - was very high too but it must have found slightly slower drift to stay in sight long enough to pip Peers.

This was the third consecutive Gamage flyoff seriously affected by poor visibility in the flyoff. Of the six qualifiers at least four required another visit to their fields later in the week to recover their flyoff models. John O'Donnell still didn't but at least he found the model he had used for the last comp. flight hanging low down and virtually undamaged in a wood he had suspected on contest day!

SMAE Third Area Centralised Event - 20th March

Open Glider No trophy (37 flew - 9 in flyoff)

- 1 G. Beal
- 2 J. Cooper
- 3 P. Owens
- 4 J. Williams
- 5 C. Sharman
- 6 J. Bailey

- Barkston
Barkston
Rufford
Barkston
Merryfield
Barkston

7:30 + 3:40
7:30 + 3:10
7:30 + 3:08
7:30 + 2:17
7:30 + 2:14
7:30 + 2:08

F1B Weston Cup and Plugge points (42 flew)

- 1 D. Neil
- 2 R. Pollard
- 3 R. Pavely
- 4 B. Rowe
- 5 B. Lavis
- 6 P. Gaunt

- Sculthorpe
Albermarle
Sculthorpe
Sculthorpe
Barkston
Barkston

12:30 + 3:00
12:30 + 2:54
12:25
12:23
12:17
12:10

Open Power White Cup (20 flew)

- 1 P. Harris
- 2 R. Peers
- 3 S. Screen
- 4 J. Hopper
- 5 P. Watson
- 6 R. Baggott

- Barkston
Barkston
Barkston
Sculthorpe
Barkston
Barkston

7:30 + 8:09
7:30 + 8:06
7:30 + 5:34
7:30 + 5:02
7:30 + 4:19
7:30 + 4:17

Plugge Cup Positions after three events

- Bristol & West
Anglia
Vikings
Biggles
Crookham
Birmingham

682
648
545
459
429
229

Here's a real mystery. What is this splendid F1C motor? Note prop brake.



Second SMAE Area Centralised Event - 6th March

Open Glider No trophy (19 flew)

- | | | |
|---|---------------|-------------|
| 1 | J. Oulds | 7:30 + 3:07 |
| 2 | B. Colledge | 7:24 |
| 3 | C.P. Williams | 7:16 |
| 4 | J. Cuthbert | 6:34 |

- Ashdown
Barkston
Beaulieu
Barkston

Open Rubber Gamage Cup (21 flew)

- | | | |
|---|--------------|-------------|
| 1 | J.O. Donnell | 7:30 + 4:40 |
| 2 | P. Ball | 7:30 + 4:13 |
| 3 | R. Peers | 7:30 + 3:49 |
| 4 | G. Sharp | 7:30 + 3:01 |
| 5 | N. Lee | 7:30 + 2:53 |
| 6 | P. Gaunt | 7:30 + 2:30 |

- Driffield
Barkston
Barkston
Barkston
Ashdown
Barkston

F1C Halifax Trophy and Plugge Points (15 flew)

- | | | | |
|---|-----------|------------|-------|
| 1 | A. Wells | Sculthorpe | 11:02 |
| 2 | D. Cox | Beaulieu | 10:40 |
| 3 | G. Fuller | Merryfield | 10:27 |
| 4 | N. Willis | Sculthorpe | 8:19 |

Plugge Positions after two events

- Bristol & West
Anglia
Crookham
Vikings
Biggles

483
373
346
325
290

SMAE Third Area Centralised Event: Barkston, 20th March

With neither Driffield nor Church Fenton available for the Northern Area, Barkston Heath was almost swamped with entries. The weather was warm and never windier than 15mph but the drift direction, south-west backing to south, is awkward at this venue both in terms of avoiding the

Compound and spotting lift. As always this baffled the F1B flyers the most with all of them ruining quite good scores with one or two slightly below-par flights. It would be fair to say that despite better weather elsewhere nearly half the country opted to use Barkston and this, as much as anything, is why two of the winners came from there.

Large flyoffs in both Glider and Power (held in reducing drift and slight intermittent drizzle) gave resounding victory to Pete Harris in Open Power. Russell Peers was second after he produced an excellent glide after a slightly off-pattern climb. Screen had been having engine trouble all day - it continued to affect him in the final too. Pete Watson was unlucky on his first contest outing of the year. His Flyoff climb was by far and away the highest - a perfect vertical rolling pattern. The speed at which the model descended on the glide would have suggested that this prompt launch had not been a tactically good move. The air improved - quite enough for Gordon Beal to make a 3.1/2 minute Glider flyoff topping the list by a clear 30 seconds over John Cooper at the same venue. If ever there had been an evening ideal for the old fashioned, big, floating Open model this was it but everything in use appeared to be of A/2 size apart from O'Donnell's game little A/1.

Over the north-west side of the country the new field of Rufford was having a good day with very light winds and moist, buoyant air. Phil Owens took this opportunity to max out in Glider and then did enough to get in amongst the placings with a fly off slightly in excess of three minutes.

The most easterly venues produced the F1B winners. Derek Neil at Sculthorpe and Ron Pollard at Albermarle returned the only five-max totals nationwide. Neil had the edge despite a wet flyoff. Following them closely, the other Sculthorpe fliers had the advantage over the Barkston competition as much because of regular, smoother and more detectable air than lighter drift. This break in turn gave both Vikings and Anglia a chance to catch up in the Plugge as Western and Southern venues had it much windier all day - and wet from lunchtime onwards. Thus Neil, Pavely and Wells, all inside the top 10, collected many points for Anglia to draw up to within 34 of the leaders Bristol & West, whose efforts were to place Greaves 10th, Aslett 12th and Pullen 22nd despite inclement conditions which brought them rain and very peculiar wind shifts to the north-east.

What's happening

8th May

4th AREA CENTRALISED EVENT

F1C for the Astral Trophy
Open Glider for Plugge Points and the M.E. Trophy for club teams CDH no trophy
Venue Area sites
Contact Area Comps Secs or SMAE
Comp Sec Richard King 01 890 4504

28th-30th May

British Nationals

Venue Barkston Heath
Contact Phil Ball on 0332 665361

5th June

F1E SLOPE SOARING TRIALS

Venue Sheffield
Contact T. Faulkner on 0742 363397

11-12th June

F1A, F1B and F1C TEAM TRIALS for World Champ Teams

to fly in Argentina
Starts 5.30am
Venue Barkston Heath
Contact P. Ball on 0332 665361

Area rules?

Dear Aeromodeller,

From a recent memo issued to SMAE Area Competition Secretaries it would appear that the present system of area contests is under challenge.

It is my view that the area centralised contests are the heart of free flight competition flying in this country. Any scheme which downgrades these events by the scheduling them at unsuitable times, removing trophies, etc. will diminish this activity.

The present formula of six events with a mix of classes has been arrived at after many years of evolution. It gives a balanced programme of activities. The benefit of area events is that they enable those flyers who have less time and resources to participate in National events. Club activity is stimulated and interest is generated across the season by such targets as the Plugge Cup. Flyers who are not of the top rank are able to fly and contribute to a club effort in this and other team events. The participation of flyers of all levels in every event is important. Contests should not be designed for the select few.

