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MODELLER

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F/F Nationals Report

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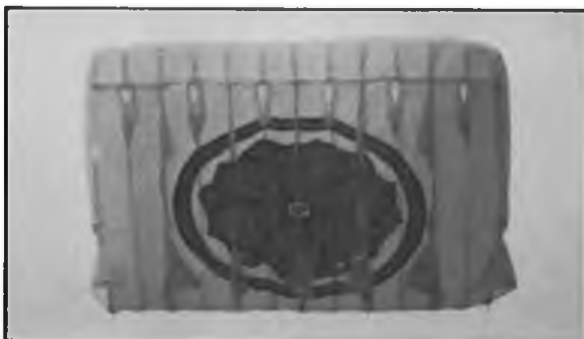
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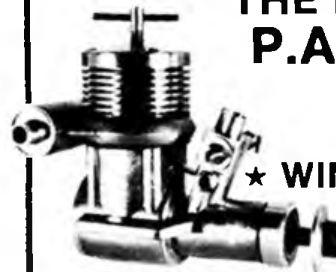
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Tel: 0625-23891

AUGUST 1986

Volume 51
Issue 607

ISSN 0001-9232

AERO MODELLER



p.446



p.490

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Cover

There's really nothing slow about them, but their relative lack of complexity makes the Slow Open Power Class an attractive way into competition F/F. Pete Harris, 1986 Nationals Power Champion, prepares to launch his Super Tigre powered model. Pete's article on trimming these craft starts on p.459. The Nationals report begins on p.446.

Other: ASP Model Titles:

Clocks - Military Modelling - Model Boats - Model Cars - Model Engineer - Radio Control Models & Electronics - Radio Control Boat Modeller - Radio Modeller - Scale Models International - Your Model Railway - R/C Scale Aircraft Quarterly - Sea Classic International



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Advertisement Offices: Argus Specialist Publications Ltd., Golden Square London W1R 3AB. Tel: 01-437-0626.

Postmaster: Send address changes to Argus Specialist Publications Ltd., P.O. Box 35 Wolsey House, Hemel Hempstead Herts HP2 4SS England.

Subscriptions: Direct subscription rate including index. Home £25.10. Overseas sterling £29.00. Overseas dollars (U.S. or equivalent) \$38.50 from Infonet Ltd., Times House, 179 The Marlowes, Hemel Hempstead, Herts. HP1 1BB. Tel: (0442) 48434.

Overseas Availability: Second class postage paid in the U.S. at New York, USA. Mailing Agent and distribution to news stand sales by Eastern News Distributors Inc., 111 Eighth Avenue, New York NY 10111 U.S.A. Tel: 1(212) 255 5620. Distribution to North American hobby and craft stores museums and bookshops by Bill Dean Books Ltd., 166-41, Powells Cove Blvd. Post Office Box 69 Whitestone BY 11357 USA Tel: 1(212) 767-6632. USA Subscription agent Joseph J. Dailedu, 4314 West 238th Street, Torrence, CA 90505.

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Argus Specialist Publications Ltd.

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

HANGAR DOORS

Nats Natterings

Another F/F Nats is over, and one can reflect... It was no place for the faint-hearted; unkind is not the word to describe the fierce wind; though in part recompense there was sunshine at times – and mercifully, no rain. Looking at the younger model fliers there (each of whom deserved a medal) it was noted that although most were seasoned performers, as you would expect, quite a few who had been tempted by the DPR Models comps had later taken their chuckies along to Jeff Anderson's Junior Kit Contest. A fine 'have a go' spirit. Maybe there's a message there.

Do clubs with a Junior policy feel that their efforts are worth it? How reasonable is it to run comps for a handful of entries (not to decry efforts in this field); or should all the energy be devoted to a major 'public' event in London or Birmingham, say, the experiment not be repeated if it turns out a dreadful flop? This was one suggestion we heard at Barkston. And what are you doing to help the youngster? Why not let us know...

Tigers away...

July 23rd saw the start of a bold adventure led by two ex Aeromodeller staff from the Eaton Bray days. Maurice Brett and George Cull led a team of ten from the Stevenage Flying Club who will follow the Oregon Trail made by the pioneer settlers of western U.S.A. They will fly G-AOIR, their pristine Jackaroo, and G-APAL which has now returned to its original Tiger Moth shape (having been a Jackaroo), over a 7,500 mile course which traverses North America. Starting point is Canandaigua close to Hammondsport where 150 years back, the Whitman family set out for the golden acres of the West. The trail reaches through Independence, Kansas and up over the plains to the Rockies where the final destination is Walla-Walla, Washington. The Tigers are then scheduled to be on show at the celebrations in Vancouver, B.C. before making a return journey to the east coast for shipment home.

Canadian Club Whisky are sponsoring the adventure which involves over 50 landing points and enthusiastic members of the D.H. Moth Club in the U.S. and

This is what happens when you line up a bunch of young enthusiasts in front of a hangar at the Nats and get them to call out 'Chuckie' Old boy in the middle is Dave Rawlins of DPR Models, responsible for much solid work in the encouragement of Junior fliers.



Canada. The project is truly international with Maurice's son having special leave from his job as Chief Engineer with the Hong Kong Flying Club, to be part of the team as the certified inspector. The Tiger 'PAL' is already a winner of prizes for being best vintage aircraft at air shows in the U.K. and should make a stunning sight with its yellow trainer finish as it escorts the fattened Jackaroo which regularly graces the open blister hangar at Old Warden. A video record is being made of the flight which will sustain 500' a.g.l. for the greater part of the route in order to photograph the wagon trails which are still to be seen in the grasslands of the West.

...and how does your Tiger fly?

Despite occasional epic voyages such as that described above, a Tiger's life today is that of a pampered classic. Wouldn't you like to know what was expected of it in the days when all it could look forward to was the slog of educating the novice pilot? Now you can, for Air Data Publications have just published 'Pilot's Notes for Tiger Moth Aircraft'. Ron Moulton read the review copy, and comments:

It seems incredible that Ivor Stretch's long list of reprints from official publications for Pilot's Operating Notes of World War II aircraft should have waited so long for the Tiger Moth to be included, particularly as the dear old Tiger is still very much alive and being flown in many instances by a third generation – all without the blessing of official operational notes. Hence the frequent resurgence of debate as to why those anti-spin strakes were fitted and the conflicting views on the use of the automatic slats. That aside, Air Data Publications found it quite difficult to acquire Tiger Moth publications

and went eventually to Australia. Supplemented by extra cockpit photos and the sketch page from Aeromodeller plus Tony Barnes' cut-away from Scale Models, the new publication will also be extremely helpful to modellers of this favourite biplane, particularly when used in conjunction with Plan Pack 2681, which is the most definitive scale drawing of all.

The price of this attractive little volume is £1.60.

Fabulous flapper flies!

Hot news from California – Paul McCready's Pterodactyl, as big as a Cessna 172 and of true high-tech construction, has passed all flight tests and has been captured on film for viewing at the Smithsonian Institute. This is super-scale modelling with a difference; Martyn Cowley tells us that the bird's fur, eyes, beak and claws are all faithfully reproduced, and the wings, covered in latex skin, actually flap thanks to internal electric drive. Guidance of the creature is with the aid of stabilising sensors. Two years in

the making, this is another triumph for the McCready team. More news soon...

A day – or two – at the racecourse

Down in the South of England on August 16th and 17th? Then why not make a point of calling in at Dave Bishop's Model Show at Plumpton Racecourse, near Lewes in Sussex. Mr 'D.B. Sound' offers a wide variety of entertainments, notably the now-famous Dutch R/C jets, which alone are worth the visit; and the aim is to provide something for everyone. Micro-lights, helicopter rides, traction engines and more besides is promised. Younger aeromodellers should note that DPR Models (yes, them again!) are running a Junior Competition. If it all gets too much for Dad, various forms of refreshment will be to hand. Camping facilities await; watch for the advert, or call Dave on 0959 775500 for all the gen. Note: pre-entry is required for all R/C models. Go along and join in the fun!

Invaluable if you want to find out how a Tiger flies – Pilot's Notes for Tiger Moth Aircraft will tell you all you want to know. Start working out the scale airspeed and angle of bank, you R/C scale modellers! See review in text.



S.M.A.E. membership soars

The SMAE membership reached 16,291 by mid-May, which is a 19% increase compared with the same time last year. Equally encouraging is the increase in Junior members; they now number over 10% of the total membership. With current membership having almost reached the 1985 total, and with a third of the year still left, it looks as if the Society's 18,000 target will be comfortably reached.

347 clubs have already affiliated 100%, compared with 328 for the whole of last year, so clubs, too, are realising it makes sense for model flyers to all pull together through the SMAE.

In case you or your club has not got around to joining the one national body run by model flyers for model flyers whatever their interest, Margaret Orton, the Society's membership secretary, is always glad to hear from new members. Write to her at SMAE, Kimberley House, Vaughan Way, Leicester LE1 4SE.

Sign of the times

Continuing with SMAE news, we hear from the Society of potential restrictions to flying activities on RAF bases as a direct result of the uncertain times in which we live. Basically, the news from the Ministry of Defence is that whenever a security alert of Bikini Amber or

higher has been declared, all model flying activities must cease *even when the event is actually taking place*. This applies, obviously, to Cranwell and Barkston Heath for the upcoming Nationals but should be regarded as a general situation on all M.O.D. properties where model flying activities are planned this season.

SMAE Photo-contest

As part of their promotion drive this year, the SMAE is looking for good colour transparencies or prints of model flyers and their aircraft, the accent being very much on *action!* The best shots you send in will be used on the SMAE's information stand at displays

and exhibitions all over Britain and in the Society's publicity material which is used to increase public understanding of model flying.

What do you get out of it? Well, for the winner there is a 20 x 30 in. colour enlargement of his photograph and a year's membership to the SMAE for the senders of the other pictures that are used. All the photographs will be returned but you must remember to enclose a return address label with your entry. Send them to: Photo Contest, SMAE at the Kimberley House address and entries should arrive no later than September 30th. Martin Dilley has more details if you wish to phone 01 777 5533.

What's on...

20th July
WHARFEDALE CLASS A COMBAT
Venue: Dewsbury. Contact: Jeff Smith Tel: 0532 663432

20th July
SHUTTLEWORTH MODEL GROUP FLY FOR FUN OPEN DAY. Venue: Old Warden Aerodrome Biggleswade, Beds SG18. Gates open at 9:00 am. Contact: M.S.F. Staples 11, Whitehill Road, Cambridge CB5 8LT.

20th July
BLACKPOOL AND FYLDE RCMS R/C SCALE FLY-IN
Low-key competition. All scale models welcome. Venue: Club site, next to Blackpool Zoo (bring the family!). Contact: Chris Bromley. Tel: Blackpool 25080

27th July
F.A.C.C.T. BARCS LEAGUE
Comp: R/C Thermal Soaring. Venue: RAF Weston-on-the-Green. Contact: N.G. Webb, The Bungalow, 13 East Street, Fritwell, Oxon OX8 9PX. Pre-entry £2.00 plus s.a.e. plus frequency details.

27th July
ABERYSTWYTH FLY FOR FUN EVENT
Venue: Plas Crog playing field. For full details contact: R.J. Edwards. Tel: 0654 2882.

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

27 July
OXFORD MFC DREAMING SPIRES F/F SCALE - SILENT VINTAGE GALA
Comps: Open Rubber (15in span plus), CO₂, Power/Electric (max 1.5cc), Twin Rubber Scale and also Mass Launch. Vintage: Wakefield (Pre 51), Lightweight, Folding Prop, Lightweight Freewheel and Glider. Venue: Port Meadow, Oxford. Contact: C. Newman. Tel: 086 77 3020. Note: Absolutely no diesel/glow powered models permitted - other than those entered in the F/F Scale event.

10th August
SMAE INDOOR FLY-IN AND TEAM PRACTICE
Venue: Cardington. Contact: SMAE Indoor Tech Committee, via 0533 58500.

10th August
THREE KINGS CARRIER DAY
Scale and profile. Silencers essential. Contact: Derek Bird. Tel: 01-874 6394.

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

16-17th August
SCOTTISH FREE FLIGHT NATIONALS. Classes: FA1, Open Mini and Vintage. Venue: Newbigging, Nr Carnwath. Contact: Ron Sabey. Tel: 0698 429170.

16-17th August
ASP VINTAGE WEEKEND
Venue: Old Warden Airfield, Biggleswade, Beds. Vintage fliers - miss this at your peril! Contact: 0442 41221.

23-25th August
1986 SMAE NATIONAL R/C AND C/L NATIONALS
Venue: RAF Barkston Heath. Contact: SMAE, Kimberley House, Vaughan Way, Leicester LE1 4SE.

24-25th August
NORTH LAKES RADIO CONTROL SOARING ASSOCIATION SOAR-IN
Venue: Club site. Meeting place: Castle Inn car park, 8 miles north of Keswick on the A591. Insurance cover needed. Contact: D.S. Atkinson. Tel: Kirkbride 51822.

24th-28th August
INDOOR WORLD CHAMPIONSHIPS
Venue: Cardington. Contact: SMAE Indoor Tech Committee, via 0533 58500.

30th and 31st August
INDOOR EVENTS FOR OPEN INTERNATIONAL AFTER WORLD CHAMPS
Venue: Cardington. Comps: EZB, Peanut Duration; Manhattan 4gm and 6gm; CO₂ Duration; Novice Pennyplane. No wire bracing of flying surfaces permitted in EZB. Also Houlberg Trophy for EZB (SMAE contest); and a Scale contest. All above comps on 30th August. The following on 31st August: F1D, 35cm and Open Microfilm; F1D for Aeromodeller Trophy (SMAE contest). Contact: SMAE Indoor Tech Committee via 0533 58500.

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

7th September
MEON VALLEY SOARING ASSOC. OPEN EVENTS. CROSS COUNTRY.
Venue: Butser Hill, Petersfield, Hants. Contact: Ken Sapsad. Tel: 0705 453688. Entry fees: £2.00 non-members, £1.00 members. Frequencies: 35 Mhz, even numbers only. Two sets of crystals.

September 7th
SHUTTLEWORTH MODEL GROUP SILENT DAY at Old Warden Aerodrome, Biggleswade, Beds. All welcome but no I.C. engines to be run. Contact: M.S.F. Staples, 11, Whitehill -Road, Cambridge CB5 8LT.

14th September
"TOWNER TROPHY" R/C Thermal Soaring. Golden Cross, East Sussex. Details S.A.E. to N. Couling, 7 The Green Walk, Willingdon, Eastbourne, East Sussex.

14th September
C/L AEROBATICS, OPEN AND NOVICE
Includes the Doug Blake Trophy. Venue: Slip End, Luton. Contact: Glen Allison. Tel: 0823 772675.

14th September
ASP FOUR STROKE FLY-IN
Venue: Old Warden Airfield, Biggleswade, Beds. Contact: 0442 41221.

14th September
SMAE NORTHERN GALA
Venue: Driffield (N.B. venue change from Lindholme) for F/F events. C/L events at RAF Dishforth. Contact: R. Hoff. Tel: 0742 732582.

14th September
ST ALBANS MAC VINTAGE FLY-FOR-FUN DAY
R/C or small free-flight. Venue: new club site at Bulls Mill on the A602 out of Hertford, 10am-6pm. Contact: Steve Payne. Tel: St Albans 34267

21st September
WHARFEDALE 1000 CLASS B T/R
Venue: RAF Dishforth. Contact: Jeff Smith. Tel: 0532 663432.

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

21 September
SHEFFIELD JUNIOR 60 AND FLYING FIFTEEN COMP
Flying Fifteen to SAM 35 rules. Any radio and engine may be used in Junior 60 comp. Venue: One mile from entrance to Rother Valley Country Park on A618. 10am start. SAM or SMAE insurance required. Contact: Dave Hanson. Tel: 0742 740316

21st September
THREE KINGS SCALE DAY
C/L scale and Profile. Silencers essential. Venue: Old Croydon Aerodrome. Contact: Derek Bird. Tel: 01 874 6394.

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

28th September
1986 LYMPNE TRIALS
Scale Rubber and CO₂ models of Lymphne Trials craft as described in Aeroplane Monthly. Miami rules plus precision. Venue: Watford Leisure Centre, 10am start. Contact: Butch Hadland. Tel: Windsor 855359 (W), 0628 72402(H). Event sponsored by SAMS.

28th September
ST ALBANS MAC ELECTRIC FLIGHT FLY-IN
Venue: new club site at Bulls Mill on the A602 out of Hertford. Contact: Albert Botterill. Tel: St Albans 59789.