Entries in free flight contests are not large. Loss or downgrading of these events will reduce participation, which is bad for the hobby. It is argued that flying on different sites is unfair and unsatisfactory because of variable weather across the country. Those who fly accept this as part of the event; they are prepared to gamble on the weather and fly rather than not have the event at all. Not everyone is able, or prepared to travel the length and breadth of the UK to fly, but many want to compete.

It has been suggested that these events might be replaced by National events spread around the country. This is not practical as fields may be suitable for small numbers at area events but not suitable when there is greater participation.

What do other enthusiasts think?

Norwich

Mike Woodhouse

MIND THE LINES

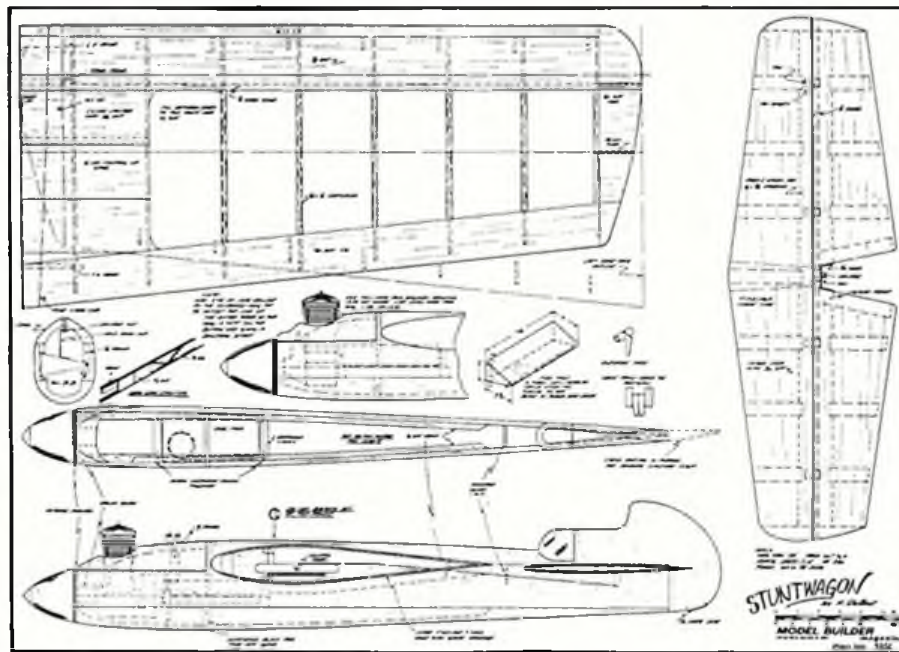
Part Two of the Hal de Bolt story recounted by Ron Prentice



AT THE END of the first part of this story we had reached the point where Hal had been demobilised, formed the Dmeco kit business and was deeply into designing and flying speed models. He also found time to develop a range of stunt models, the first of which was the classic Bipe, Dmeco's highest volume seller. Early shop orders were often for several hundreds and this swamped production for a couple of years. The original Bipe was updated in 1947. Its symmetrical aerofoil section meant that it was capable of inverted flight and most other manoeuvres. In 1948 came the ultimate in the line, the Super Bipe. This was an enlarged and much improved version of the Bipe with symmetrical section and side-mounted engine. The moment arm was shortened and the elevator area increased. The prototype used a Madewell 49 spark motor. It was a great flier, fast and always tight on the lines, though not able to execute tight-radius aerobatics. For roundness of loops and thrilling landings, it was hard to beat. Older readers may remember Henry J. Nicholls' beautiful Madewell-powered version which was flown on many demonstrations in the late '40s and which was featured in the early books on control line flying by 'Dickie' Laidlaw-Dickson and Ron Warring.

Although a very satisfying model to fly, the Super Bipe could not match the larger monoplanes, and so later in 1948 Hal designed the Stuntwagon. This model is truly impressive, both to watch and to fly, as those who have seen my Stuntwagon might testify. It has a span of 58in, wing area of 667 sq.

Top: Hal de Bolt in 1949 with his red and black Stuntwagon. This Atwood Champ powered model was one of the last in the series with fixed, dural sheet undercarriage. The original Wagon was light blue. Top left: Our columnist's well-known Merco 61 version. Above centre: Straightforward construction shown on the Model Builder plan. Right: As advertised in the early '50s — the All American range for .09 to .35 engines.



LEARN WITH THE "ALL-AMERICAN" TEAM

All American Jr	All American Jr	"All American"	All American Jr
BASIC TRAINER \$1.75	STUNT TRAINER \$2.50	STUNT MODEL \$4.95	CONTEST STUNT \$5.95

Every Member of the Team features "Asymmetrical Stability", the surest means of obtaining a Check, lighter Model of superior performance. All kits are completely hand packed, parts are FULL SIZE and a forward Dural Gear is included.

inches and weighs 52 oz. I was lucky enough to be sent an original kit by a pen friend in 1948; this model, powered by an Attwood Champion, was really something after the small Mills 1.3 and Elfin ultra-lightweight models which I had flown up to that time. Unfortunately I cannot recall what eventually happened to it...

Several modellers have commented that the fixed U/C on my present Wagon isn't authentic. However, as can be seen in the photo, Hal himself used a fixed gear. To quote his letter: 'I bet you raise some eyebrows and have a ball flying your Stuntwagon, the performance being so different from the modern scene. Of all my control line models, that was my pride and joy. If I could go back to only one, the Wagon would be it. I had several with fixed dural gear, although I liked it better with the drop-off U/C. The last version was tailored to a Fox 35. I lightened the structure, extensively slimmed the fuselage and added dural landing gear. It was a real contest winner; it manoeuvred similar to the 60 version at about two-thirds the speed. A real delight to fly as long as the wind was not too high.'

In addition to the Stuntwagon 60, Stuntwagon 30 and InfantWagon (designed for the K & B Infant .02 engine), Dmecco produced their most successful range of control line models, the All American series. These began in 1950 with the All American Junior, a 26in stunt trainer for .09 motors. In 1951 the series was expanded to include the All American Senior, the largest of the AA range, which featured asymmetrical stability. This was a most efficient model, capable of the AMA pattern. It had a 51in. span, 510sq. in. wing and used a Fox 35. A smaller 36in. version for .19 motors was produced at the same time.

Fire!

From its inception until the autumn of 1957, de Bolt Engineering had been located in the same building in Williamsville, New York. The building was extended from time to time. For the first six months, Hal did all the work alone and work it really was - often sixteen hours a day. That summer Hal's father joined him; he became a more and more important factor in keeping the shop running smoothly while Hal took care of the design work, test flying and sales.

Dmecco suffered a serious blow late in 1957 when a flash fire burned out the plant, destroying most of the stock. Most disheartening of all, de Bolt Senior suffered injuries from which he did not recover. Despite the setback, Hal not only got the old plant rebuilt, but purchased a new one, enlarged it and moved in during 1958. The firm went from strength to strength, producing many R/C kits, multi servos, tanks, landing gear, and other components.

Finally Hal decided it was time to retire, so he closed the business and decided to move away from the cold North country to the warm sunshine state of Florida. There he and his wife Arlene happily found a fine community with extensive activities to enjoy their leisure years, including some modelling.