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

5th October
EASTBOURNE CLUB VINTAGE DAY (R/C only). Golden Cross, East Sussex. Details from S. Coombe, 7 Petworth Place, Hampden Park, Eastbourne, East Sussex

5th October
SOUTH BIRMINGHAM VINTAGE C/L RALLY
General flying for all SAM 35 and SMAE members. Fun comps to SAM 35 rules. Presented by South Birmingham MFC, SAM 35 and University of Birmingham Model Engineering Society. Venue: Rubery Hill Hospital, near Birmingham. Contact: Peter Martin. Tel: 021 444 7964.

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

19th October
FAI RALLY
Venue: Driffield for F/F, RAF Dishforth for C/L. Contact: D. Davitt. Tel: 0532 675433

16th November
FALCONS GALA
Venue: Driffield. Contact: R. Peers. Tel: 0270 80893.

1st-8th January 1986
1986 MODEL ENGINEER EXHIBITION
Venue: Wembley Conference Centre. It's not too soon to start thinking about entering a model for one of the competition classes at the M.E. Exhibition. Let's see plenty of flying model aircraft - scale and non-scale - to augment all the other representatives of the modellers' craft. Watch for announcements in Aero-modeller...

THE FREE-FLIGHT NATIONALS

**RAF BARKSTON HEATH,
24th-26th May 1986**
Report by Geoff Clarke and John
O'Donnell with much extra
photography by June O'Donnell



THE LAND YACHT RACING CHAMPIONSHIPS weren't held at Barkston Heath over the Whitsun break. They should have been. Instead, it was the model fliers who had to make the best of a wind that reached an estimated 40mph at times - and which was accompanied by more than enough turbulence to make things interesting, thanks to the upwind trees. It was a weekend for tried and tested models, many of which performed impressively, to the delight (and, one suspects, occasional surprise) of their owners. In such conditions a max guaranteed a good walk or cycle ride, with models travelling way beyond the airfield to end up in a line stretched right across country. Even a prudently early D/T might well fail to safeguard the model, for many were the scrapes, grazes and worse as craft were blown along the runway, into obstructions, and so on. Plenty of new models, prepared for the season but still untrimmed thanks to 1986's oh-so-kind weather so far, remained warm and snug in their boxes. The lid was pretty well shut on the sport flier too - at least until the late evenings when the wind would drop slightly and hectic sessions took place as modellers sought to cram in as many flights as possible before (and in some cases, after) nightfall. Perhaps because of this, campsite activity seemed more subdued than usual.

But the Nats are primarily about competition flying, and it is the F/F competitor

who can be relied upon to perform in all weathers. Events this year followed the now familiar pattern of 'Mini' on the Saturday, 'Open' on Sunday and 'FAI' on Monday. In each case, prizegiving took place at close of play, with relevant Contest Directors doing their stuff in the handshaking and microphone departments. Organisations throughout seemed relatively smooth, with few moments of notebook consultation necessary, although there was some debate both as to the definition of a Junior and as Championship; and flight line changes, aimed at keeping models well clear of the missile compound, did not always go unchallenged (or un-commented upon).

Nevertheless, the SMAE F/F Technical Committee, particularly Pete Harris, who took time off from organising to compete - he ended as Power Champion - should be congratulated on their efforts, and for the seventh time running we are grateful to the Officer Commanding RAF Barkston Heath for inviting us as guests.

It was a pleasure to welcome visitors from abroad, notably Paul Lagan from Australia (ex New Zealand) who called in to compete after a trip North of the Border to take in some motorcycle sport, and Walt Ghio, erstwhile USFIB Team Member, on holiday with his wife and a model box. We're sure they enjoyed themselves...

Sunday 24th May: Mini events

First to have to brave the breeze, the Mini flier was not encouraged to join battle quickly. Even by mid-day relatively few scores had been returned. At this time a wind shift caused an alteration to the flight line in order to keep models out of the missile compound - a task in communication not helped by the fact that there was, as yet, no P.A. system.

Several who did fly early sustained damage; Stafford Screen's *MA Power* model *Too Heavy* (see June *Aeromodeller*) broke its fuselage on landing after a first-round max, going on to make only 47sec on its next flight, thus ending his chances. Russell Peers' *Mini-Pecker* showed well early on, but a dropped third flight meant that the way was open for Bob Wells and his trusty union-jack-surfaced model, its TD049, standard except for an 051 venturi moulding, driving it to just 5sec short of a full house. A fly-off was necessary for third place, with From the Handle columnist Jim Woodside victorious over Tony Chilton with a fine 3:11.

Coupe d'Hiver was won by Mike Chilton, who dropped one second on his final flight to just avoid six maxes. Look elsewhere in this issue for details of Mike's model! Ian Davitt was second, with his father Dennis two seconds behind him. Neil Auckland's fourth-place model, which he has been flying competently for some time now, is another craft soon to appear in these



Heading photo: Symbolic of this windy Nats; a line of observers concentrating hard as their target speeds towards the horizon. Left: 1/2A winner Bob Wells eyeballs his trusty Tanner. Drawing to appear next month. Below left: A happy Mick Page, HLG champ once again, with one of his fleet of chuckles. He lost a larger version in the competition. Below: John Cooper, overall Glider champion, after the A/1 fly-off. Placed 2nd.



pages. Many fell by the wayside after a promising start; Ian Kaynes' large, light model, for example, which after two maxes failed to get high after launch and was simply blown away downwind. Also unlucky was John Carter who lost his best Coupe in the woods; it D/T'd in 2:17 but wasn't down for over six minutes...

Congratulations on 'three-in-a-row' for Mick Page, HLG winner, who recorded a mixture of scores sufficient to give him a lead of 4sec over Andy Crisp. All Mick's secrets (HLG secrets, that is) will soon be revealed in these pages.

A/1 Glider required a fly-off to decide the winner, both John Cooper and Biggles club-mate C. Parry achieving a full house. There was a considerable wait in the steady, cold wind before Cooper was first away, his model 'pinging' off the line overhead to stall slightly before flying into lift at a relatively low height. Had he launched too late? Melinex tail glinting in the overcast, the craft headed downwind for a time of 1:40. Parry waited almost until the end of the fifteen-minute slot. His model veered downwind and was released low - but into excellent lift which kept the model aloft for a winning 2:16. Interestingly, Cooper mentioned that his A/1 turns to the left in cold weather and to the right when it's hot, according to the differential expansion of the balsa fuselage. His later version has a carbon fibre fus...

Another fly-off was necessary in CO₂ Duration. A dropped second flight having put Dave Hipperson firmly in third place (his last max in turn displacing Chris Strachan) it was left to Phil Ball and Steve Philpott to fight it out. Philpott was first to launch, his Telspark (one of last month's *Aeromodeller* full-size plans) at first stalling in turbulent air but seemingly riding it out well for an OOS flight of 4:26. The model actually landed over six miles away. Ball launched almost unnoticed, his craft circling gently but low, with a very long motor run; not good enough, though, for he was down in 2:13, giving Steve his fourth win in six years in this event. A fitting end to the day. Surely tomorrow would be less breezy?

Sunday 25th May: Open events

It wasn't! Furthermore, it was colder and gloomier than before - and with no let-up in wind or turbulence. The organisers bravely chose to stick with a three-minute max for all events, which earned them praise from some quarters (if not from others). Scores were slow to be returned. Russell Peers, again quick off the mark, managed 2:52 with his Woodpecker in **Open Power**, even this large model becoming difficult to see towards the end of its first flight. Julian Hopper's model was clearly buffeted on its first flight, but eventually rewarded its owner with three maxes to win - an excellent

performance, for this was only Julian's second outing of the year. He was very pleased!

Peter Williams' three maxes in **Open Glider** put him well ahead of the opposition. Glider enthusiasts were either delighted or appalled at the antics of their craft, and a connoisseur of wing-flexing could have wished for no finer day. Despite long waiting, and protection at launch, models were being flattened by the wind upon release. All credit to those who flew. No such troubles for George Blair who came down from Edinburgh to show us all how it should be done in the second year of the Falcons Trophy for **Slow Open Power**. Three straight maxes meant that he was unassailable, even by last year's winner, Pete Harris, who was slightly below par in this event, even going inverted on one launch. An encouragingly healthy mixture of models and power units were seen - Andrew Moorhouse used an AM 25; maxed out, too - and given better weather this event will surely go from strength to strength.

Vintage was won by Chris Strachan whose colourful Lanzo Stick was the only craft to max three times (the third time into a garden at Ancaster, which apparently resulted in a bit of a chase!) thus keeping out Peter Michel who had changed to his trusty Stahl Gipsy after his first flight. Phil Ball's Challenger was seen to circle tightly and stall late in its first flight; his others were



Top left: Chris Parry, first in A/1, about to go for his fifth max. Top: Yet another win in CO₂ for Steve Philpott. Ronylube-fuselaged Talspark went OOS in fly-off. Note Nationals paraphernalia - bikes, dog, etc - in background. Above: Julian Hopper launches for his first max of a full house in Open Power. Below: Ian Davitt readies his Open Rubber model for the fly-off.



Monday 26th May: FAI events Report John O'Donnell

maxes, but it was too late.

Tailless was a victory for Russell Peers and his Never Forget. After damaging the wing of his first model he cracked-up his reverse when going for the last flight, so he cyanoed model one back together in time to launch into a calm spell for a superb max. Most eyecatching in this class was Peter Lumsden's diesel-powered craft, based on an *Aeromodeller Annual* design, which circled low and slow, to much comment from all.

The Women's Cup was taken home - metaphorically - by Jessica Nash after a reliable series of flights, including a max. Second was Ed Flynn, just as consistent but with lower scores. Perhaps we could see a few more ladies next year?

Seven flew in the Frog Junior Trophy which was a victory for A. Cliff with an excellent full house from his Skywalker 60. Well-known Junior competitors Anthony Ball and Neil Auckland were second and third.

Open Rubber saw some keen competition. Dave Hipperson had rather a day - his model touched after 16sec on his first flight but this was not seen by his downwind timekeeper. After the model was recovered, having maxed and landed six miles away, Dave sportingly decided to start again - this at 4pm. He finished in eighth place after dropping a flight in between two

maxes. Others had grim tales to tell of lost or irretrievable models, involving marathon cross-country searches; but at the end of the day four competitors each had a full house, making for a fly-off in the evening sunshine. Fourth was Tony Brown, down in 2:20; third was Ian Davitt who made a good launch and rapid climb, but his model suffered a period of stalling, giving rise to rumours of a rubber bunch, before evening out to record 4:22. D. Neill from the Anglia club flew his neat black, orange and white craft unobtrusively to a fine 4:48, the craft reaching a good height and bouncing well. Eventual winner John O'Donnell broke his best 'fly-off' motor (which will now have to boast yet another knot) but the replacement came good - from the moment of launch the model was always going to do well, turning tightly but ever higher. He was clocked off at 5:49, over a minute ahead of second man Neil. The model was recovered despite having been treed; John being lucky enough to have its whereabouts pointed out to him. A fine climax to Sunday evening.

Monday 26th May: FAI events Report John O'Donnell

Monday's F.A.I. events were scheduled to start at 7.30am, partly to allow sufficient time for seven rounds of reasonable length, and partly to reduce the lift available in the

THE FREE-FLIGHT NATIONALS



Left: The only full house in Open Glider was achieved by Peter Williams. Below left: George Blair came down from Edinburgh to place 7th in Open Power and top the list in Slow Open. Below: Get up there! John O'Donnell launches for winning Open Rubber fly-off flight after an intent look at the opposition (bottom photo).



preliminary round(s). Times and the like were even given in the Programme!

However, on the morning itself changes were announced due, it was said, to the prevailing weather conditions and the need to avoid the missile compound. The contests were cut to five flights with a 2:30 max; and the rounds themselves extended to 45 minutes, but with no breaks between them. Since glider alternated with combined rubber and power, this gave a complete 'cycle' time of one-and-a-quarter hours - fifteen minutes longer than before! The only 'gain' appeared to be that of shortening the contest so as to finish an hour earlier. Perhaps surprisingly there were few complaints, even from those who maintain that 'proper' F.A.I. events *must* have the full complement of seven flights!

Presumably the weather did play its part. Certainly conditions were far from enticing - being quite breezy, overcast, and chilly. None of this would have mattered too much if the fliers had been permitted to use the airfield to advantage. As it was the launch line was marked out well downwind of the upwind end of the 'drome - and almost immediately behind a row of trees.

The first few glider flights showed that the turbulence was just as bad as might have been expected! Naturally the casualty rate was high. Inevitably those still to fly moved *along* the line away from the trees.



Left: D. Nell in pensive mood before the Open Rubber fly-off. Below far left: Ed Flynn launches in the Women's Cup. Model is named Co-Co, after her mother, says Ed. Below left: Top in Tailless was Russell Pears who consolidated his position with a splendid last-flight max. Below: Ginetta Moore is happy after winning the glider class in the Junior Kit championship.



This technique was soon curtailed by the C.D.(s) who at first requested, and later ordered (their word) a limit to this movement - all whilst the round was still in progress! Although of questionable legality, this decision effectively restricted the event to 80 yards (75 metres) or so of line - with most activity concentrated at one end! The limitation did prevent models flying into (or even near) the compound - but it also prevented many from flying very far at all. There was a definite tendency for gliders to veer towards the trees whilst on tow, and any inclination to weave was amplified, often disastrously. Wing breakage on tow was witnessed more than once. Even off the towline, models were thrown about in the turbulence.

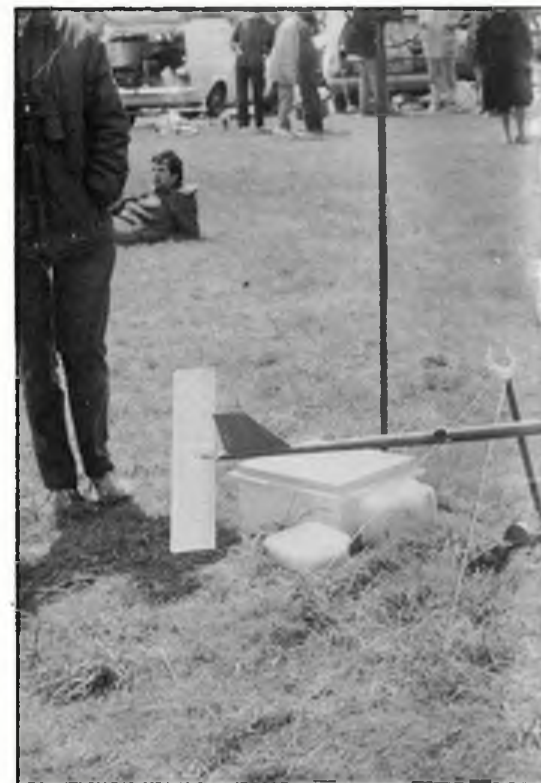
Nevertheless there was certainly thermal lift to be found, as shown by a smattering of early maxes. Straight tow was definitely the 'way to go', and there were very few (intentional) attempts to circle. The usual rush at the end of the first round saw John Cuthbert mark lift for several others - and make the scene look more like a normal glider contest.

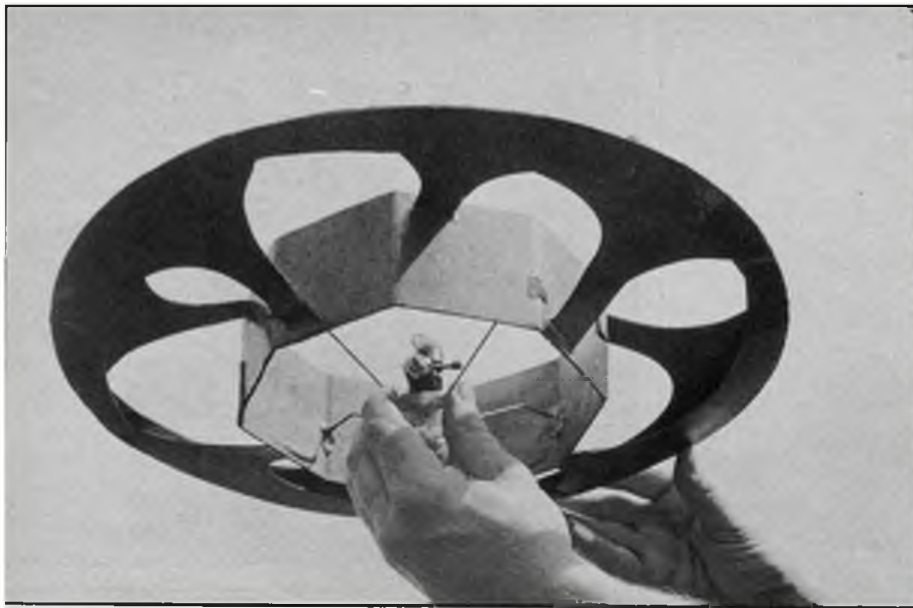
Rubber and Power were flown together, with the former suffering far more from the conditions. Wakefields with fixed surfaces often display poor power patterns in wind and turbulence, and there were soon many examples to be seen. Even VIT was far from

a cure-all, although Walt Ghio (all the way from California) showed what could be done with a most unsuitable looking model. By and large, scores tended to be good (maxes) or dreadful, with little in between.