In answer to my letter requesting information, he sent me the following:

'I wish I could help you, but am afraid that



Rarity makes up for quality in this 1952 shot of Hal de Bolt (left) and R. Wilson — yes, that's a C/L Speed floatplane!

I have no material to offer. Information, yes, but photos I don't have. My life has not all been wine and roses; along the way three major events disrupted things, resulting in the loss of what would be cherished material. When I switched from free flight to control line, I put all the models, drawings, and photos into a large plywood storage box. I also switched from C/L to R/C almost overnight, and did the same with that material. Sadly the storage boxes were consumed in the Dmecco fire. Later I was stupid and did not see the value in what I had left, misplacing much when I closed Dmecco and more when we made the Florida move. Some results are crazy. For example, as I write this history thing, I have to rely on other sources for photos of my own models!

'At 68 I am still healthy and keep active building and flying what R/C suits my fancy. Not at the former pace though! I have spent a couple of years with electric power, which has proved interesting'

My thanks to Hal deBolt for taking the trouble to provide me with information. Should any reader wish to build any of the models mentioned, drop a line to Fran Ptaszkiewicz at 23 Marlee Drive, Tonawonda, New York, 14150 USA. He can supply the necessary plans. In addition, of course, I am able to supply kits of the Super Bipe at a cost of £31.50 including postage and packing.

Also unusual was the Dmecco A/2 Twin for a pair of .049s. Surely someone will try this for our Vintage Weekend?

Congrats...

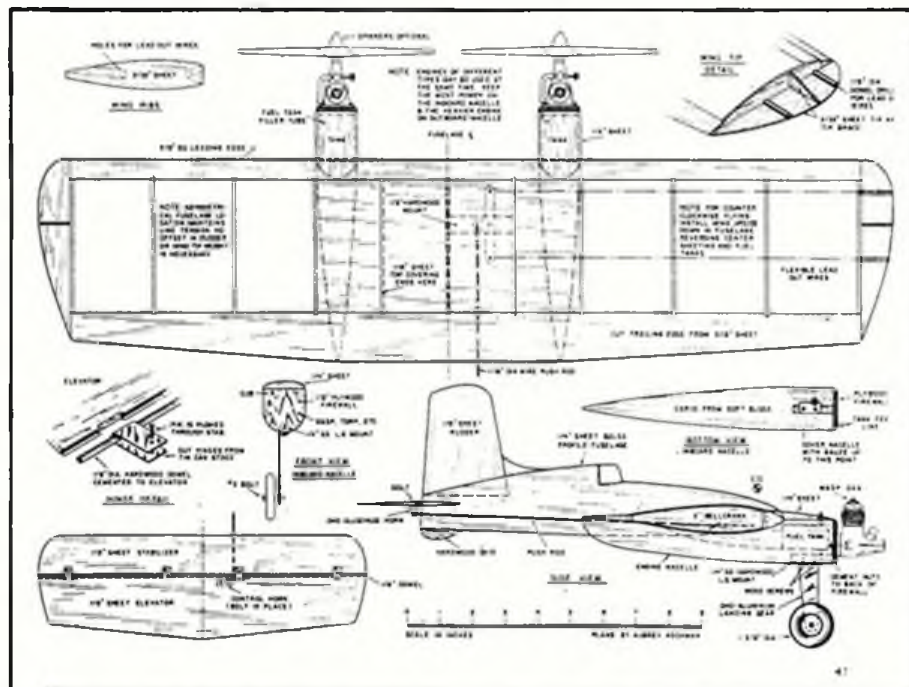
Finally, I should like to congratulate my Mind the Lines co-writer, Andy Brough, on his appointment to the Editor's chair of SAM 35 SPEAKS. He is following in the illustrious footsteps of Ben Buckle, David Baker and Aeromodeller Editor Geoff Clarke; and I am sure that all SAM members will wish him the best of luck with his task.

I have read his contributions with interest, as they covered the present vintage control line scene, as opposed to the 'historical' content of my column. However, because of the amount of other work now to contend with he will be unable to continue writing this feature. I shall endeavour to combine both present and historical aspects of vintage control line in future, and hope that those correspondents who kept Andy supplied with information will now send it to me instead. My address is The Mill, Ash Priors, Taunton, Somerset TA4 3NQ. I look forward to receiving your letters in great numbers.

Stop Press

Glen Alison has just phoned with the news that there will be F2B, Novice and Vintage Stunt competitions at Slip End, Luton, on 19th June and 25th September. For the June meeting contact Rex Landon on 0525 713472; and for September's gathering call Glen Alison on 0923 772675.

Glen also tells me that the CLAPA Champs this year will be held at North Weald during the Wings and Wheels Spectacular in July.



INTERNATIONAL WHAT'S ON

Contact SMAE at Kimberley House, Vaughan Way, Leicester (0533 518500) for details of all Championships.

World Championships

28th May - 1st June
WORLD INDOOR CHAMPIONSHIPS
Venue Johnson City, Tennessee, USA
Organising body AMA Class F1D

5 - 11th August
WORLD CONTROL LINE CHAMPIONSHIPS
Venue Kiev, USSR Organising body FAS of USSR
Classes F2A, F2B, F2C, F2D

8 - 15th August
WORLD JUNIOR FREE FLIGHT CHAMPIONSHIPS
Venue Leszno Poland. Organising body Aero Club of Poland.
Classes F1A, F1B, F1C.

14 - 19th August
WORLD ELECTRIC R/C CHAMPIONSHIPS
Venue St Louis, USA Organising body AMA
Class F3E

5 - 11th August
WORLD CONTROL LINE SCALE CHAMPIONSHIPS
Venue Kiev, USSR Organising body FAS of USSR
Class F4B

3 - 11th September
WORLD RADIO CONTROL SCALE CHAMPIONSHIPS
Venue Gorizia, Italy Organising body Aero Club d'Italia.
Class F4C

European Championships

3 - 9th July
FREE FLIGHT EUROCHAMPS
Venue Zrenjanin, Yugoslavia Organising body Aeroklub Zarko Zrenjanin.
Classes F1A, F1B, F1CV

25 - 31st July
RADIO CONTROL AEROBATIC EUROCHAMPS
Venue Norrköping, Sweden. Organising body Organising body SMFF
Class F3A

30th August - 4th September
SPACE MODEL EUROCHAMPS
Venue Suceava, Romania Organising body Federatia Aeronautica Romaniaa.