Not surprisingly, power fared rather better, thanks to better penetration (more airspeed on climb) and greater performance. There was one very spectacular flight that went over the top, bunted, and nearly climbed out inverted - but on the whole there was little real trouble.

It might be appropriate to spell out the numbers involved: forty odd in glider, half that in Wakefield, and a baker's dozen in power. Some very well known experts opted out, perhaps thinking of the Trials in a month's time - but maybe just reflecting the pattern of the two previous days. In round numbers, about half of the pre-entry actually flew. This is typical of similar events - and indicates just why the Society likes pre-entry! As the day progressed, it got brighter, warmer, and even sunny. The wind did not really drop, but it swung slowly but steadily away from the compound. This reduced the turbulence and the fliers coped that much better. The change in the wind direction was noticed - but its implications appeared to escape the organisers, apart from a minor lengthening of the launch line. Certainly, from halfway through the contest, Control could have been moved and





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Left: Not all models at the Nats were competition entries. Ray Millard's Saucer was a great attraction. Plans to follow! Below left: Walt Gluo, over from the States, waits to launch in the F1B fly-off. Below: Stafford Screen tunes the Rossi in his winning F1C craft. Bottom photo: Brian Martin prepares for the F1B fly-off.



the line relocated at the upwind end of the field - with *no* risk at all to the dreaded compound.

Such a move would have kept most flights in the 'drome, and certainly would have avoided trouble with the more obvious downwind obstructions. At one point there were five models decorating the roofs of the hangars, Paul Rowledge being particularly unfortunate with both his power models lodged on the same roof. Fortunately one of the local farmers has a long ladder and a couple of modellers have a good head for heights!

A blow-by-blow account of the whole day would be possible - but of limited value. On the whole, conditions got easier as the contest progressed, even though there was a noticeable drop-out rate. Consequently, those on top tended to stay on top.

Glider could easily have been a different story, as the three fliers with four maxes apiece *all* dropped on their last flight. Bill Colledge had a terrible flight of little over a minute, and fell to about sixth or so. John Cooper returned minus his model, temporarily in the woods, and only managed two minutes dead with the reserve. This left John Cuthbert, who picked good air only to have his model D/T prematurely (for no known reason) and land at 2:04 - just enough for first place. The winning model is unusual in having wide

cap strips on the wing ribs. This isn't to improve the aerodynamics, but to avoid awkward steps and notches in the wing ribs (which John says he hates to cut). Conversely, the colour scheme indicates that he likes covering with little scraps of tissue (sorry!). Third spot was filled by chuck glider winner Mick Page who dropped his second flight. His model has Accipiter wings modified to polyhedral.

The other two events both needed flyoffs, with two qualifiers apiece, and no near misses. Both Ray King (third in power with a built-up wing) and Phil Ball (third in Wake) were around 30 seconds short of a perfect score - and the fourth place men were well below them.

Initially, the C.D.s proposed that a 'sudden death' (unlimited) flyoff be used. This caused immediate complaint, particularly from Stafford Screen, due to the risk of losing models. Eventually a rule-book was procured and consulted to see what could and should be done! The resultant progressive flyoff, starting with a 3½ minute max, appeared well received - and was, in fact, decisive first time.

Power was flown off first with Stafford first away, shortly followed by John Bailey. Their power patterns were almost identical. Both launched a little left, and hence over-rolled as they climbed to the left. Transition to glide (via normal VIT) could not be



Top left: John Cuthbert and his winning A/2. Note capstrips on wing ribs and patchwork colour scheme. Top right: In the evening fun-fly sessions, Robin Clews from Bilston flew this home-made 0.3cc diesel in a Titch. Above left: Dave Greaves tries 'stretching-in'. A moment later the motor broke... Above right: John Bailey on the way to 2nd in F1C. Opposite page, main photo: You should see the rest of the model! Len Auckland with Mallinax tall of calm-weather large Open Rubber job - flies at walking pace (but not stred at this Nats!). Far right: Phil and Anthony Ball watch the meter for lift at the Junlor Kit Rubber fly-off.

- an effect blamed on hasty repairs after breaking a tail in half on his final max. His flyoff landed just outside the airfield for a little over 2½ minutes.

The Wakefield flyoff was between Walt Ghio and Brian Martin. The American's efforts attracted quite a fan club, who soon had plenty to watch. Walt was using F.A.I. rubber, and stretched a long way whilst winding - a technique reputedly giving more turns and power. (He quoted 436 turns on a 19 in. long motor of 26 strands of 1/8 - and certainly didn't lack power). He wound and launched early in the flyoff period, only to have his climb flatten out after the burst, and then develop into the proverbial power-dive. This was clearly a VIT failure, but its cause was unknown. Certainly the timer was running when Walt picked up the remains. He wasted little time in assembling and winding his reserve.

Meanwhile Brian had broken strands on two Pirelli motors before getting a third to hold together. He described his rubber as good, but a bit old and worn. Both contenders were eventually ready almost simultaneously, then waited to assess the weather. Brian was using an electronic thermister and anemometer setup, and was the first to launch - straight into a very healthy thermal. Walt was only seconds behind, but suffered a bad power-stall, well after the burst and at fair altitude. This cost

a lot of height, but more importantly turned the model away from the lift to struggle for a disappointing 1:53 inside the airfield. Brian's model went up and away for a high max and a long retrieve. He looked very pleased with the outcome, and rightly so.

The day's proceedings were rounded off by prize-givings on the field for the F.A.I. and other events, with etched glass tankards for the top three places, plus 'champagne' for the actual winners - all being well received.

Mention must be made of the overall category champions awarded over the Mini, Open and F.A.I. events. The rubber, glider, and power champions were, in that order, Ian Davitt, John Cooper, and Peter Harris. All placed in at least one event and were well up in the others - so it really was a case of quality as well as quantity. For some reason these awards attract little publicity or prestige compared with the individual events, yet demand so much more effort. Strange, isn't it?!

In retrospect these Nationals must raise serious questions and doubts about the running of major meetings under the sort of restrictions that were applied at Barkston. There is no doubt that the flying was handicapped - and a lot of hopes and models ruined in consequence. Surely the question must be asked for the next time round - Is half a loaf always better than no bread?

described as good, but Stafford was clearly in good air from the start, and easily cleared the required max, eventually descending on D/T behind a downwind wood. John Bailey was not so lucky as his model was trying to stall, rather than settle into its normal glide

THE FREE-FLIGHT NATIONALS



Results		Vintage		Jubilee Cup	
Coupe d'Hiver		HJN Trophy			
66 entered, 40 flew		Birmingham 9.59		1 C. Strachan Biggles 9.00	
1 M. Chilton		Morley 9.49		2 P.D. Michel SAM 35 8.24	
2 I.W. Davitt		Leeds 9.47		3 D. Davitt Morley 8.19	
3 D. Davitt		NYFFG 9.44		4 P.A. Ball Grantham 8.04	
4 N. Auckland (J)		Louth 9.32		5 G. Blair Edinburgh 7.03	
5 J. Brookes					
A1 Glider		British Airways Trophy		Frog Junior	
47 entered, 28 flew		12 entered, 7 flew		Frog Junior Trophy	
1 C. Parry		Biggles 10:00 + 2.18		1 A. Cliff Biggles 9.00	
2 J. Cooper		Biggles 10:00 + 1.40		2 A. Ball Grantham 7.14	
3 G. Manion		Walsall 9.57		3 N. Auckland NYFFG 6.40	
4 G. Beal		C.M. 9.05		4 C. Montgomery 4.28	
5 J. O'Donnell		C.M. 9.03		5 R. Anderson NYFFG 4.22	
1/2A Power		Hales Trophy		Women's Cup	
39 entered, 13 flew		5 entered, 3 flew		Women's Cup	
1 A.R. Wells		Anglia 9.56		1 Mrs J. Nash Anglia 7.38	
2 B.R. Peers		Falcons 9.10		2 Mrs E. Flynn Liverpool 5.02	
3 J. Woodside		3 Sisters 8.49 + 3.11		3 Mrs W.A. Dixon Birmingham 2.57	
4 A. Chilton		Crookham 8.49 + 1.59			
5 S. Screen		Birmingham 8.47			
CO₂ Duration		Sparklets Trophy		Slow Open Power	
18 entered, 10 flew		46 entered, 18 flew		Falcons Trophy	
1 S.R. Philpott		Biggles 10:00 + 4.26		1 G. Blair Edinburgh 9.00	
2 P.A. Ball		Grantham 10:00 + 2.13		2 K. Harrison Penrith 8.29	
3 D. Hipperson		Grantham 9.36		3 K. Rowse Vikings 7.48	
4 C. Strachan		Biggles 9.28		4 P.R. Harris Birmingham 7.36	
5 P. Gibbons		Peterborough 8.24		5 P.A. Ball Grantham 7.03	
H.L.G.		H.L.G. Trophy		F1A Glider	
21 entered, 15 flew		75 entered, 42 flew		Ronytube Trophy	
1 M. Page		Peterborough 7:10		1 J.R. Cuthbert Grantham 12.04	
2 A.J. Crisp		Biggles 7:06		2 J. Cooper Biggles 12.00	
3 J.K. Tipper		Lee Bees 6:52		3 M. Page Peterborough 11.48	
4 M.A. Benns		Peterborough 6:13		4 B. Parkinson Nottingham 11.44	
5 G.J. Percival		Grantham 5:59		5 R.E. Audley Bristol & West 11.23	
Open Rubber		Model Aircraft Trophy		F1B Rubber	
76 entered, 24 flew		50 entered, 23 flew		Fred Boxall Memorial Trophy	
1 J. O'Donnell		C.M. 9:00 + 5.49		1 B.G. Martin Tynemouth 12.30 + 3.30	
2 D. Neil		Anglia 9:00 + 4.48		2 W. Ghio Overseas Competitor 12.30 + 1.53	
3 I.M. Davitt		Morley 9:00 + 4.22		3 P.A. Ball Grantham 11.54	
4 A. Brown		Tynemouth 9:00 + 2.20		4 M. Chilton Birmingham 11.18	
5 N. Lee		East Grinstead 8:23		5 F.G. Sharp Croydon 11.15	
6 J.E. Carter		Falcons 8:11			
Open Glider		Thurston Cup		F1C Power	
28 entered, 33 flew		24 entered, 12 flew		Eddie Cosh Memorial Trophy	
1 C.P. Williams		Richmond 9.00		1 S. Screen Birmingham 12.30 + 3.30	
2 P. Stewart		Crookham 8.48		2 J. Bailey Biggles 12.30 + 2.34	
3 P. Owens		Liverpool 8.27		3 R. King Morley 12.03	
4 A.J. Crisp		Biggles 8.00		4 P.R. Harris Birmingham 11.38	
5 J. Cooper		Biggles 7.19		5 P. Watson Birmingham 10.54	
6 B.E. Boxall		East Grinstead 6.59			
Open Power		Sir John Shelley Cup		National Champions	
37 entered, 11 flew		13 entered, 6 flew		Glider	
1 J.J. Hopper		Stanstead 9.00		Rubber	
2 P. Chapman		Stanstead 8.19		Power	
3 P.R. Harris		Birmingham 8.05		Junior	
4 B.R. Peers		Falcons 7.43		John Cooper	
5 C. Hickmott		NYFFG 6:50		Ian Davitt	
6 L.R. Moore		Biggles 4:01		Pete Harris	
				A. Cliff	
Tailless		Lady Shelley Cup		Junior Kit Contest	
10 entered, 6 flew		10 entered, 6 flew		Rubber	
1 B.R. Peers		Falcons 7.14		1 A. Ball Grantham 4:30 + 9.05	
2 K. Attwell		Calderdale 3.00		2 T. Owens Liverpool 4.30 1.50	
3 R. Steines		Grantham 2:16		3 N. Auckland NYFFG 3.10	
4 P. Lumsden		Vikings 1.43			
				Glider	
				7 flew	
				1 Miss G. Moore Biggles 3.51	
				2 A. Ball Grantham 3.48	
				3 R. Dyer Vulcans 1.05	

What else?

'Unofficial' events included Jeff Anderson's Junior Kit Contest, the Glider section of which was won by 13-year-old Ginette Moore (second last year) with a Kelston Swift. Rubber needed a fly-off to decide between Toby Owens and Anthony Ball, the latter emerging victorious after a fine 9:05 from his Performer. The model went OOS and has not been found...

Results of Chris Hawke's Vintage Rubber comp, which attracted fewer entries than in previous years, have yet to be confirmed - but will follow.

We enjoyed a look around the trade tent, where Dave Rawlins was masterminding 'hit the kit' and Chuckie competitions all day, it seemed; Ben Buckle showed his latest offerings (gallantly fighting to hold his Long Cabin in the gale so we could photograph it, and we drooled awhile over the goodier on SAMS stand. There was time to enjoy the antics of the fun-fly and 'unorthodox' brigade. But, we fear, the main story is that, once again, the weather did its best to stop us having a really good time. For the action, one had to look to the hardened contest modeller - a fact which those who decry competitions as mere pot-hunting would do well to reflect upon.



VINTAGE CORNER

Alex Imrie reports on an enjoyable Sunday out, looks forward to another and tells us about some delightful miniatures

Golden Era Meeting at Old Warden

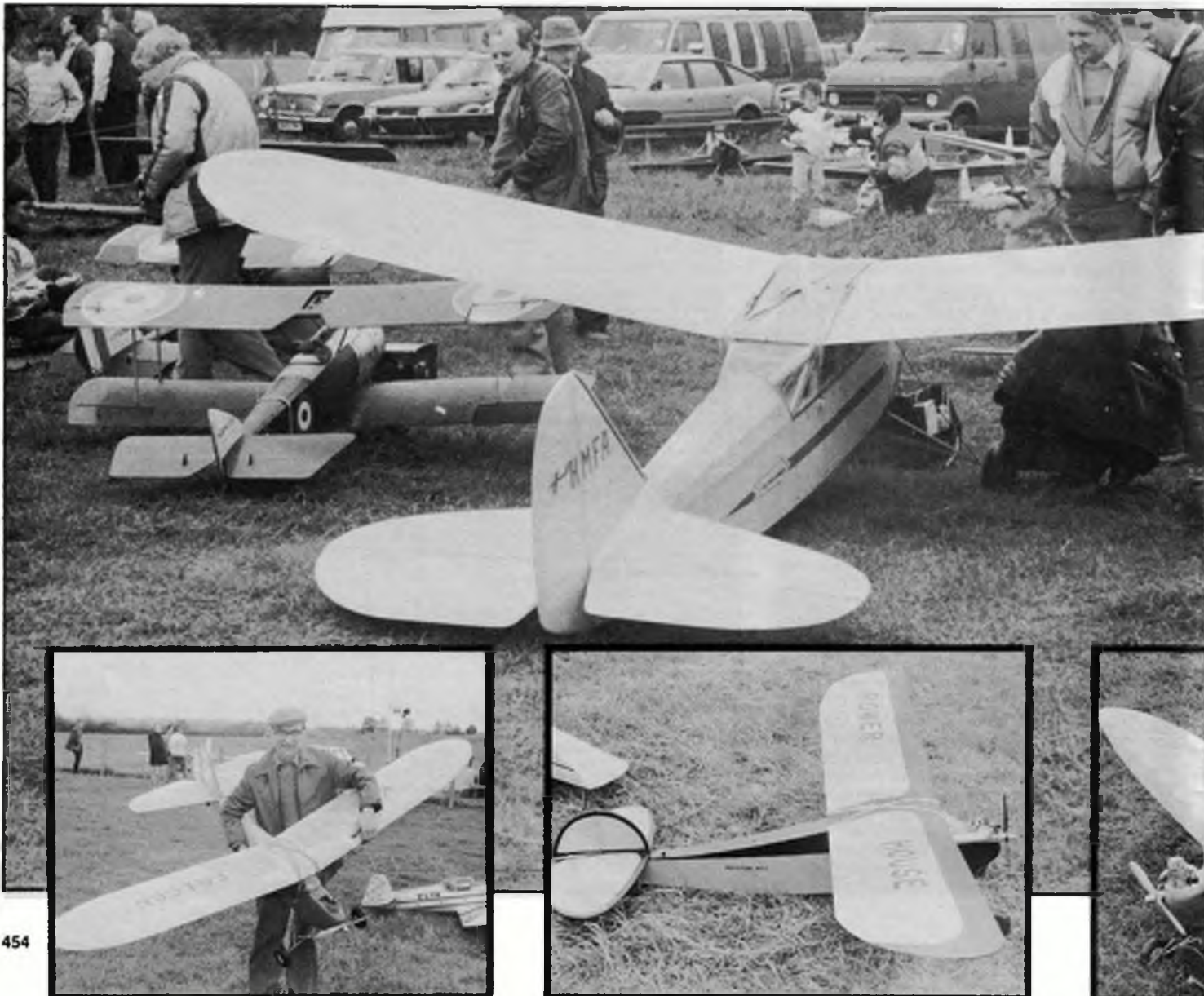
Last year saw the inauguration of this event which is aimed at large radio scale models of aircraft from the 1920s and 1930s. Since prototypes from outside this period are not excluded, the occasion is taken advantage of by most modellers keen to get airborne. Even free-flyers are tolerated as long as no conflict takes place with the main programme of flying and as a result all types of models are to be seen; but the emphasis is, of course, of the larger R/C variety. A special feature of this function is encouragement for participants to wear period attire, a trend which was continued this year, although to a lesser degree than previously; nonetheless, boaters, helmets and goggles, Norfolk jackets and whipcord breeches were all in evidence.

Sadly the weather on Sunday 18th May at Old Warden, although sunny at times and precipitation free, was dominated by a

strong south-easterly wind which produced a great deal of turbulence across the field in the lee of the aerodrome buildings. This was really not conducive to any kind of model flying apart from the large 'overpowered' scale radio types, which, of course, were present in abundance. But even they found the conditions troublesome and models 'arrived' in a variety of attitudes at unusual speeds that even their skilled pilots could do little about. As a result there were some breakages in the normal course of events and sadly some 'write-offs', which included Richard Crapp's magnificent DH 89a Dragon Rapide. It is thought that a flying wire pulled out in the turbulence and that this led to the collapse of the Rapide's wing structure. Some idea of what the conditions were like can be gained when one considers that the bracing wires had ends with brass tube ferrules - in the approved aircraft style - that should have been indestructable at the loadings usually experienced in model flight, even if that model happened to weigh

44lbs. Readers may remember that I enthused over this machine in the account of the first Golden Era meeting in the August 1985 *Aeromodeller*. I still maintain that this was one of the best flying scale models that I have witnessed; it looked right and was flown in a scale manner. Let's hope that Richard will repair the model (he built it in only six months from scratch!) in order that future meetings will be graced by its appearance, handled just like its big sisters.

The meeting was well controlled and flyers walked their machines out to the runway where all take-offs and landings were made. Furthermore, all flying was well away from the spectators, a safety rule which is always aimed for nowadays; and as events showed, this was a wise precaution. No-one wants a large radio model (no matter how well finished!) falling amongst spectators. Some good flying was carried out by the large scale models. Notable were the fine aerobatics of various Zlin Treners,



three of which attempted to make a formation flight; a feat also tried by two 1/4 scale Sopwith Pups, one of which, flown by Dave Tappin from Harrogate suffered an unusual failure...when gliding in to land, the engine obviously backfired for some reason causing the complete loss of prop nut, propeller, and driving washer! A most impressive sight was Dr Jeremy Shaw's twin-engined Grumman Amphibian. The sight and sound of this majestic model, both in the air and during take-off on its special four-wheeled dolly, was really something else. Indeed, it tended to put otherwise masterly models in the shade.

Vintage R/C

In the model enclosure, a fifteen-foot wingspan Buccaneer Standard dwarfed all the other vintage designs (and most of the scale types too). Built by Len Shannon of the Hampshire Model Flying Association to a special set of enlarged plans prepared by Ben Buckle, it is the first model to emerge from a number of sets of these giant drawings already sold. Powered by a 50cc Quadra converted to glow ignition, everything about this model is big. The wheels are eight-inch diameter French Air Tops, and it is said that only one wing rib emerged from a sheet of 36 x 3 x 1/4 in. balsa. The model appeared to jump off the ground as soon as the wingtip men let go and the



throttle was opened. Having got off, the model lacked effective penetration, but obviously climbed well enough, going up like a kite in the strong wind; flying, in fact, exactly like a free flight Buccaneer that needed a bit more downthrust! Although the model was turned downwind and eventually battled against the wind back to the aerodrome, one can't help thinking that if it had been kept heading into wind reduced throttle would have brought it 'down and backwards', enabling it to alight at its take-off point without the need for making a turn. (Readers might find this hard to believe, but slow flying aircraft like the Fieseler Storch and Westland Lysander flying in very strong winds are known to have carried out this manoeuvre).

Surely this is as big as vintage is liable to get? A number of similarly sized models have been built, mostly in USA, but here we

have had Dianne Humphreys' Boehle Giant - and Dave Baker has been working on a double-sized Powerhouse that has yet to be seen in its completed form. The Boehle Giant was, of course in its original size, and apart from the wingspan was not too bulky, but the conventional models scaled up two or three times have a certain massiveness that seems to be approaching full size! Readers will no doubt know that my personal choice is to see models constructed in the sizes they were originally built, and it is worth remembering that the original Buccaneer Standard was powered by a Brown Junior petrol engine and had a wingspan of 66 inches. However, one has to accept that the size war is a fact of life in present day vintage circles, and there is no real difference in principle between a very small CO₂ powered Buccaneer and this giant version.

Two Powerhouses were to be seen. One decorated in orange and black, and powered by an Irvine 40, had been made to Ben Buckle plans by AT Reavey of Royston, while the other, powered by an Enya 40 4-stroke, was made by G Bushell of Enfield from the 1939 Model Airplane News articles which were reprinted in the book Air Age Gas Models. Incidentally, this book is still available from Beaumont Aviation Literature at a price of £3.95 plus 55p postage...well worth getting, it contains descriptions of twenty-one vintage power models and includes all dimensions, from which working drawings can be easily drawn up. The last mentioned Powerhouse was a floatplane version, and was unpainted, being covered in red and yellow tissue; and a comparison between models tended to suggest that there were differences in the wing tip planforms, but this was probably only an illusion caused by the differing decoration. We have seen the floatplane version on previous occasions, and this model has done a great deal of flying.

Main picture: First giant Buccaneer to be completed from Ben Buckle plans is this red and yellow example built by Len Shannon of Southampton and powered by a 50cc Quadra engine converted to glow plug ignition (see text). Bottom left: Fred Sear of Berkhamsted with his red and cream Kell Kraft Falcon powered by an OS 60 4-stroke. Model was flown by John Harris of The Model Centre, Hemel Hempstead. Middle: A T Reavey's Powerhouse is powered by an Irvine 40 and was built from a Ben Buckle kit/plan; but building instructions are also available in book form (see text). Below right: 'Old Wal' inscription on this big Kell Kraft Scorpion denotes Wallace Schuiberg the builder. Model is attractively finished in red and yellow and is powered by an OS 40 4-stroke. This page, top: Period attire and liquid refreshment go with the Mills .75 powered Wasp. Norman Young from Biggleswade with his model at Old Warden. Above: Ray Alban, taken in to task by the public address announcer Dave Bishop, tells the audience of 1/4 scale R/C flyers what it's like to build and fly a real model aeroplane!



The landings on grass don't appear to have had any harmful effect on the floats at all. A group of enthusiasts discussing the Powerhouse and commenting on its flight characteristics were heard to suggest that the fin area was too small and that this caused the model to wallow in flight. Being radio modellers perhaps they had lost sight of the fact that this was a free flight model which Sal Taibi, one of the best-ever free flight power model designers, had created for stability and high performance, and to have the ability to handle the power of big engines like the 16cc Forster 99. Furthermore, the model has generous dihedral (eight inches each side for its 84 inches span) and its natural stability will, of course, resist a control input from the rudder. Another aspect worth remembering when discussing R/C-assist free flighters is that they were designed to be slow flying models, usually operating on much less power than is used on the same designs nowadays. To make realistic flights should be the aim with this class of model, slow steady stuff, letting the model do most of the flying, the pilot only assisting it with its flight pattern in order for the model to stay in the field and thus eventually to land reasonably close by. If such models are driven around the sky at high speed, being furiously manoeuvred at the same time, their movements will look disjointed due to the constant battle of forces going on...so if dissatisfied with an R/C-assist vintage model, reduce the power and leave the sticks alone for a bit and watch that marvellous old fashioned built-in stability do the job for you!

Another large vintage model was a Keil Kraft Falcon, finished in red and cream and built by Fred Sear of Berkhamsted. Powered by an OS 60 4-stroke, it was flown at intervals throughout the day by John Harris, proprietor of The Model Centre in Hemel Hempstead. Wallace Schulberg had his big Keil Kraft Scorpion with him. Built from a Ben Buckle kit/plan this model also did a lot of flying. It carried the name Old Wal, was finished in red and yellow and used the OS 40 4-stroke for power. However, as far as I could see the most active R/C vintage flyer was Mike Parrott who, ably assisted by Brian Downham, seemed to be continually in the air with his AE Brooks' Skyrocket. This model, built from plans in the old Model Aeroplane Constructor magazine from 1937, is powered with a Merco 49 and seemed to be in its element: the way that the Skyrocket rode the gusty Old Warden wind really proved that the original claim of it being an 'all weather model suitable for British conditions' was no idle boast; and landings too appeared easy on that wide track springy piano wire undercarriage. Mike also had his well-known blue and white Blue Dragon with him (also powered by a Merco 49) but he did not fly this machine, obviously being too busy with the Skyrocket - a model for which he has great enthusiasm.

Vintage Free-Flight

As already mentioned this type of model was not officially included in the programme, but a few enthusiasts were present who seem to snap-up every opportunity available to fly their models. It takes

more than a mere puff of wind to stop such stalwarts and a knot of free flighters could be seen positioned as far upwind as possible for the whole day. One of those was Ray Alban who flew his Keil Kraft Senator to good effect. Returning across the aerodrome after retrieving his model from an early flight, Ray was accosted by PA announcer Dave Bishop who then proceeded to interview him 'on the air' for the benefit of the spectators. They seemed spellbound and, amazingly, many of them seemed not to know anything about this flimsy balsa and tissue creation driven through the air by twisted rubber bands! This, I think, once again really shows how far away much of the aeromodelling community is from 'true' aeromodelling. Doubtless it came as a surprise to some to learn that a model aeroplane could be constructed from an outlay that did not strain the financial resources to impossible limits, and which did not have to include de luxe radio control sets and large engines burning expensive fuel. Later in the day Ray's transits of the aerodrome during retrievals of his model were again commented upon by Dave Bishop, who remarked that in the morning Ray had looked ten feet tall and had moved more rapidly, but now he seemed to be getting smaller and slower; a sure sign that he had experienced a good day's flying. Ray, I am sure would agree that despite the weather he had enjoyed himself greatly. He had a car full of models including a recently completed Warring Voodoo and a Northern Arrow, neither of which was flown because of the conditions. I was able to examine Ray's duration propellers whose fragile outlines are strengthened by a border of thin bamboo peeled from quills taken from a broken waste paper basket; and I also learned that the way to transport and store such fragile things as rubber duration models is to have them in 'made to measure' boxes. Ray passed on the tip that many florists will be pleased to give away long cardboard boxes used for the transport of flowers from wholesalers. With slight modification these can become stowage receptacles for models, rendering transport less of a damaging proposition.

It goes without saying that Vic Dubery was also present, flying, when I saw him, a Frog Minx, which the purists might find just outside the vintage definition but which is nevertheless a good choice for a sporting day. Vic had other models with him too including a twin-pusher. Another Frog Minx flyer was Steve Gleed from Colchester, his red and white model being fitted with an outsize 16 inch diameter propeller; how it fared in the conditions is not known! A Red Admiral low wing rubber model built by Jerry Brown of Sudbury, Suffolk was flying well despite the wind. This is an attractive model but not vintage in the true sense of the word. The plan for this 32 inch span model, identified as D 718 does not appear in the latest ASP plans catalogue. Paul Huggett and son Robert armed themselves with a fine example of Stormbird, the Scandinavian glider from 1944 designed by Nils-Ake Johansson and re-introduced by Vic Smeed as the free plan in last November's *Aeromodeller*. They also brought along a Keil Kraft Invader glider converted to rubber power, a procedure which is the reverse of what usually

happens, i.e. gliders are produced from other types of models, usually by discarding the motive power unit and adding suitable ballast. Finally, Bill Langley of Sidcup had his Halifax Spartan with him. This is powered by a Czech NVI diesel, and is the same model and same engine upon which I commented in the last Golden Era write-up (on that occasion he treed the model). It was rather like turning the clock back...had twelve months really passed since our last encounter?

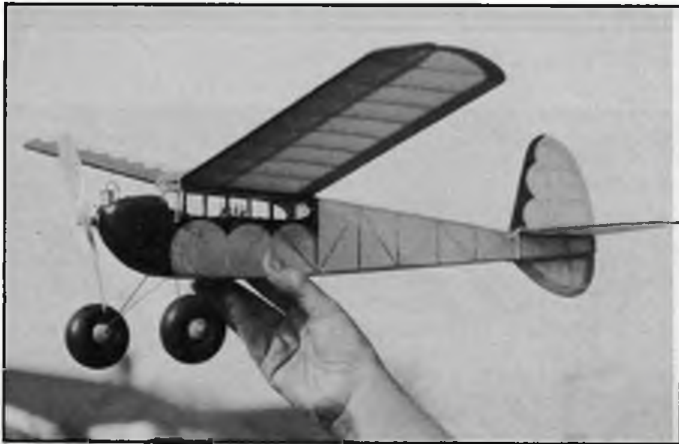
Many other vintage modellers brought models, but because of the unhelpful wind direction which meant transgression of drifting models over the radio men's patch, and also because of the sheer windspeed and attendant gustiness, they were left in the safety of their cars. Kevin Wallace of St Ives, Cambs was able to show his PLW 5, a relatively unknown low wing petrol design by CE Bowden originally designed for the 2.4cc Elf motor, which was, of course, spark ignition; thus the model would have had to carry the normal components for that purpose. Kevin's model, made to plans drawn-up by Tony Penhall, is a super lightweight. No ignition gear is needed on his model which is powered by a Mills .75 diesel engine. It will be interesting to see this model in the air; one suspects that it will be a real floater! Another small power model was the Wasp (also Mills .75 powered) built by Norman Young of Biggleswade from the description in Vintage Corner in July 1981.



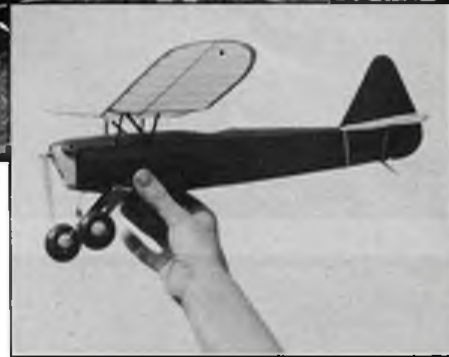


Main picture: More period attire, as modelled by Terry Bridle of Slough, judged the builder of the best monoplane at the Old Warden meeting with his Fly Baby, a homebuilt design by famous American modeller Peter M Bowers. The name and that rudder shape were first used on Bowers' 1940 Class A free-flight model (see Vintage Corner, February 1984). Above: Steve Gleed with his Frog Minx fitted with a 16 inch diameter propeller. Top left: Stormbird glider, made by Paul Huggett from Aeromodeller plans in November 1985 issue. Top right: Robert Huggett with the Kell Kraft Invader glider converted to rubber power (see text). Above left: Little-known CEB design PLW5 held by Kevin Wallace from St Ives, Cambs., who built this Mills .75 diesel version from plans by Tony Penhall. Note the 'cylinder head' fairing blocks ahead of the cockpit in the style of the Supermarine S6B Schneider seaplanes. Above right: Bill Langlay with his Halifax Spartan, a seldom modelled subject whose cowling hides another rarity...a Czech NV1 diesel.