13-18th September
RADIO CONTROL HELICOPTER EUROCHAMPS
Venue Eibergou, The Netherlands
Organiser G Nijhuis
Class F3C

21-24th September
MAGNET SLOPE SOARING EUROCHAMPS
Venue Banska Bystrica, Czechoslovakia
Organising body Ustredni Modelarsky Klub CSSR
Class F1E

Open International Events

(Generally non-R/C only listed here)

26th April - 1st May
WASSIL DEMIREVSKY - JULIU CUP
Venue Stanke Dimitov, Bulgaria
Organising body Ikar Aeromodelling Club, 2600 Stanke Dimitrov, POB 50, Bulgaria
Class S3A, S6A, S4B, S7, S8R

30th April - 1st May
CUPR OF LORRAINE
Venue Marville, France
Organiser Jean-Paul Perret, 22 Rue de Mousson, Atton, 54700 Pont à Mousson, France
Classes F2A, F2B, F2C

7 - 9th May
CONTROL LINE INTERNATIONAL
Venue Hradec Kralove, Czechoslovakia
Organising body Ustredni Modelarsky Klub CSSR, Opletelova 29, 116 31 Praha 1, Czechoslovakia
Classes F2A, F2B, F2C

12 - 15th May
14TH INTERNATIONAL MILITKY CUP
Venue Pfaffikon/ZH, Switzerland
Organiser Emil Giezendanner, Feidstr 25B, 8330 Pfaffikon, Switzerland

12 - 15th May
1988 INTERNATIONAL FESSLFLUG CUP
Venue Kraiweisen - Salzburg, Austria
Organiser Johann Niederwimmer, Bessarabier Strasse 39, 5020 Salzburg, Austria.
Classes F2A, F2B, F2C

20 - 21st May
MEMORIAL FULOP SANDOR
Venue Domsod, Hungary
Organising body Modell Klub Budapest, PG-614, 1374 Budapest, Hungary
Classes F1A, F1B, F1C World Cup points

4 - 5th June
AKRO 88
Venue Nafels, Switzerland.
Organiser Modellfluggruppe Glarnetland, Elmer Kaspar, Lowengase, 13, 8570 Glarus, Switzerland
Class F2B

11 - 12th June
CRITERIUM MIDDEN NEDERLAND XX
Venue Utrecht, Luchtvaartvereniging De Kempharen, Eduard Verkadaalan 123, 3584 Gt Utrecht, The Netherlands
Classes F2A, F2C.

12 - 13th June
7TH INTERNATIONAL COMPETITION OF ORLEANS
Venue Orleans, France.
Organiser Jacques DELcroix 7 Rue de Foucémange, 45000 Orleans, France.
Class F1D

18 - 19th June
LORRAINE CUP
Venue Eblange, France
Organiser Jean-Paul Perret, 22 Rue de Mousson, Atton, 54700 Pont à Mousson, France
Class F2D

25 - 26th June
MIDSOMERNACHT TROPHEE
Venue Terlet (Sinhem), The Netherlands
Organiser T V Eeden, Vermerlaan 15, 3764 WB Soest, The Netherlands
Classes F1A, F1B, F1G, F1H
World Cup points

13 - 14th July
17 HERI KARGL CUP
Venue Karneralm, Sibg, Austria
Organiser UMSC-Kolibri, Ober-Grafendorf Felix Schobel, sen, 3200 Ober-Grafendorf, Austria.
Class F1E

15 - 17th July
EUROPACUP-AUSTRIA
Venue As above
Organiser As above
Class F1E

26 - 27th July
1988 SCANDANAVIAN OPEN
Venue Revinge, Sweden.
Organiser Thomas Kostier, Harlosevej 184, 3400 Hillerød, Denmark
Classes F1A, F1B, F1C World Cup points.

27th July
29 SOKO CUP
Venue Mostar, Yugoslavia
Organiser Aeroklub N.H. Ljubo Bresan, Krcicas B, 7900 Mostar, Yugoslavia
Classes F1A, F1B, F1C.

30th July
12 MEMORIAL IZET KURTALIC
Venue Livno, Yugoslavia
Organiser Aeroklub Izet Kurtalic, Dure Pucara 3, 71300 Visoko, Yugoslavia
Classes F1A, F1B, F1C.

19 - 21st August
POITOU INTERNATIONAL
Venue Thouars-Noize, France
Organiser Michel Poussard, 78 Rue La Fontaine, 79100 Thouars, France.
Classes F1A, F1B, F1C, F1G, F1H, F1J.
World Cup points

26 - 28th August
VAR CUP
Venue Gyula, Hungary
Organiser Istvasn Gombocz, Pf 614, 1374 Budapest, Hungary
Classes F2A, F2C

26th - 28th August
12TH INTERNATIONAL INDOOR MEETING, FLEMALLE
Venue Fiemalle, Belgium
Organiser Fernand Van Hauweart, Grand Place 1, bte 52, 4110 Fiemalle, Belgium
Classes F1D, beginners' F1D

27 - 29th August
19TH EIFEL POKAL
Venue Zulpich, W Germany
Organiser Hans-Peter Gatzweiler, Kolnstrasse 52, 5352 Zulpich, F.R. Germany
Classes F1A, F1B, F1C. World Cup points.

3 - 4th September
1988 MBZB CUP
Venue Breitenbach, Switzerland.
Organiser Christian Gafner, Genn. Wedmüllerstr 12, 8804 Au/Wadeswil, Austria
Class F2B

3 - 4th September
INTERNATIONAL AROSER CUP
Venue Arosa, Switzerland
Organiser Peter Glur, Feldstrasse 23a, 5442 Fistsbach, Switzerland
Class F1E

16 - 18th September
2ND CARL NEUBRONNER CUP
Venue Gergzhofen, W Germany
Organiser L. Gunther Jordan, Schweinfurter Strasse 120, 8719 Schwyzach/ Main, F.R. Germany
Classes S4, S6, S8E

23 - 25th September
NOGRAD CUP
Venue Salgotarjan, Hungary
Organiser Istvan Gombocz, Modell Klub Salgotarjan, Pf. 614, 1374 Budapest, Hungary.
Class F2B

1 - 2nd October
OPEN DE VUELO CIRCULAR
Venue Mallorca, Spain.
Organiser Club de Aeromodelismo, Mallorca, C/Tomas Rullman, Num 64, 5º Basriolomé Dey a Bilton, Spain.
Classes F2A, F2C, F4B.

2nd October
EUROPA CUP
Venue Utrecht, The Netherlands
Organiser Utrechtse Luchtvaartvereniging De Kemphanen, Eduard Verkadaalan 123, 3584 Gt Utrecht, The Netherlands.
Classes F2A, F2C.

8 - 9th October
14TH CALIFORNIA FAI
Venue Taft, California, USA
Organiser: Juan A Livotto, 13212 Lake Street, Los Angeles, California 90066, USA.
Classes F1B, F1C

15th - 16th October
12TH SIERRA CUP
Venue Roger Simpson, 2625 Queenswood Drive, Ranch Cordova, California 95670, USA
Classes F1A, F1B, F1C. World Cup points.

21 - 22nd November
JIM PATTERSON FAI CHALLENGE
Venue Taft, California, USA
Organiser Bill Hartill, 7513 Sausalito Avenue, Canoga Park, California 91307, USA
Classes F1A, F1B, F1C.



And don't forget our very own...

1988 Old Warden Flying Days

Come to Old Warden Airfield, Biggleswade, Bedfordshire, on the dates below for all the best in model flying

18-19th June SCALE WEEKEND

Fun Flying informal 'best model' awards. Shuttleworth Trophy for best 'Old Warden' subject. Jack Carter Memorial Trophy for best C/L biplane. P.E. Norman Trophy for best 'Spirit of P.E. Model'. Fred Longbon Trophy for best APS scale model. Masfield Trophy for SAM 35 Vintage Rubber Scale.

10th July GOLDEN ERA DAY

Scale and Vintage - the emphasis on the style of the '20' and '30's. Period dress welcomed. Lympne-Scale '88 for F/F and the Howard Boys Memorial event - the Pterodactyl Trophy for best Unorthodox.

20-21st August VINTAGE WEEKEND

All old time enthusiasts - come to the ball! Best model awards, SAM 35 competitions including Mass Launch; and our own Vic Smeed Event! Much more too - news next month!

18th September FOUR-STRIKE DAY

Slow and easy low-noise R/C and C/L. Model Rocketry demonstration too!

BINDERS

FOR YOUR VALUABLE
COLLECTION OF
**AERO MODELLER
MAGAZINES**

• SMART • EASY TO USE
• TOP QUALITY

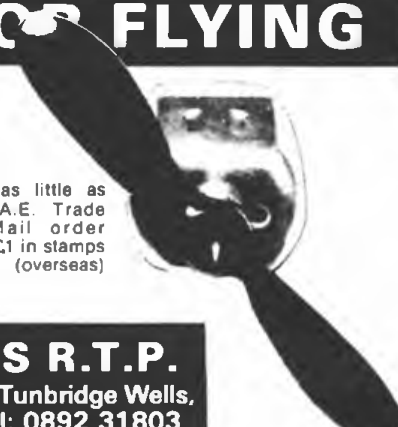
**£5.95
inc
P&P**

To ASP Readers Service, PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts HP2 4SS (0442-41221)

Please supply... Aero Modeller Binders £5.20 inc. P&P
Total £..... (Please make cheques payable to ASP Ltd.)
Years Required - 198... 198... 198... 198...

Name.....
Address.....
Please allow 21 days for delivery

INDOOR FLYING



There are no difficult noisy engines to start. No expensive fuel to buy and its quiet and pollution free. You can start for as little as £15.50. All enquiries S.A.E. Trade enquiries welcome. Mail order catalogue and guide send £1 in stamps (UK) or 5 reply coupons (overseas) inc. P&P.

BALLARD'S R.T.P.


54 Grosvenor Road, Tunbridge Wells, Kent. TN1 2AS. Tel: 0892 31803

SCOTLAND

FOR YOUR ESSENTIAL
AEROMODELLING SUPPLIES
YOUR *FIRST* REQUIREMENT
VISIT

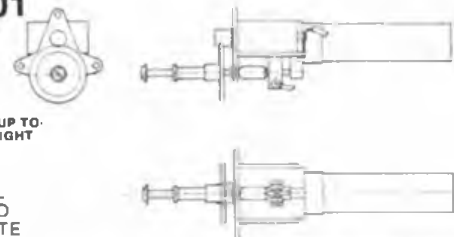
DUNN'S MODELS

3 WEST NILE STREET
GLASGOW G1 2PR
Tel: 041-221 0484



**RECHARGEABLE
ELECTRIC
FLIGHT UNIT**

KNIGHT & PRIDHAM LTD,
Castle Road, Rowlands Castle, Hampshire.
0705 412172



SUITABLE FOR MODELS UP TO -
750mm SPAN 120gm WEIGHT

WITH
2 PROPELLERS
STAINLESS STEEL
NUTS, BOLTS AND
WASHERS, REMOVE
BATTERY HOLDER,
MARKING TEMPLATE.

PRICE £19.50 PP 45p
SEALED LEAD ACID CHARGING
BATTERY READY TO USE £12.50 PP £1.35
SPEED CONTROL TRIMMER £1.50 PP 20p
SODASTREAM CO₂ ADAPTOR £16.00 PP 45p

THIS MODEL RUNS AT AN AVERAGE 15000 RPM WEIGHT WITH PROPELLER REMOVE BY TURNING HANDLE. INTERNAL SWITCH. USE ONLY INSIDE NATIONAL ELECTRICAL STANDARDS. USE ONLY WITH BATTERIES FOR SAFE COLLISION.

SUPERLINE

The **ULTIMATE** Control Line Wire
DIRECT FROM MODELEC

Superline is manufactured from the finest quality high-tensile steel giving it superior properties to all other lines. Just look at the features:-

- ★ EXTREMELY STRONG
- ★ EXCELLENT KINK RESISTANCE
- ★ BRASS PLATED FOR CORROSION PROTECTION
- ★ SIZES FROM 0.014" to 0.018" (0.35-0.45mm)
- ★ 3 AND 7 STRAND CONSTRUCTIONS
- ★ NUMEROUS CONTEST VICTORIES
- ★ 35, 500 AND 1000 METRE REELS
- ★ VERY COMPETITIVE PRICES eg £35/1000m, 3 strand.

Telephone or SAE for sizes and prices. Trade and Export Enquiries Welcome.

MODELEC 19 FELIX AVENUE, CROUCH END
LONDON N8 9TL Tel: 01-341-3171

£1,000,000

**MODELLERS
ACCIDENT
PROTECTION**

Double The Cover —
Standard (Aircraft, Boats and Cars) £5.00
Passenger (Live steam operations) £6.00

Fly, Drive, Sail or Steam under our protection with a Public Liability Insurance tailored to suit modellers needs.

— no limit on Aircraft, car or Boat scale, just an engine size limit of 40cc —
Traction engine up to 1/4 scale, locos up to 7 1/4 gauge.

Send an SAE for full details or simply fill in the form below to receive your certificate, smart plastic wallet and decals.

**NOW
COVERS
Large
Models**

To: Insurance Office, Argus Specialist Publications Ltd., P.O. Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts, HP2 4SS.

Name (in full)

Address

Please tick class of insurance required:-
 Passenger £6.00
 Standard £5.00

Please make cheques payable to ASP Ltd. AERO

If an advertisement is wrong we're here to put it right.

If you see an advertisement in the press, in print, on posters or in the cinema which you find unacceptable, write to us at the address below.

The Advertising Standards Authority. ✓
ASA Ltd, Dept 3 Brook House, Torrington Place, London WC1E 7HN



NEW HORIZONS

In the 1988 ASP Plans Service Catalogue

*MORE THAN 1500
DESIGNS LISTED*

CHOOSE FROM
SPORTS, SCALE, AEROBATIC,
GLIDERS, DUCTED-FAN,
VINTAGE, FREE FLIGHT AND
CONTROL LINE

DESIGNS BY SEAN BANNISTER,
DAVID BODDINGTON, CHRIS FOSS,
WOLFGANG MATT, HANNO PRETTNER,
PETER RUSSELL, BRIAN TAYLOR,
DAVID VAUGHAN AND MANY MORE TOP
INTERNATIONAL DESIGNERS ARE LISTED.