This CO₂ powered Junior 60, actual span 60 centimetres, uses a Telco 3000 and Trexler wheels. Covered with Japanese tissue, the model, which weighs 2½ ounces was made by John Meaney in Bahrain. Note dummy radio in cabin (see text). Right: Close up of the engine on Len Shannon's Buccaneer. The Quadra 50 swings that 24 by 10 wooden propeller to some purpose. Note the 'birdcage' undercarriage strutter! No Buccaneer ever had that much, surely? Another of John Meaney's CO₂ miniatures, a half size Ken Willard designed CAVU (the abbreviation for a pre-war American aviation term, Ceiling and Visibility Unlimited). The model weighs two ounces and is powered by a twin cylinder Brown engine. Below: Len Shannon's Buccaneer again. 15 feet of wingspan carries the underwing legend 'Fly with the HMFA' (Hampshire Model Flying Association) and dwarfs the 1/4 scale Sopwith Pup at right!



The Wasp was a pre-war design by LS Wigdor and was originally described in this magazine in April 1938.

At the end of the day there were awards for the main model classifications. Winners were each presented with a turbine blade from an Olympus jet engine that had seen service in the Falklands conflict. Best large model was adjudged to be the monster Buccaneer; best biplane, the written-off Dragon Rapide; and the best monoplane was said to have been a very fine Fly-Baby which was super detailed to the nth degree by the good use of full-size (homebuilder) plans. There had been some pleasant full-size distractions during the day. Upon departure for Biggin Hill the Shuttleworth Spitfire treated us to an impromptu display in the morning. When it returned in the late afternoon the wind was across the runway, and the Spitfire made a very late overshoot in one landing direction before successfully landing on the shorter run up the hill towards the sheds. An unheralded arrival was the ex-Leisure Sport Fokker Triplane replica, painted all red to represent Rich-

thofen's machine, and this gave the opportunity to examine the aeroplane at close quarters. A disappointing affair that would not get many marks from discerning scale modellers or World War One aviation buffs, its 'sit' in particular was offensive, caused by the 'Leyland bus' landing gear proportions.

Built in Bahrain

John Meaney is a flight engineer with Gulf Air who has been a keen vintage builder for a number of years. Since local restrictions prohibit flying any kind of model in Bahrain, John brings home his output periodically for flying. Recently he has built a 1935 Ying, a four-ounce Korda Wakefield, a Cats Whisker (a lightweight 1943 rubber model), a Coquette, an Achilles, a Don Quixote (a 30 inch span glider from the 1950 Aeromodeller Annual); and he is currently building another glider, an Archangel! Another interest has resulted in a spate of CO₂ powered 'scale models' of famous free flight power models which are usually built to half the original size.

Included are Wedgy, Cavu and Junior 60, the last named being fitted with a dummy miniature radio receiver, made from small light bulbs, visible through the cabin windows.

Vintage Weekend

Don't miss this event of the year at Old Warden on 16th and 17th August. Remember, there will be Cruiser Pup, Achilles and Earl Stahl events, Twin-pusher and Wakefield mass launches; and the Rupert Moore Trophy will be extended to include ANY Rupert Moore design, not merely Jackdaws as previously (here's a chance for that Twin Gull to show its paces!). Although I do not have details, there will be power events of various sorts as well as the John Haggart Precision competition which will be run this year by Clive Bunyan. Pre-entry has always been the aim of this latter event, but because of resistance against 'organising their hobby' this was never popular with participants, so this year you may enter on the field. Let's have a good turnout. Any vintage power design is eligible. It must make an unassisted ROG and fly to a set target time to be decided on the day. There will be other events including the light-hearted Fliar Phil Outing, already mentioned in this column some issues ago, for any Ray Malmström design. If vintage or flying for fun is your thing, do come on both days...should you miss this one you will always regret it!



UP, UP AND AWAY



Main picture: Pete Harris prepares to let go at the '86 Nationals. Although 4th in the class this year, Pete was nevertheless Senior Power Champ after consistent performances in Open and F1C. Above: John Carter with very promising 'Slow' Rossi .09 model which made the first open power fly off of the year (Dave Hipperson photo).

THE SLOW OPEN POWER class was recently introduced in an attempt to woo those who were interested in power flying but who had previously been put off by the inherent complexity, expense and performance of the contemporary model. To this end, the formula appears to have been reasonably successful with competition entries on a par with those of other Power classes - and apparently on the increase.

Many flyers will either have no experience of, or will have forgotten the techniques of trimming a slow-type model, whilst those with experience of both slow and modern models will almost certainly express the opinion that the present-day variety equipped with V.I.T. and auto rudder is easier to trim by virtue of the fact that climb, transition and glide can all be adjusted

Go for max! 1985 Nationals Slow Open Power Champ Pete Harris tells us how to trim a winner

independantly. However, there are advantages to the Slow model, including the facts that it is quicker and easier to build, is free from most of the systems problems that seem to catch up with all of us power flyers at some time or another and - given care and patience - can be trimmed with relative safety.

My aim in writing this article is to help make the trimming procedure more painless, and hopefully to stimulate further interest in the class.

Fundamentals

It is not my intention to include thoughts on model design in this article. However, there are some points that are worth attention at the construction stage in order to facilitate trimming later. Firstly, in general terms a large lightweight model is likely to be easier to trim and more forgiving in use than its smaller, faster counterpart. Further, it is likely to make up for any lack of climb by having a better glide performance.

Secondly, as we will see later, some adjustment of C.G. position will almost certainly be required in order to obtain the correct glide trim. It requires less added weight to shift the C.G. back than to shift it forward, so it follows that unless you are building a tried and tested design with the correct balance point indicated on the plan, then it is best to build very slightly nose

heavy. For those in doubt, as a rough guide I find that for a model having tailplane area of 33.3% wing area, the C.G. should be at about 90% chord. A larger tail plane requires a more rearward C.G. and vice versa. However, this is not a definitive rule as it can be influenced by choice of wing section, for example. Equally important, remember that your engine is not going to have the benefit of a pressurised tank and it is essential to keep the head of fuel low; that is, the tank should be situated as close to the engine as possible. You will not be able to launch consistently if you have not got the confidence to point the models nose up and throw without fear of the engine cutting as a result of fuel surges!

Variables

Before we get out onto the field to start any test flying, it is as well that we consider the various factors that enable us to trim a model and how each of these can be used to affect the way the model will fly:-

Dihedral, which is fixed at the construction stage, is used to prevent side-slipping and to keep the model upright. It is desirable to have slightly more dihedral with the Slow Open type of model than is normal as its attitude during flight is subject to greater variation than others and it therefore needs the ability to stabilise more readily.

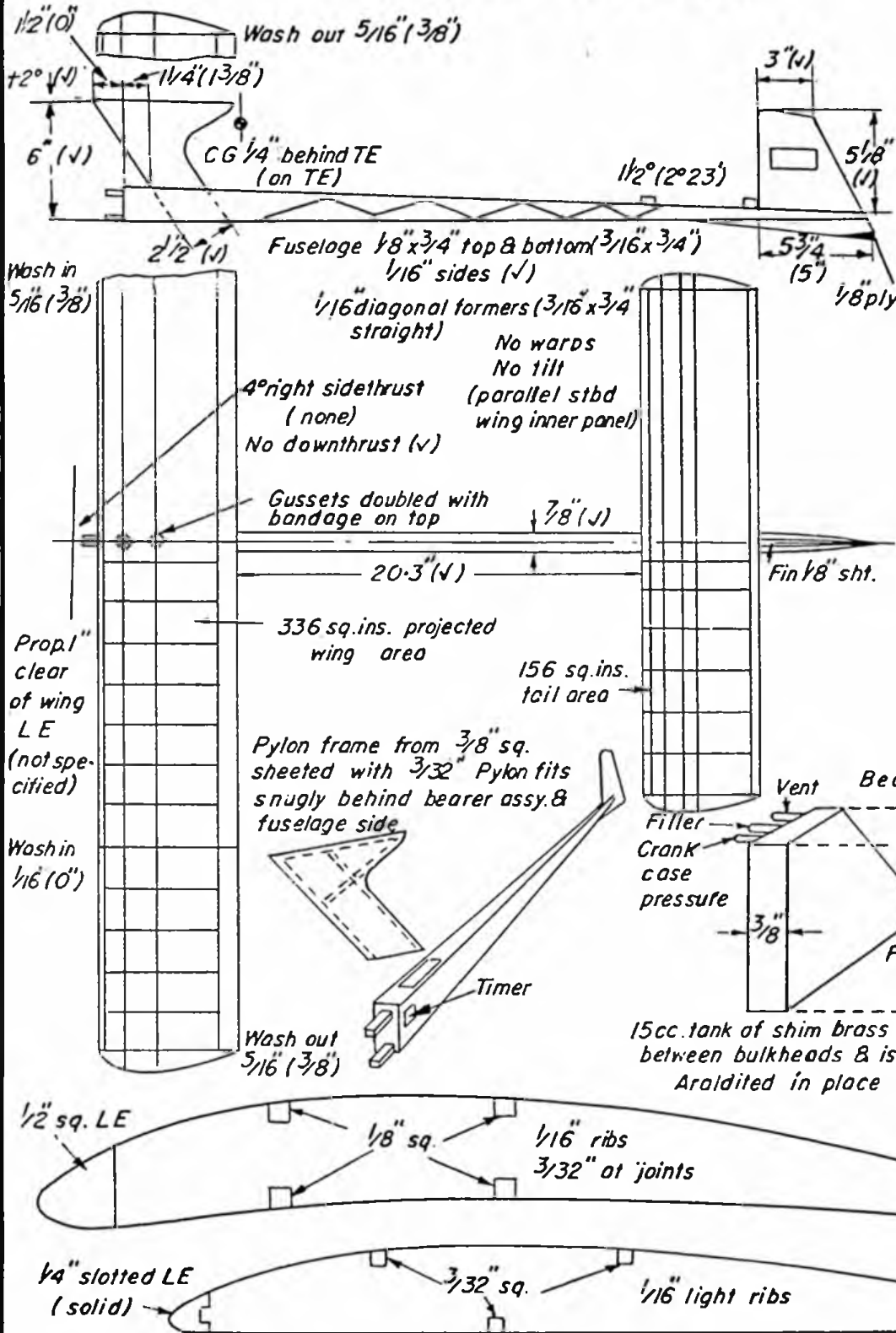
Phil Ball produced this PAW 19 powered model at the start of the season. Mylar-covered tailplane is practical but the mylar fin has now been replaced by a sheet balsa unit (Dave Hipperson photo).

JOHN WEST'S

MODIFIED DIXIELANDER

THE drawing is intended to illustrate the differences from the Yeoman Kit plan, as distinct from being a complete description of West's model. The details quoted are for the model flown to many successes throughout 1962. This has a kit wing off a previous model, a modified fuselage and a lighter tail.
Drawing scale is 1/8th full size. Work to dimensions quoted, together with kit plan—do not scale up off this drawing. All dimensions in inches. Information in brackets refers to kit plan. Ticks indicate no alteration.

Cox T.D.15 with 8 x 4 Top Flight nylon prop and crankcase pressure fuel feed. Tatone "Tick Off" timer, squashing Elmick fuel feed tubing. Fuel generally K.K. Super Nitrex for contest flights, with 50-70 per cent. nitromethane fuel used for fly-offs. Britfix cement used throughout, except where indicated otherwise, e.g. on bearer/tank assembly.
Total weight 16 oz.



FUSELAGE

Heavyweight modelspan doped on; six coats sanding sealer rubbed down; one coat red Humbrol plastic enamel lightly rubbed down; one coat Titanine proofer; two extra coats Titanine proofer on front fuselage and pylon.

TAILPLANE

Ron Draper's medium weight Jap tissue; two coats thin Britfix dope; one coat Titanine proofer.

WING

Heavy modelspan; three coats thin Britfix dope; one coat Titanine fuel proofer (with one extra on undersurface of inner panels).

One of the most successful power models of the early 60s was John West's modified Dixielander. This drawing, based on information collected by John O'Donnell, was first published in the July 1963 issue of Model Aircraft and is reproduced here for the interest of all you Dixielander fans. Don't forget - this is not an exact scale drawing; use it to augment a plan. Rear fuselage and tail are lighter than standard and the engine is mounted further back. CG is further aft. Final trim was a steep right turn which rolled the model vertically as speed built up. Glide trim was a very wide right circle, "with the idea of flying through draughts".

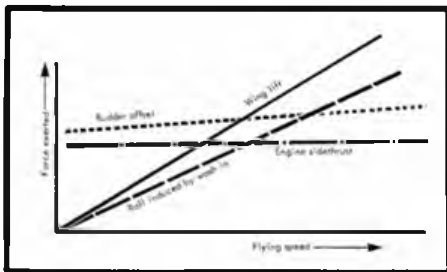
Wing incidence is governed by the relative angles of the wing and tailplane and for any positive incidence lift will increase in sympathy with flying speed.

Wash-in is usually to the right hand inboard wing panel and will tend to roll the model towards the left. The higher the flying speed, the higher will be the rolling force. A side effect to wash-in is that it will to some extent assist the glide turn by "dragging" the wing into the right hand turn.

Rudder offset must be used with caution as its effect is much more dramatic on power than on glide due to it being positioned in the propeller slipstream. Its effect is most noticeable at the initial part of the climb when the flying speed is low but will apparently diminish as the speed increases, i.e. as other aerodynamic factors take over.

Engine thrustline offset will pull the nose of the model in the direction of the offset and the force exerted will be virtually constant whilst the engine is running. However, as with rudder offset, its effect will become less apparent as flying speed increases and other factors become more dominant.

Tail tilt is used as the normal means of inducing glide turn, the model turning in the direction of the raised tip. This is used in preference to rudder offset because it is more manageable and less violent. It is not possible to predict precisely the effect that alterations will have as it will be dependent on how much lift the tail is generating and this can vary according to model lay-out, C.G. position etc. In particular, any effect it has on the climb will be largely dependent on its angle of attack relative to the thrust line.



To the flying field!

Having given the above some thought we can turn our attention to the actual procedure of trimming.

It is imperative to wait for a calm day before attempting any test flights, for not only does flying in windy conditions place the model at greater risk, but it also makes it almost impossible to determine how an untrimmed model is behaving and what adjustments need to be made to correct it.

Start with hand launched glide tests, making any necessary adjustments to tail incidence and tilt in order to achieve a slow flat glide in a wide right hand circle. (When I am carrying out glide tests, I take advantage of a slope in order to prolong the flight and so better observe it). When satisfied that the glide is correct, I strongly recommend that a final test of the engine and timer system is carried out before attempting any power flights. The timer should stop the engine cleanly everytime. Take no chances! If there is any doubt that the system is not 100% efficient then correct problems at this stage.

There are other techniques for making the initial powered flights, for example, if using a diesel engine it may be possible to start at low power with the compression backed off



Above: Just in case you've never seen one - this is what a standard Dixielander looks like. The design makes an excellent introduction to Slow Open Power. Derek Ridley's example, PAW powered, is held by Jan Hancock. Below: How trim variables affect the climb; Pete's sketch graph indicates how forces change (except for sidethrust effects) as flying speed increases.

and then build up as you become happy with the climb trim, but this is not possible if using a glow. If you are running the engine rich in order to achieve low power then you should beware of any tendency for it to "rev-up" as the fuel supply is strangled. If you are using a combined engine/D.T. timer, it may be possible to arrange to D.T. immediately after the engine stops, but whilst this technique reduces the risk of a crash, it does impose considerable stresses and you will need to be very confident in the strength of your wings before using it.

The method I use is to start by setting for a very short (approximately 2 seconds) engine run on full power and launch at an angle of about 40 degrees into or slightly right of any breeze that exists. I find that by doing it this way, the engine has cut before the model can get into too much trouble and the shallow climb angle allows it to recover from any stall in time to settle into its glide and land safely. If this flight is safe I stretch the engine run and raise the launch angle slightly. It should be noted that at this stage I am concerned only with safety, and because the model cannot be expected to climb correctly until launched at the correct angle, I would not make any adjustments unless they were essential in order to prevent a crash.

As soon as I am satisfied that it is safe to do so, I make all further launches at the ultimate climb angle I expect to be aiming for, i.e. approximately 60-65 degrees. The model should climb away, banking and turning slightly to the right. This pattern, if continued, should result in a consistently steep climb, turning to the right and with the wash-in rolling the model to the left.

The object of the exercise is to balance the three factors of turn, looping tendency and roll in order to achieve the classical stretched "corkscrew" climb pattern. If any of these individual factors is out of balance with the rest, the correct climb pattern will not be achieved. Since the amount of wash-in used is not adjustable in the normal course of events and since we have set the tail tilt for the glide, we have only wing incidence and rudder adjustments to worry about. Changes to the thrust line will only be made only if all else fails.

At this stage the most likely fault will be for the model to roll excessively to the left as the speed builds up; this can be corrected by applying a little right rudder but remember the earlier comments about the effect of rudder and make any adjustments with extreme caution. Similarly, any excessive right turn can be corrected by applying left

rudder. Correct any excessive looping tendency by reducing wing incidence a little at a time. It is unlikely that any tendency to dive will be observed, but if any is present it should be corrected by increasing wing incidence. And remember - only make adjustments *one at a time*, testing between each.

When the correct climb trim has been established, it may be necessary to re-trim the glide by "fine-tuning" the C.G., adding weights as needed.

Trouble shooting

Having completed the trimming process one may be left with some residual problems that cannot readily be ironed out. Here are some of the more common ones and some possible remedies:

1. *Model displays a tendency to roll left in spite of attempts to remedy this with rudder adjustments:* Make sure your launch is steep enough because if it too flat the model will "corkscrew" away from you horizontally rather than up. If in any doubt get someone to watch and advise you on your technique. If attention to your launch doesn't produce a cure, then it is likely that you are using too much wash-in. Try removing some of the warp by steaming and try again.

2. *Model drops its right wing immediately after launch but flies a good pattern when speed builds up:* Check wind direction. If this is not the problem then it is probably the effect of right rudder at low flying speed. Try throwing harder to get it up to speed immediately. Failing this you could try adjusting the thrustline to the left and re-trimming.

3. *Model climbs and glides well but takes an excessive time to recover from a stall:* I'm sorry, but the C.G. is too far back and there's nothing for it other than to re-balance it further forward and start again.

4. *Inconsistent climb trim:* Assuming all flying surfaces are firmly fixed and the engine is running reasonably, this problem is almost certainly a result of inconsistent launching. From my observation, this must be just about the commonest fault of all. I have seen the most experienced of flyers making trim adjustments in order to correct for a bad launch only to have to restore it to its original setting after the next flight.

I hope that I haven't made it sound too complicated, because it's not that bad really. So get building and flying, but don't get too good!

Fancy a stable F/F job, suitable for R/C conversion?



ZIZ IS IT!

Build Peter Fisher's 50inch sportster and go fun flying

‘WHAT’S A ZIZ?’ we asked. All we could think of is what happens when one’s feet are put up after Sunday lunch (assuming no model flying is in the offing, that is) and eyes are allowed to shut, but this did not seem right.

‘The Ziz,’ replied Peter, ‘is of course named after the gigantic bird of Hebrew myth. It was the King of all birds, and was said to be a distant relative of the better known Roc, which, in legend, was said to feed on young elephants. Truly a most formidable fowl!’ Indeed...

Despite this ancestry, the Ziz offered here is rather more docile. Peter’s original, powered by a Micron 0.9cc diesel (rather a nice engine, we thought) first caught our attention at a Chobham flying meeting a while ago. A parasol wing with plenty of area, and generally straightforward construction make it an ideal sport model, perfectly suitable for conversion to R/C if you’ve a mind to.

By the way, Peter’s original is equipped with a couple of rather special pilots. Perhaps we’d better let him explain:

‘The miniature mice pilots are both ladies and are 1” in overall length, excluding their tails. They are both fully dressed for Old Warden Air Displays, and one has goggles.

They were made for me by Mrs Bader, who at one time ran a small model and craft shop in Wellingborough. Usually she made only very superior, large scale (about 10 times full size), fully dressed mice. The pilots in the Ziz have always done an excellent job of piloting this machine!’

The Mrs Bader referred to is, of course, the wife of Group Captain Sir Douglas Bader. We regret that we cannot offer plans of her handiwork - but the Ziz is here, with Peter’s instructions below. To further speed you on your way to the flying field, we are able to offer full size component pattern sheets on self-adhesive paper ready to stick onto the balsa, thus to avoid the chore of marking out. These are available for £1.10 inclusive of postage. Quote number PAM 1521 when ordering.

But let’s get on with the construction. Over to Peter again...

Down to business

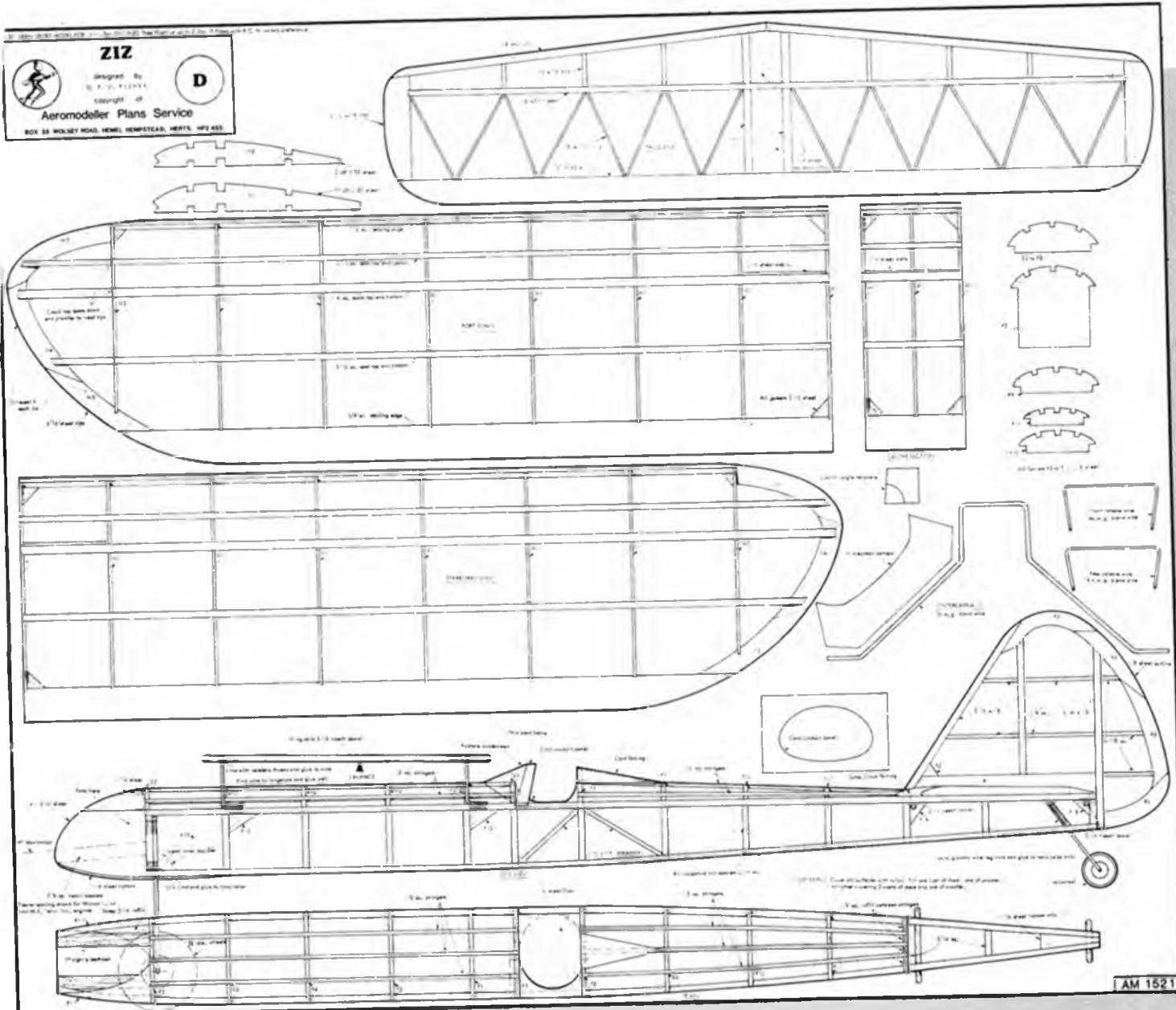
The Ziz has been designed for the model aeronautical connoisseur who appreciates traditional constructional techniques, applied to a carefully designed and extensively tested semi-scale vintage style sports

F/F or R/C model.

The airframe has been stressed so that engines up to a maximum capacity of .19cu. in. can be used; but excellent F/F or light-weight R/C characteristics are obtained with good 0.9cc. or larger engines. The special aerofoil gives excellent penetration for R/C while retaining suitable characteristics for F/F.

Fuselage

Cover the plan with a piece of wax paper, thus preventing the parts from sticking to it. Pin the 3/16 × 3/16in. longerons in place followed by 3/16 × 3/16in. uprights, 3/16 × 1/8in. diagonals and formers F1, F12, F13, F14 and F15. Build the second side over the first. When dry, remove from the plan and sandpaper to ensure identity; then separate with a double-edge razor blade. Assemble the sides over the plan elevation starting with the parallel section F2-F8 composed of formers on the top and 3/16in. × 3/16in. spacers below. Draw in the tail and cement to a scrap shaped upright. Check alignment frequently. Fit F10, followed by F9 and F11 with complimentary lower spacers; finally the rear 3/16 × 3/16in. spacers. Cement the 1/8 × 1/8in. stringers and the cabin floor in



Full-size plans of the Ziz may be obtained from Aeromodeller Plans Service, PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts HP2 4SS. Price is £2.50 plus 55p postage. Please quote AM 1521 when ordering.

place. Bend the wire cabane supports to shape over the plan and bind in place. The 3/16in. dia. dowels are bound and cemented on top as indicated. Fair in the space between the supports and the lower 1/8 x 1/8in. stringers with scrap balsa. Bend the undercarriage to shape, bind to a pair of inner uprights, and then cement in place securely followed by support gussets. Fit tailwheel assembly. Bolt the engine to the engine bearers and then epoxy in place, filling in the space between them and F1 with scrap sheet. Fit fuel tank and engine cowlings. Fuelproof engine compartment thoroughly.

Tailplane

Build over the plan, starting by locating the trailing edge and leading edge with pins, followed by tips and 1/4 x 3/16in. main spar. Fit front 1/4 x 1/8in. riblets and rear 1/16 x 1/4in. ribs, which must be tapered by

1/16in. so that they mate with the 3/16 x 3/4in. trailing edge. Sheet the centre section with 1/16in. balsa and shape the leading edge and tips to section as indicated.

Fin

Pin down the outline followed by 3/16 x 1/8in. uprights and 1/8 x 1/8in. horizontals. Shape leading edge and trailing edge to aerofoil section after removing the structure from the plan.

Wings

The wings are made up in three sections comprising a centre section and two outer panels. The root ribs on the outer panels are canted towards the tips to allow for the dihedral; this is done using the card template shown on the plan. The centre section root ribs are canted towards the centre line. Dihedral should be 4in. under each wing tip. Notch the 1/4 x 1in. trailing

edges of the outer wing panels and shape their outer ends with the trailing edges superimposed so as to ensure identity of the tip profiles. Shape them to wedge section following the rib contours, sandpaper and pin together with 1/4 x 1/4in. lower main spars, and 3/16 x 3/16in. spars over the plan. Cement the ribs in position canting the root ribs as mentioned above. Add the 1/4 x 1/4in. top main spars, 3/16 x 3/16in. top spars, tip supports, 1/4 x 1/4in. leading edges and formers W3-W5. The centre section is built similarly to the outer panels, and when all three sections are finished, they are cemented together and the tip dihedral of 4in. checked carefully.

Covering and finishing

Carefully sandpaper, and then clear dope all the framework. Sandpaper again with 00 grade. Nylon is preferred covering material. Soak it in a bowl of water, a panel at a time.

Squeeze out and pull back into shape. Apply with clear dope, dopping through the top of the nylon. Keep the grain straight up and down the panels. Nylon will not shrink, and must be applied free of crinkles. The dope will shrink in its pores and so give a first class finish. The white marks come out with subsequent dopping. Apply two coats of clear dope over all surfaces, except the fin, which needs only one. The first must be applied in warm dry conditions to remove the white blushing. Apply a coat of fuel proofer over all surfaces.

Radio control installation

The Nicads are fitted as far forward as possible in the fuselage. Next come the receiver and servos. Access is arranged through hatches in the underside of the fuselage. With larger engines (and if three or four function R/C is fitted) it is advisable to sheet the fuselage forward of the cockpit with 1/16in. sheet. If .15 to .19 size engines

are chosen, the entire fuselage sides should be sheeted.

Now to consider the control surfaces. The fin should be built in two parts. The front fixed section forward of the longer 3/16 x 1/8in. upright and the rear moving rudder section. A further 3/16 x 1/8in. upright is fitted to the front of the hinged rudder section.

An elevator can be fitted to the trailing edge of the tailplane; this should be made from two sections of 1/8 x 1 1/2 in. sheet joined with a wire yoke/horn to allow room for the rudder to move. The elevator is made to the full span of the non-curved portion of the existing trailing edge and should be blended to fit in with the tips.

Strip ailerons may be fitted if four-function radio gear is used. They should be full-span, except for the centre section of course, and should be made from 1/8in. sheet, one inch wide. In this case, dihedral may be reduced to 1in. under each tip; otherwise, 2in. dihedral is sufficient for an R/C Ziz.

F/F trimming

Hold the wing and tailplane in place with elastic bands. Check to ensure that the trailing edges of the wing and tailplane are parallel. Check that the CG position is on the C/L of G marked on the side elevation. Choose a calm day and the traditional long grass. Hand launch the model into wind from shoulder height. Aim for a point on the ground about a hundred yards ahead of you (it won't get that far!) Ensure that it is launched with its wings parallel to the ground. A long flat glide should result. If the model dives, pack the underside of the trailing edge of the tailplane with a piece of 1/16in. sheet balsa. If it stalls apply this remedy to the underside of the leading edge. Built correctly the model flies perfectly with no packing at all.

Carry out first power flights on reduced engine power. Set the fin to give about 1 1/2° right rudder. Engine run should be about 15 seconds. Trim for a gentle turn to the left under power and on the glide. Happy flying!

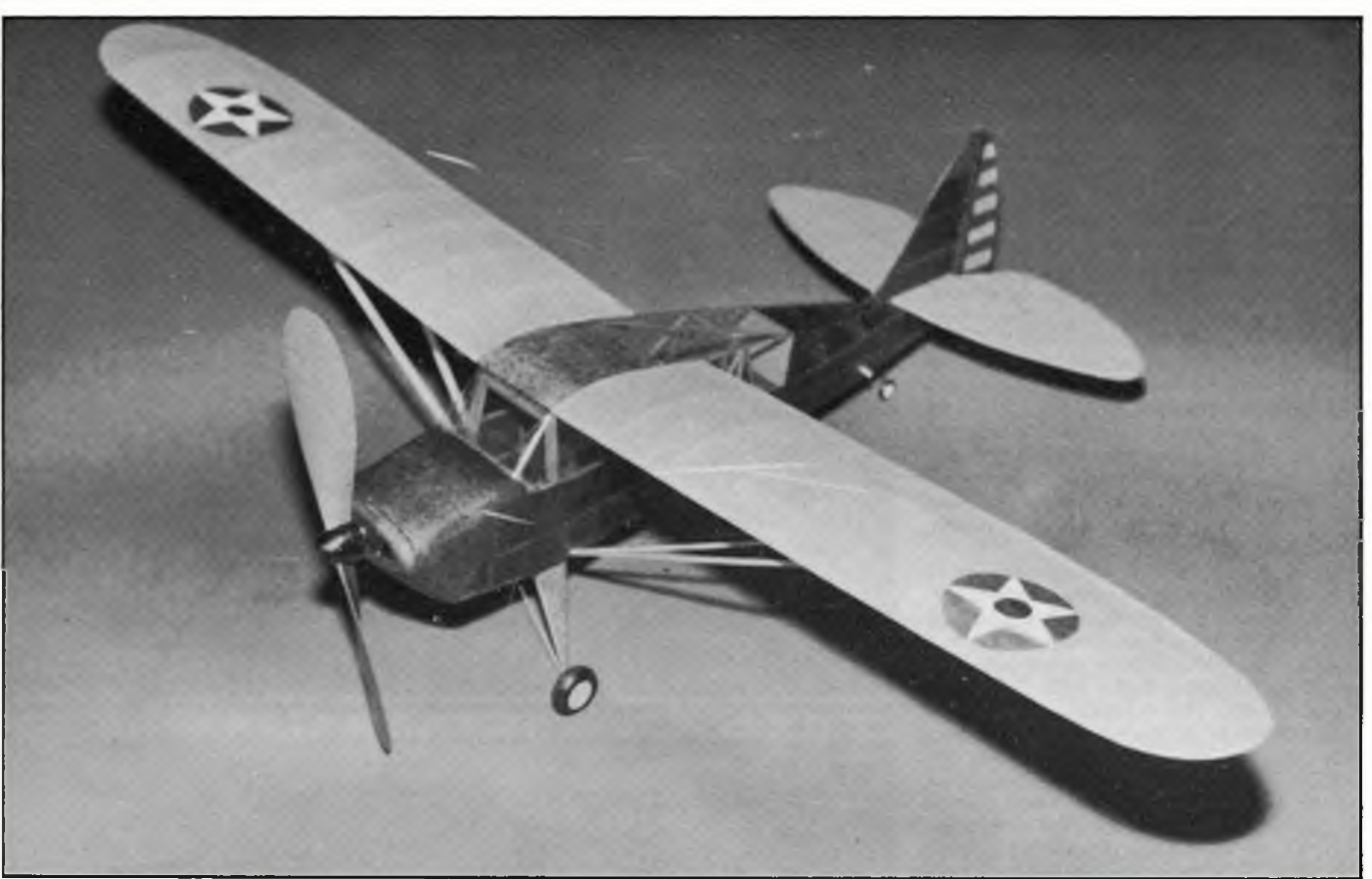


The Ziz rests between flights. Model has all the necessary requirements for slow, steady sports flying. Prototype was powered by a Micron 0.9 diesel - not many of those about!