PLUS 12-PAGE BEN BUCKLE
VINTAGE PLAN COLLECTION
SUPPLEMENT



**AND - IT NEEDN'T COST YOU A PENNY!
PURCHASE JUST £5.00 WORTH OF PLANS
FROM ANY OF OUR CATALOGUES AND
YOU CAN DEDUCT THE FULL £1.50 PUR-
CHASE PRICE OF THE CATALOGUE FROM
YOUR ORDER.**

*Offer only applies to order made using the printed
Order Form from the Handbook and worth £5.00
and over before postage charges.*

Not forgetting our other Catalogues

No. 2: Model Boats, Live Steam and Engineering £1.50
No. 3: Scale 3-View Drawings £1.50
Woodworker: Furniture, Leisure, Music £1.50

**All with the same Purchase-Price-
Refund on first orders worth over £5.00
Why not order all 4?**

To: A.S.P. Plans Service, 9 Hall Road, Maylands Wood Estate,
Hemel Hempstead, Herts. HP2 7BH. Telephone: 0442 41221

Please send me.....copies of Plans Handbook No. 1. @ £1.50

Please send me.....copies of Plans Handbook @ £1.50

Overseas Postage: £1.00 -----> _____

U.K. Inland Postage: £0.35 -----> _____

TOTAL _____

I enclose cheque/P.O. payable to A.S.P. Ltd.

Please debit my Barclaycard/Access Account Number:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Name

Address

© Argus Specialist Publications Ltd.

ARGUS
PRESS
GROUP

9 HALL ROAD, MAYLANDS WOOD ESTATE, HEMEL HEMPSTEAD, HERTS. HP2 7BH. Tel: 0442 41221

MICHAELS

MAIL ORDER HOTLINE 445653

MAIL ORDERS WELCOME
OVERSEAS CUSTOMERS DEDUCT 13%

NEW DIESELS AVAILABLE AT PRESENT

A.M. (LIMITED STOCK)

AM 10 1.0cc D	£27.50
AM 15 1.5cc D	£27.95

DC

DC DART 5cc D	£21.99
DC MFRLIN 75cc D	£17.99
DC SPITFIRE 1.22 D	£18.50
DC SABER 1.5cc D	£19.50
DC BEE 049 G	£19.99
DC WASP 049 G	£18.50

PAW

We carry full range

80 STD	£19.55
100 STD	£19.55
149 DS3	£21.85
149 CONTEST 3	£23.00
249 CONTEST 4	£25.30
249 DS 4	£24.15
19 DS 4	£26.45
29 DS inc. SIL	£39.10
35 DC inc. SIL	£43.70
80 R/C	£24.15
100 R/C	£24.15
149 R/C inc. SIL	£28.75
249 R/C inc. SIL	£31.05
19 R/C inc. SIL	£33.25
29 R/C inc. SIL	£44.40
35 R/C inc. SIL	£46.00

PAW BALL RACED

249 DS BR	£35.65
19 DS BR	£37.95
249 R/C BR	£42.55
19 R/C BR	£44.85

IRVINE SUBJECT TO AVAILABILITY

MILLS 75D	£29.95
-----------	--------

JETEX

JX 1 MOTOR/SET/PELLET/FUEL	£9.95
JX 6 40 PELLETS	£5.60
JX 7 WICK	£2.50

ROCKETS

POSTAGE
Kits 2.45 Engines 85p
Other Items 60p

MODELS

FINCHLEY BRANCH:
646-648 HIGH ROAD,
NORTH FINCHLEY,
LONDON N12 0NL
MON-FRI 9-6
SAT 9-5.30

Mercury Matador 47 £29.95
Long Cabin 76 £41.50
Radio Queen £42.95
Southerner 60 £37.60
Privaleer 87 £59.95
Slicker Mite £14.95
Diamond Demon 48 £19.95
Golden Era
Powerhouse 84 £49.95
Scram 84 £46.45
Mini Scram 55 £23.95
Miss Tiny 45 £22.95
Mini Powerhouse £23.95

TREXLER AIR WHEELS

Size 1 (1 1/2" - 1 3/8")	£3.95
Size 2 (1 1/2" - 1 3/4")	£3.95
Size 3 (1 3/4" - 1 7/8")	£4.65
Size 4 (2" - 2 1/8")	£4.65
Size 5 (2 1/4" - 2 3/8")	£5.75
Size 6 (2 1/2" - 2 3/4")	£5.75
Size 8 (2 3/4" - 3")	£9.50
Size 9 (3")	£10.95
Size 10 (3 1/2")	£12.50
Size 11 (4")	£13.95
Pump	£6.95

Size 1-6 suitable for free flight only.

L/L ITEMS

SULLIVAN

Line Connectors small	99p
Line Connectors large	99p
Handle JS1	£4.25
Handle JS1	£4.25
4 Spools	£1.10

Laystrate

100ft HW	£2.85
100ft LW	£2.60

Superline

35mts HW	£2.35
35mts LW	£2.35

OS K6 (Spark £164.95)
in stock now.

WE BUY/SELL VINTAGE ENGINES

Mercury Matador 47 £29.95
Southerner Mite 32 £14.95
Slicker Mite 32 £14.95
Diamond Demon 48 £19.95
Southerner 60 £37.50

R/C or F/C

Mercury Matador 47 £29.95
Southerner Mite 32 £14.95
Slicker Mite 32 £14.95
Diamond Demon 48 £19.95
Southerner 60 £37.50

VINTAGE MODELS

Ben Buckle

Junior 60 63	£39.95
Buccaneer Sid 66	£39.95
Trenton Terror 72	£38.50
Flying Quaker 88	£54.95
Playboy Snr. 88	£39.95
Quaker Flash 67	£35.60
Majestic Major 88	£64.50
Red Zephyr 72	£43.50
Fokker D8 57	£42.95
Super 60 63	£42.95
Super Scorpion 66	£43.50
Hepcal 48	£19.95
Lanzo Record Breakers 96	£65.25
Falcon 96	£94.50

THE NEW P.A.W. ENGINES

HIGH PERFORMANCE DIESEL ENGINES



35 R/C A/C
35 DS 7th in European Championships 1988

HIGH PERFORMANCE DIESEL ENGINES

P.A.W. 80	£19.55
P.A.W. 100	£19.55
P.A.W. 149 DS-3	£21.85
P.A.W. 149 CONTEST-3	£23.00
P.A.W. 249 DS-4	£24.15
P.A.W. 249 CONTEST-4	£25.30
P.A.W. 19 DS-4	£26.45
P.A.W. 29 DS (FITTED WITH SILENCER)	£39.10
P.A.W. 35 DS (FITTED WITH SILENCER)	£43.70

R/C AIR COOLED DIESEL ENGINES

P.A.W. 80 R/C A/C	£24.15
P.A.W. 100 R/C A/C	£24.15
P.A.W. 149 R/C A/C (FITTED WITH SILENCER)	£28.75
P.A.W. 249 R/C A/C (FITTED WITH SILENCER)	£31.05
P.A.W. 19 R/C A/C (FITTED WITH SILENCER)	£33.35
P.A.W. 29 R/C A/C (FITTED WITH SILENCER)	£41.40
P.A.W. 35 R/C A/C (FITTED WITH SILENCER)	£46.00

***NEW* BALL BEARING CRANKSHAFT DIESEL ENGINES**

P.A.W. 249 DS-BR	£35.65
P.A.W. 19 DS-BR	£37.95
P.A.W. 249 R/C A/C-BR (FITTED WITH SILENCER)	£42.55
P.A.W. 19 R/C A/C-BR (FITTED WITH SILENCER)	£44.85

TWO MONTHS GUARANTEE
OBTAINABLE FROM MODEL SHOPS — OR WRITE TO:

PROGRESS AERO WORKS
PARK MILL, HOBSON STREET, MACCLESFIELD SK11 8BE
TEL: 0625 23891

ALWAYS THE CENTRE OF ATTENTION...