**MOTORS — GLOW PLUGS — SPARES
AT YOUR FAVOURITE MODEL SHOP**





INTERSTATE L-6

Try a spot of Rubber Scale — build John Watters' 27 inch (3/4 in : 1 ft) replica of this little known U.S. trainer. Full-size plans overleaf; comprehensive instructions below

IN GENERAL CONVERSATION with a colleague of mine, who knew that I was interested in model aircraft, and for that matter most things aeronautical, he mentioned that he had the first three volumes of *Aircraft of the Fighting Powers* 'originals' and would I like to look at them... obviously the answer was yes.

Although I have quite a comprehensive amount of literature on both full size aircraft and models, I must admit that I had never seen any copies of these books - let alone owned any. True to his word he brought them for me to look at. After a few attempts to 'cross his palm with silver', to lever the volumes away from him (I must admit I would not have parted with them either), I was reduced to relying on the trusty Xerox copying machine to add the more interesting information to my collection.

One of the many new (to me anyway) aircraft within these volumes that looked right for modelling was the Interstate L-6. This aircraft gets its designation from being the sixth light liaison aircraft. The full size machine started life as the Interstate Cadet; and was modified to the L-6 by enlarging the cabin area, and glazing in particular. This was to allow for the addition of a 'map table'.

After studying the L-6, it seemed most appropriate to design it for rubber power (with a few necessary modifications). One thing it does have in its favour, for rubber power anyway, is its reasonably long undercarriage legs. This allows for a good propeller diameter with some ground clearance, without having to exaggerate the undercarriage.

Tailplane and Fin

The enlarged tailplane area is the only deviation from true scale outline.

Due to the rather 'curvy' outline of the fin and tailplane, and its flat plate section, a laminated outline seemed to be the best type of construction. To anyone who has not tried a laminated construction before it may look difficult, but once mastered it really isn't. Excellent stiffness for little weight is the main advantage.

First mark out onto either a piece of 1/16in medium balsa sheet or card the whole of the inner profile of the tailplane. Cut out the shape and with a candle rub the edges of the template until it has a thin coating of wax. Run a piece of string around the outside of the template and measure the length, which will be that of the balsa strips you will need.

For the laminates themselves, cut strips of 1/16in wide balsa from 1/32in medium sheet. Make the strips longer than actually required, and cut a few more than you need, just in case you break one. The template can now be pinned down onto your building board. Before the strips are wrapped around the template, they should be softened. This you can do either by soaking them in water, or use good old saliva, i.e. run the strips through your lips a few times.

Position the first strip (still wet) against the edge of the template and pin it in place. Now with a firm continuous motion, wrap the strip around the template, pulling gently. The strip can be held against the template by scraps of balsa pinned against the strip. The next and any further strips are

added in the same manner, but one face of the strip should be smeared with PVA glue. The small retaining scraps are removed and repositioned each time a strip is added.

After building up the outline of the required thickness, and allowing it to set thoroughly, sand the structure smooth whilst it is still on the template. Lastly, remove the outline from the template and trim to length. Now pin the outline down over the plan and build up the inside structure from the 1/16in sq cross pieces. Finally remove the completed part from the plan and lightly sand smooth.

The above construction method can be used equally well for the fin and wing tips. If on the other hand it all seems too much, the outlines can be made up from sheet pieces - but it is recommended that you laminate!

Fuselage

Begin by building up one side frame to the shaded outline. Select medium stiff strips for the top and bottom longerons. The remaining spacers can be from lighter balsa. I used a PVA glue for all the 'balsa to balsa' joints.

Use whichever method you prefer for building up the second side (building the two frames one on top of the other will give you the best results). Now with both sides completed, glue formers F4 and F5 into position on one side frame. You will probably find it best to check the correct alignment of these formers by positioning the side frame over the plan view. The second side can now be added, and when set

glue the frames together at the tail.

The upper fuselage formers F6, F7 and F8 can now be glued in place and the bottom 1/16 in sq spacers added. The nose formers F1 and F2, plus the dashboard former F3, are added next along with the remaining 1/16in sq bottom spacers.

Because of the slightly 'out of square' fuselage cross-section, you may find it best to hold the frames in position with elastic bands when fitting the spacers. The top fuselage stringers from former F5 to the tail can be added next, plus the three 1/16in sq nose stringers. Now add the cabin spacers, i.e. the wing leading edge section and the two tubes which pass through the part wing ribs. I used rolled gummed paper to make the tubes, although aluminium or even plastic could be used.

In my view, one of this craft's most appealing features is its large 'green-house' cabin, so particular attention should be paid to the roof and side framework in this area. I used 1/16in x 1/32in wide strips, carefully removing any glue blobs from the joints. Cyanoacrylate glue is ideal.

The fuselage 1/16in sq side and bottom stringers can now be added, butting the ends up to the front and rear spacers as shown on the plan. The nose area can now be completed. Sheet over the top of the nose with 1/32in sheet balsa. Do not try to bend the sheet dry. The sheet will bend easier if wetted on the 'inside' surface and then slowly bend to shape. Hold the sheeting in place with either elastic bands or tape, and allow it to dry out before gluing in place.

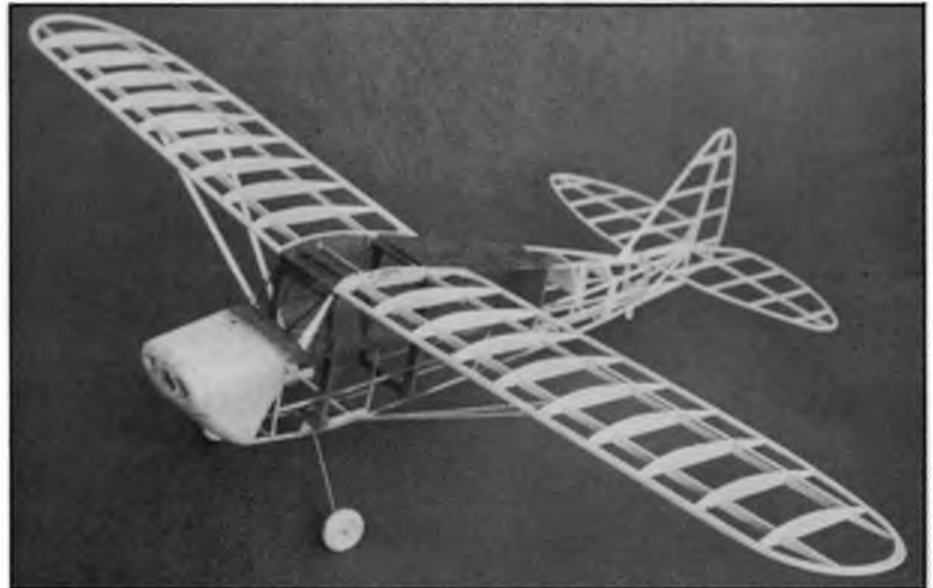
The remaining 1/8in sheet nose side pieces can be added, along with the 1/4in thick bottom block. Make up the nose from either block or laminated sheets. Tack glue the nose block into place and sand the whole nose area to shape. The whole fuselage structure should now be given a light sanding.

Now bend the front undercarriage legs from 20swg wire, and bind and cement to the bottom of former F4. Add all the remaining bits and pieces, i.e. windshield struts, wing strut tubes and any cockpit detail you wish. I was unable to find any of the latter, but decided that because of the large area of cockpit structure visible, this structure would look far better painted. I gave my model a light spraying of dark green paint, although felt tip pens could be used to colour.

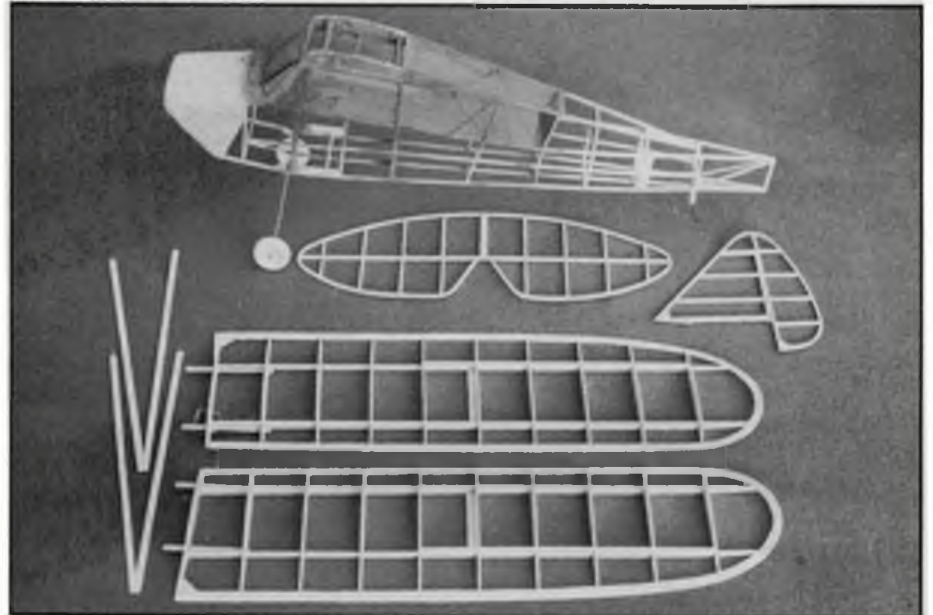
Fitting the undercarriage leg fairings and tailwheel are best left until after the fuselage has been covered.

The cockpit glazing should not really offer any problems, although care should be taken not to smear the glazing with glue. Using acetate, thinned down dope worked well as the adhesive. To attach the glazing to the main cockpit structure is sufficient; and this also gives a neater appearance rather than trying to stick it to every piece. The windshield can be held in place more easily by letting it into a slot in the top sheeting.

The fixing method itself, for the benefit of anyone who has not tried it, it is as follows. First, with a small brush, apply a coat of dope onto the outer edges of the cockpit structure, i.e. the cockpit outline. Now hold the acetate pieces in place with masking tape or sharp pins. Next, run thinned-down dope along the edge of the acetate sheeting and the doped structure. It should creep between the two and form a bond. This takes time, so don't rush it. If all else fails, spots of cyano work wonders. (continued on p.495)

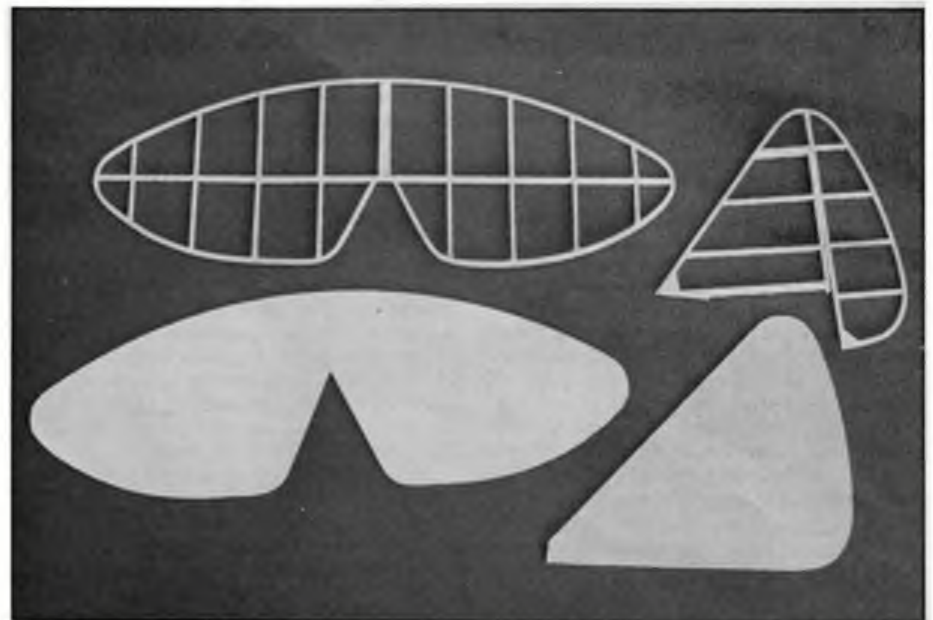


Construction of the L-6 is relatively straightforward - but don't rush! Care taken will ensure accuracy and make for easier trimming.



All the bits ready for covering. Note that the cockpit interior has been painted to avoid anaemic-looking balsa strips.

Finished tailplane and fin structures rest above the templates used to form the laminated outlines. Do try this method - it's strong, and surprisingly quick. Details in text.





OLDER READERS WILL REMEMBER when newspaper placards were printed (with wooden type) instead of hand written with a felt pen. For some reason there were always plenty of unused ones stacked in the writing shop of my father's business and I always used them to draw plans. These 20 x 30in. sheets were entirely adequate for most models - and were free! The reason for this reminiscence is that I came across a mouldering fragment of one at the bottom of an old box which, on gingerly unfolding it, took me instantly back forty-odd years.

In the 1930s I used to cycle a couple of miles or so to a flying site on the outskirts of the town for an hour or so of flying on a fine evening, usually meeting a couple of friends of similar enthusiasm. If there was any breeze it was usually off-shore, which made it the short way across the field; we usually flew small models of 30in. span or less. From the field, incidentally, I saw both the Hindenburg and the Graf Zeppelin as well as the regular D.L.H. Junkers 52 evening flight heading for Croydon; sometimes, too, a late Vickers Victoria returning to Manston.

However, a few hundred yards from my house was a small open area which housed some grass tennis courts and abutted on a small group of allotments. I have a vague recollection of some financial problem, but in any event the court nettings fell into disrepair and late in 1938 the remnants were removed, leaving the whole space open apart from two large elms on the border with the allotments. It seemed too good an opportunity to miss. The area was dignified, by the way, with the name of Victoria Park.

I drew up and built a model which I felt would fly reasonably in the space available, on perhaps half turns, finger wound, and which would also suit the short way of the

PARKER

Pre-war revival — here's a real charmer of a rubber

job for you! Vic Smeed tells us the story behind the

model and gives full building instructions

usual flying field; and it was the mildewed remnant of this plan which I found recently. I did fly it in the little park on a number of occasions; two chaps who watched several times eventually approached me, both wanting to build a model. Neither had before, but both insisted that it was this model they wanted to build. I drew up tidier plans for them, and both produced very reasonable results. Their delight when the models flew successfully was gratifying!

The model proved to have quite reasonable performance on nearer full turns; it placed 3rd in its class in a local inter-club derby, which I recall only because the results appeared in 'Club News' in October 1939. I redrew the plan from the rather smelly scrap I'd found, plus memory, and early in 1985 built a replica which flies very happily; vintage enthusiast Alan Wiggs has also built one and is pleased with the performance. It was the latter model which raised the need for a name as I usually hung Andromeda on any new model and this could be confusing. In view

of the influence on its origin, Victoria Parker seemed a reasonable choice.