AERO MODELLER



Issue

Specialist Publications Ltd.

Argus

made payable to

with the

from my Access/Barrleycard No.

to

from Mrs/Miss

NAME (Mr/Mrs/Miss)

ADDRESS

Postcode

Signature

Date

Send your remittance to:

INFONET LTD.,
5 River Park Estate,
Berkhamsted,
Herts. HP4 1HT

Subscriptions begin my subscription(s) to AEROMODELLER with the

I enclose my cheque/postal order for £

or debit £

valid from

SubSCRIPTION RATES

£22.20 12 issues UK
£27.00 12 issues Europe
£27.20 12 issues Middle East
£29.00 12 issues Far East
£27.50 12 issues Rest of World

VISA

JPEG 1058x1495 24bit This document is freely available for personal use at https://www.hippocketaeronautics.com/hpa_plans/ since March 25 2024

CLASSIFIED advertisements



We accept
Access/Barclaycard



Private and trade rate 50p per word. VAT inclusive. minimum £7.50 Display box rate £8.85 per single column centimetre (minimum size 2.5cm). All advertisements are inserted in the first available issue, unless specified otherwise.

Write your advert in **BLOCK CAPITALS** indicating the section you wish it to appear under. **INCLUDING YOUR NAME AND ADDRESS** and send to: **AEROMODELLER, CLASSIFIED ADVERTISEMENT DEPARTMENT, ARGUS SPECIALIST PUBLICATIONS LTD., 1 GOLDEN SQUARE, LONDON W1R 3AB. Tel: 01-437 0699.**

FOR SALE

GLIDING HOLIDAYS

THE PEATOL LATHE



£120 including 3 or 4 jaw chuck. Milling attachment and other accessories available. Centre height 2 1/2". Distance between centres 5".
Please send SAE for full details.
Peatol Machine Tools, A.M. 19 Knightlow Road, Harborne, Birmingham B17 9PS. Price inc. VAT

MODEL ENGINEERS 3 1/2" lathe, backgeared, screw cutting, change wheels, 240 volt electrics, 2 chucks, faceplate, cutting tools £375. Delivery arranged if required. Tel: Cranleigh (0483) 274464.

ESTES ROCKETS, SIG C/L and flyline kits in stock SAE to Pegasus Models, Caston, Attleborough, Norfolk NR17 1DGA.

FRANKENSTEIN PLUS TEN-A 10%

Increase in a classic design of the 50's
57" Span, 05 - 25 motors
1-3 Funct. R/C or F/F. Precut components
Detailed plans & instructions
£27.50
P&P £1.50
Plan only £2.65 post paid.
049 powered F/F rotort wing flying machine - Pre-cut components
Detailed instructions
£4.85
P&P £1.50
B.E. PARK MODELS
10, Norman Road,
Percyman, Northfields,
Tyne & Wear Phone 091-2570753. NE29 7AJ

VINTAGE and collectable model engines. Call in to Godalming RC Models, 3, & 3A Bridge Street, Godalming. Shop hours 10.30am - 5.30pm Mon - Sat. The Shop with the stock.

FREE FLIGHT SUPPLIES

NOW IN STOCK - CHINESE RUBBER in 2 x 1mm & 4 x 1mm size 1lb boxes. **£15 post free.**

SAE for full list of stock from:

Michael J. Woodhouse,
12 Marston Lane, Eaton,
Norwich. NR4 6LZ.
Tel: Norwich 57754 evenings.

TO ADVERTISE
01-437 0626

WANTED

SCALE AIRCRAFT wanted. Top prices for good Scale Model Bi-Planes or other earl aircraft. G. Gower. Tel (0666) 822332 (Daytime) 0225 833049 (Evn) Or write to Brillscote Lea Malmesbury Wilkshire.

BOOKS & PUBLICATIONS

AMERICAN AERO-MODELLING MAGS

R/C Modeller prices inc postage **£3.30**
M A N **£2.80**
Flying Models **£2.35**
Scale R/C Modeller **£2.90**
Model Builder **£3.00**

Current — and some back issues available

THE AVIATION BOOKSHOP
656 Holloway Road, London N19 3PD

Now you've built a model

Why not build a full size aeroplane? Join the Popular Amateur Aircraft industry with the **Popular Flying Association** and learn how to build your own flying machine. Send 75p for information pack.

POPULAR FLYING ASSOCIATION
Terminal Building, Shoreham Airport,
Shoreham by Sea, Sussex, England
Tel Shoreham by Sea 61616

TRY IT FOR REAL

Take your holiday gliding course with the **YORKSHIRE GLIDING CLUB**. Fully residential Clubhouse with Licensed bar, full-time professional instructors. Three tugs. Winch. Glasfibre K21 two-seaters. Falke motor glider. Hill, thermal wave soaring. Courses April to October.

For details contact
The Secretary, Yorkshire Gliding Club,
Sutton Bank, Thirsk, Yorks.
Tel: Thirsk (0845) 597237

GLIDING HOLIDAYS

SLOPE SOARING - TRY YOURSELF!
Five-day holiday course for beginners and early solo pilots. May to September. Beautiful Peak District. Tuition and full board £195 - £215 incl. No hidden extras.

Apply:
Course Secretary (AM) Derby & Lancs.
Gliding Club, 118 Chorley Road,
Sheffield S10 3RL.
Tel: 0742 301831 (7pm - 10pm)

SERVICES

COX, E.D., P.A.W. Motors. Spares and service. John D. Haytree. The Haven, Rixey Park, Chudleigh, Devon. TQ13 0AN. Tel (0626) 852330 Access. Visa

REBORE SERVICE. Give that worn vintage engine a new lease of life with a Rebore parts made pattern. Rebuilds undertaken. Ring or write for quotation 0652 57754. John Codd, 3 Burnside, Broughton, Nr Brigg, South Humberside. DN20 0HT.

NEXT COPY DEADLINE FOR AUGUST ISSUE IS 7th JUNE.

AWAT GLIDING HOLIDAYS FOR BEGINNERS

Our gliding centre at Connel Airfield, near Oban, offers professional tuition for beginners in spectacular Scottish west coast scenery. Superb holiday area for non-flying friends and family.

1 Day Course £35 5 Day Course from £180 Accommodation Inclusive from £230
Contact A.M. Shelton

For information and free brochure write **ARGYLL AND WEST HIGHLAND GLIDING CENTRE** WOODMARSH KINNESSWOOD KINROSS KY13 7HX or phone 059284 288



FLY THE SKIES OF KENT KENT GLIDING CLUB

Challock, Nr. Ashford, Kent
Take to the air! — Come Gliding
March—October

4 or 5 day holiday courses

(All inclusive of professional instruction, accommodation, meals and VAT)

£190 - £240

Challock (023 374) 274 or 307



WANTED

IDEAS, INVENTIONS Wanted. Call ISC 01 434 1272 or write: Dept (ASP) 99 Regent St. London W1.

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

WANTED - Mabuchi A-1 motors and chargers. Good price paid. Tel. (0728) 830895.

AEROMODELLER

WILL BE PLEASED TO ACCEPT YOUR



TELEPHONE BOOKINGS.

CLASSIFIED COUPON

AERO MODELLER, CLASSIFIED ADVERTISEMENT DEPT., NO 1 GOLDEN SQUARE, LONDON W1R 3AB
PLEASE DEBIT MY ACCESS/BARCLAYCARD NO.



FOR SALE WANTED GENERAL CLUBS BOOKS/PUBLICATIONS OTHER (Please state)

IF YOU DO NOT WISH TO CUT YOUR MAGAZINE, PHOTOCOPY THIS FORM

AIRCRAFT ARCHIVE

'Aircraft Archive' brings together in a thematic and organised manner, selections of 3-view 1/72nd scale aircraft designs, many of which are hailed as masterpieces of the draughtsman's art. Each book covers a number of aircraft of a particular period or type and, although emphasis is firmly on the drawings and detailed aspects of these drawings, each aircraft section includes information on technical data and numerous black and white photographs.

The 'Aircraft Archive' library is an indispensable source of reference for aviation enthusiasts and for all interested in the construction, development and history of aircraft worldwide.

2 NEW
VOLUMES
FOR MAY

POST WAR JETS
VOLUME 1
FEBRUARY 1988 PUBLICATION
PRICE £5.95
96 PAGES
ISBN 0 85242 940 1



Contents include:-
De Havilland Venom F8 Mks 1 and 4, Lockheed F-94C Starfire, Avro CF-100 Canada Mk4, Republic F-84F Thunderstreak, Boulton Paul P 111A, North American F-100D Super Sabre, Saab A32A Lanser, Nord 1500 Griffon II, English Electric Canberra B(1) Mk8, Fiat G91, Lockheed CF-104 and F104G Starfighter, Saab J35A, Sk35C and J35F Draken, Sukhoi Su 7B 'Fitter A', Macchi MB326, Northrop N-156F (F-5A prototype), Handley Page Victor Mk2, Dassault Mirage IIIC, BAC Lightning F Mk 6, Hawker Siddeley Harrier GR Mk1 and T Mk2, SEPECAT Jaguar A S E B and M, Grumman F-14A Tomcat, Panavia Tornado GR Mk1.

FIGHTERS OF WORLD WAR 2
VOLUME 1
FEBRUARY 1988 PUBLICATION
PRICE £5.95
96 PAGES
ISBN 0 85242 939 8



Contents include:-
Gloster Gladiator Mk1, Supermarine Spitfire Mk1, Messerschmitt Bf 109E-4, Mitsubishi A6M5 Zero-Sen, Boulton Paul Defiant Mks 1 and 11, Curtiss Kittyhawk Mks 1, 111 and 1V, Messerschmitt Bf 110C-4, C-5, F and G, Hawker Typhoon Mk1, Republic P-47B on D Thunderbolt, Supermarine Spitfire Mks IX and XVI, De Havilland Mosquito Mks 11, 1V and V1, Grumman F6F-3, -5 and -5P Hellcat, Bristol Beaufighther Mks 1, 11, V1 and X, Lavochkin La-5FN and La-7, Supermarine Spitfire Mks X11, X1V, XV111 and X1X, Dornier Do 335.

POST WAR JETS
VOLUME 2
MAY 1988 PUBLICATION
PRICE £5.95
96 PAGES
ISBN 0 85242 944 4



Contents include:-
Chance Vought F7U-3 Cutlass, DeHavilland DH 110, North American F-86 Sabre, Hawker Hunter F Mk 5, DeHavilland Sea Venom F (AW) Mks 20 & 21, Dassault Mystere 1VA, B & N, Miles Sparrowjet, Leduc 021, Hunting Percival Jet Provost T Mk2, Gloster Javelin F (AW) Mk1, Convair F-102A Delta Dagger, Grumman F9F-8 Cougar, Fairey FD 2, Sud-Est SE 5003 Barodeur, Chance Vought F8U-1 and -3 Crusader, Republic F-105B Thunderchief, Hawker Siddeley Buccaneer S Mk2, Chance Vought Corsair A7E, McDonell F-4 K & M Phantom, General Dynamics F-111E, British Aerospace Sea Harrier FRS Mk1, British Aerospace EAP.

FIGHTERS OF WORLD WAR 2
VOLUME 2
MAY 1988 PUBLICATION
PRICE £5.95
96 PAGES
ISBN 0 85242 945 2



Contents include:-
Hawker Hurricane Mk1, Fiat CR42, Fokker D23, Messerschmitt Me 109F, Fairey Fulmar, Macchi C202 Folgore, Douglas A-20 Boston/Havoc, Yakovlev Yak 9, North American P-51B, C & D Mustang, Messerschmitt Me 410A, Chance-Vought F4U-1 Corsair, Messerschmitt Me 163B-1A, Hawker Tempest Mks 1-V1, Northrop P-61A Black Widow, Messerschmitt Me 262, Supermarine Spitfire Mks 21 & 22, Heinkel He 162, Hawker Sea Fury FB11 & T20.

ARGUS BOOKS

HOW TO ORDER BY POST

- 04092 POST WAR JETS VOL 1 £5.95
 04089 FIGHTERS OF WORLD WAR 2 VOL 1 £5.95
 04091 POST WAR JETS VOL 2 £5.95
 04090 FIGHTERS OF WORLD WAR 2 VOL 2 £5.95

I enclose my remittance of £
Please add 10% part postage and packing

Please charge my access/mastercard/barclay/visa

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

BY PHONE

TELEPHONE (0442) 41221
Quote access/mastercard/barclaycard/visa
Allow up to 28 days for delivery

Signature _____

Name _____

Address _____

AE0688

Complete details and return form to
Argus Books Ltd, P O Box 901, Sudbury, Suffolk CO10 6FR

THE BRISTOL & SOUTH WEST

Model Engineer and Hobby Exhibition

**JUNE 10th 11th 12th
BRISTOL EXHIBITION CENTRE
OPEN 10.00am - 6.00pm**

**ADULTS £2.50
O.A.P £2.00
CHILDREN £1.50**

Run in association with
the Bristol Society
of Model and
Experimental
Engineers.



**COMPETITION
ENTRY FORMS
AVAILABLE
NOW!**

Organised by: Argus Specialist Exhibitions

Appendix - Links to the Plans

The original issue comes with a free plan (XANADU) printed front/back on a pull out banner of four sheets. The banner is not included in this document.

XANADU X-Wing by Kevin Wallace

FF Power

[https://outerzone.co.uk/plan_details.asp?ID=8775 ...](https://outerzone.co.uk/plan_details.asp?ID=8775)

[Document Page: 26](#)

**A GREAT
Build X-Wing
Xanadu for
free-flight
excitement**

JOIN THE FOLD
A modern
approach to
paper planes

PLEASE SIR...
School club fun

RACE AGAINST TIME!
Our go-ahead guide to Vintage Team Racing

ARGUS SPECIALIST PUBLICATIONS