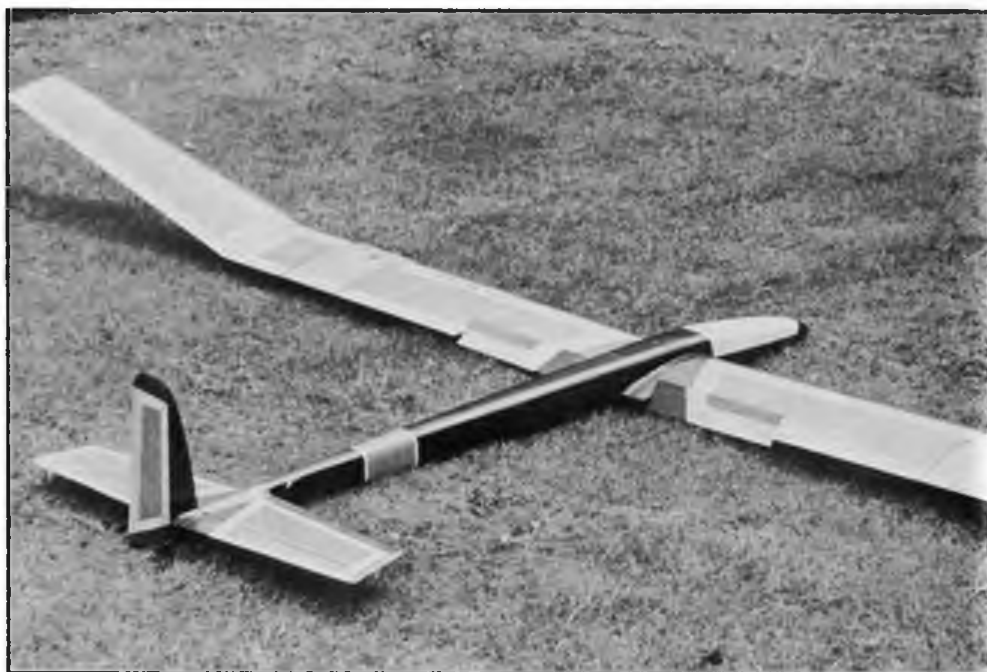
Looking at the structural design today, there are shortcomings, particularly in respect of warping. That 1/8in. square flat plate tailplane and the shortage of ribs in the outer wing panels seem to be asking for trouble, but that's how it was originally. The fins are over elaborate and could well be just cut to outline from 1/16in. sheet; which is what Alan Wiggs has done; I believe he has also modified the tailplane to a curved symmetrical section and changed the undercarriage to single tube type with a forward wire frame held by rubber to give a sprung rearward pivot action. There was no DT on the original (we hardly knew what thermals were!) but it is simple to fit one.

Apart from the exercise of building as it used to be, and ending up with a nice flying sport model, construction is very inexpensive. There are no large chunks or sheets of balsa (except for the prop) and the requirements are basically eight strips of 1/8in. sq. (two hard for leading edges, the

Continued on p481

The BRITISH OPEN CLASS

In this two-part special feature, George Stringwell takes an analytical look at the pedigree of these top-line thoroughbreds.



THE BASIS OF THIS ARTICLE is the paper given to the second BARCSTEC Symposium in 1985. The aim and purpose of both the talk and the subsequent article is to fix in place, after almost 20 years of development, the history, current state of the art and possible future of the large duration type thermal soarer which has been developed peculiarly in this country, primarily for competition in percentage slot soaring events to the rules of the British Association of R/C Soarers.

First of all, to define the beast; an Open class model can be any size up to the FAI maximum weight and area limitations, with no restrictions on type and number of control surfaces or functions. In practice, the average size of model has gradually grown over the years (for reasons discussed later) until a glider of around 11 or 12 feet wingspan, with 800 to 1000 square inches of area and with a weight ranging between 4 and 8 pounds is now the norm. What are they like to fly? Well, the answer to that, if the design is right and the model well adjusted, is 'b****y marvellous!' A good Open model is capable of covering vast areas of sky efficiently at a good glide angle, is agile enough to take advantage of tight and light areas of lift and, once placed in a thermal, will ascend like a homesick angel. A good Open model is strong, tows easily, and lasts a surprisingly long time barring accidents (which is probably a good thing, since they are large and do consume a lot of time and materials during construction). A good Open model, in the view of the author, and a lot of other soarers, gives the biggest thrill available to a R/C soaring pilot.

Although primarily developed by and for the requirements of contest flying, the Open class soarer makes a splendid sport model, and when flown in this way without the

pressures and rigours of competition, they tend to last almost indefinitely, offering very good returns in terms of cost per flying hour (a point to bear in mind here is that, when thermal pilots go sport flying, they tend to spend a much greater percentage of the time with the model actually in the air than do their R/C sport power counterparts. It is not unusual for a four hour session in decent conditions to yield over three hours of actual flight).

Many factors influence the way a particular class of model develops in any one country. To simplify matters, these factors are listed in Table I, and dealt with here in more detail.

Rules

First and foremost, any class of competitive model is a child of the rules to which it operates. Gradual development results in models which are more and more suitable for the job in hand, and what were originally very challenging tasks set by the rules become easier. The longer the period of stability granted up unchanged rules, the nearer will the models produced approach the ultimate for those rules. Table II indicates the principal changes in the Open class rules since their inception.

Often, model aeroplanes become *too good* for the rules; a classic example of this can be seen in the World Championship classes, in particular free-flight. The 'blue riband' Wakefield rubber model used to allow as much rubber as you wanted within the restriction of a minimum all-up weight of just over eight ounces. In those days most people were happy to produce a model that would do three minutes, but the experts developed things to the point where the five minute maximum flight time was a formality. So the rule-makers changed the

rules, reducing the allowed weight of rubber to first 80 grams, then 50 grams, then 40 grams, whilst leaving the overall weight requirement unchanged. The result? Current F1B (Wakefield) models at the highest level will still do five minutes, on a fraction of the power, due to aerodynamic and structural development, and more refined techniques of thermal detection.

In Open class thermal soaring, we have enjoyed a period of great rule stability, with only the most trivial of changes in the last ten years. In consequence, the modern model is pretty well developed for its purpose - to return the longest possible flight time within a ten minute slot. To do this successfully, it must tow quickly, cover sky economically in search of lift, thermal well once contact is made, and handle nicely to facilitate a precision descent and landing as close to the ten minute mark as possible. It is still possible to win contests with out-of-date machinery, due to the moderate and acceptable luck element which is fortunately still present in thermal soaring competition, but it gets harder every year, and anyway, the more developed models are so much more *fun* to fly!

Weather

A subject dear to the heart of all British aeromodellers, this is the key factor in producing a type of thermal soaring machine which is quite different from the models flown to similar rules in, for example, the United States. Although we do sometimes enjoy calm conditions in this country, on the majority of flying days the soaring pilot has to contend with wind to a greater or lesser degree. This fact alone has encouraged the emergence of a breed of model with higher average wing loadings, greater attention to cleanliness of design,

S THERMAL SOARER



Main photo, left: The author's Aeolian, designed in 1976, was of 12ft. wingspan and 8oz/sq ft loading. Apart from the root airbrakes, it is a typical model of the period. Above: Derek Martin designed the Cadenza P80 in 1980. These three prototypes won many contests, including the Nationals, in the hands of R.R. clubmen. Below: A collection of typical open models from 1977, showing the then-common 'traditional' structures.

low drag, strength and greater efficient speed range than is common in other countries where duration type thermal soarers are flown.

Interestingly enough, the writer has some sample statistics, completed by most of the contest directors organising BARCS League open events during the 1984 season, which was widely regarded as being an excellent summer from the point of view of thermal soaring. The wind aspect of these statistics is summarised in Table III. Without going into too much detail, these clearly show that, even in a good year, only a very small percentage of contests are flown in what may be described as calm conditions, the vast majority taking place in winds of between five and fifteen mph. What the equivalent figures for the awful summer of 1985 would be, I shudder to think! However, such an analysis certainly explains the fact that whilst lightly loaded 'floaters' retain a high degree of popularity for sport flying (where one can pack-up if the wind rises) they are rarely seen these days on the contest circuit.

There appears to be another difference between the British and Continental climate and types which has had an equally great influence on the direction of model development here. Put simply, this is the nature of our lift. We tend to experience very locally-variable conditions in this country; often there will be two or three small areas of lift within range of the flying site and as many (or more!) areas of sink. These type of conditions tend to encourage the trend towards faster flying models with emphasis on good glide angle, since one just has to be prepared to move about fairly rapidly. In continental-type climates, the tendency is for lift and sink to occur in much larger areas, so that at a particular flying site and at a particular time, the whole of the area within reach of the thermal soaring pilot (i.e. his limits of visibility) will be offering the same kind of air. In these circumstances the ability to move efficiently and quickly around the sky is of much less importance. It is also worth noting that, in such conditions, the very viability of percentage-slot duration contests of the British type is open to doubt; if each pilot in a particular slot can expect to find the same conditions, no matter what part of the visible sky he operates in, the whole thing is reduced to a gliding match, or minimum sinking speed contest, rather than a test of pilot skill. This factor perhaps accounts for the fact that, in Europe, duration type contests are very much the poor relation in comparison to the multi-task events.

Available Technology

Naturally, the currently available technology has a great effect on the way in which any class of model develops. In terms of the R/C soarer, this heading needs splitting into three parts, broadly titled Aerodynamic, Structural and Electronic.

a) Aerodynamic developments

Looking at the Open model of fifteen years



ago, compared with its 1985 descendent, a number of changes are apparent. First of all, the section used is different. In 1970, the majority of models used a fairly highly cambered section, probably of the NACA series, or even a good old Clark Y. Then, in the mid-seventies, the impact of Dr. Eppler's work made itself felt on the soaring scene, and, to date, his popular specialist sections such as E193 and D205 have numerically been dominant. These sections have a semi-symmetrical type leading edge, and are relatively thin. Lately, other sections imported from the F3B field such as the Quabeck series have started to see the light of day in Open models, sometimes together with servo operated trailing edges to make the most of their properties. It might not be readily appreciated that the gradual change in structures referred to under the third sub-heading of this section has had an important 'aerodynamic' effect in that, whilst still imperfect, many modern Open model wings reproduce the intended section to a much higher degree of accuracy than was the case in the days of open-structure wings.

The second readily apparent difference is that tailplanes are now much smaller than in days of yore; moment arms are shorter and tailplane sections are almost universally fully or semi-symmetrical, rather than flat bottom or 'lifting' as was once the case. The net result of this is that models tend to be much less auto-stable than they were, and are further removed from their free-flight ancestors, requiring more continuous flying but offering quicker reaction to air disturbances which normally accompany lift.

The third notable feature is a great consciousness of the importance of keeping the old enemy, drag, on a tight rein - external rubber bands, 'gappy' joints, square section fuselages and so on are out. Naturally, the faster one wishes a model to fly, the more important this becomes. It is in this field, perhaps, that the greatest progress in the near future may be made, since most soarers' idea of what constitutes a low-drag set-up is pretty empirical, usually limited to trying to make the fuselage cross section as small as possible (which is not necessarily the best thing) and generally streamlining everything.

b) Structural developments

In the 18 years since the first officially organised thermal soaring event in this



country in 1968, there have been great changes in the materials available to the builder of R/C gliders. Table IV summarises some of the techniques which we now accept as 'conventional', and guesses at one or two which might become so in the future. The wide acceptance of blue foam, glassfibre, carbon fibre, epoxy resins, heat-shrink woven fabrics and, more recently, Kevlar, alloy spar tubes and aramid fibres have produced a model which, structurally, is a very different animal from the soarer of fifteen years ago. To some extent, developments have been forced upon the soaring population by the need to remain competitive with the leaders and hence fly bigger models in worse and worse conditions. Building a strong wing for a twelve foot thermal soarer (for an acceptable weight), when using a wing section at the most ten percent thick, employing an aspect ratio in the 18 to 20 region and, of necessity, some form of multi-part wing, is an infinitely more demanding exercise than producing a strong wing for, say, a .61 powered R/C aerobatic model, where one has the advantage of a low aspect ratio and thick section. For the latter, stressed skin over white foam with a glass reinforced centre-line joint will do just about

as good a job as any structure; for the former, it would be pretty useless without careful fitting of spars and reinforcements, and even then, it would be less than ideal.

Fairly early in the history of the thermal soarer, the glass fibre shell fuselage became more-or-less the standard method. This is not due to any great superiority in structural terms over a conventionally constructed balsa and ply item, but was rather for convenience, and because nice 'streamlined' shapes could be reproduced. It seems, perhaps, strange that in commercial and semi-commercial terms, this, the least important component of a typical thermal soarer, has dominated the scene - maybe this is just because almost everyone now knows how to make glass fibre fuselages! There are, however, distinct differences in terms of strength, weight distribution and durability between the best and worst examples of fuselages currently available on the market. Be that as it may, the enthusiast setting out to create an 'own design' open model will, most often, reach for a commercially available fuselage, or one available from a club-mate, as a basis for his design.

The wing, on the other hand, is a very different story. From the virtual standard of





Left: Dave Worrall's 1981 version of his classic Plus Max, 150 in span, was still winning contests in 1985. Above: Nationals 1978; and Roy Pitts' already elderly Wildflecken design collects 2nd and 3rd in the hands of York clubmen Barker and Buckham, behind the winning Aquila.

10 to 15 years ago, that is, open framework balsa structure, covered in nylon, heat shrink film or even tissue, there has been a gradual shift to solid surfaced wings - 'stressed skin' structures, in other words, - either built up and sheet covered or with foam cores; white foam at first, now more commonly blue styrofoam. As mentioned, this emphasis on solid surfaces has had an important spin-off in the aerodynamic sense in greater accuracy of reproduction of the chosen section, although we still have some way to go in this field to approach the ultimate offered by the moulded glass wings which a few specialists have used on multi-task models and very large scale gliders.

Another aspect of wing structure development has been the ability to build ever stronger and more rigid wings, capable of withstanding higher towing and flying loads to allow all weather operation at wing loadings which, only a few years ago, would have been considered quite outlandish for open thermal models. This has been achieved by the use of vertical ply spars in foam wings, alloy tube spars integrated into both foam and built-up wings and, sometimes, purpose produced carbon fibre spar booms. Hand-in-hand with this has been the upgrading of the wing joining



A later development of the Cadenza was the less successful low aspect ratio Cadenza GT.

systems which the large soarer is almost obliged to use, from 10 swg piano wire up through 8 and 6 gauge, 1/4 and 5/16 inch spring steel to vertical spring steel joiners, purpose machined alloy stub spars and even half inch mild steel bar! The art is in choosing a joining system which is strong enough, but not too strong, for the wing structure in question.

Developments in electronics

Whilst the general reduction in size of the airborne systems over the last fifteen years, coupled with their ever-greater reliability have been welcomed by thermal soaring enthusiasts, some of the more 'technological' developments mean less to us than to our power flying friends. It is difficult to envisage a thermal soarer usefully employing more than five channels. Switchable trim on elevator is very useful; rate switches rather less so; transmitter mixers are really relevant only if you wish to experiment with ailerons (as, admittedly, more and more people do), and the more esoteric things such as pre-programmed roll buttons just clutter up the Tx as far as we are concerned. Table V offers a view of the developments which are important to us, and suggests one or two which might be in the future.

The thermal soarer's requirements, as far

as a radio outfit is concerned, really boil down to reliability, reasonable weight and bulk of the airborne pack, good interference rejection, absolutely guaranteed out-of-sight range, long operating duration per charge and first class servo resolution. Anything else is really peripheral, and we are very fortunate that we do not have to pay a fortune for a set bristling with knobs and switches to get what we need. There are many 'economy priced' sets on the market which, with the addition of nicad batteries for the Tx and Rx, come as close to the ideal for our requirements as one could expect. The only slight criticism is that more manufacturers do not offer the switchable elevator trim as a standard feature or optional extra, but in general the thermal soaring pilot is very well served at very reasonable cost by the electronics industry.

Although airborne 'thermal sniffers' are not officially allowed in this country (at least, not those utilising radio transmission to the pilot) I know a few people who have experimented with these, and they confirm, without exception, that they are amazingly efficient devices making the finding and centring of lift very much easier. Whilst it would be nice if we could use these 'toys', both for record flights, especially cross-country, and for practice and sport flying to help sharpen up our lift recognition, I am Luddite enough to feel that they would have to be banned from contests. This is merely because, if allowed, their use would quickly become mandatory, and would undoubtedly help to reduce the mass appeal of the open class contest.

To be concluded...

For contrast, this is an earlier (1978) version of the Plus Max, smaller, with straight dihedral.



Left: One of the very early R/C thermal soarers was John Fletcher's RM 'Drifter', clearly showing its free-flight ancestors; note short nose and large, lifting section, tailplane. Below: Ray Cooper in the early '80s with his classic and immaculate 'Explorer I'. Bottom: The 10 foot Super Nova kit model by Jim Baguley enjoyed great popularity in the early and mid 70's, but this one made the fly-off at Radloglide as late as 1980 for David Taylor.

Table I: Factors affecting model development

1. Rules
 2. Weather
 3. Available Technology
 - (a) Aerodynamic
 - (b) Structural
 - (c) Electronic
 - *4. Pilot Ability and Flying Technique
 - *5. The 'X' Factor
Enthusiasm of individuals and groups and the urge to produce 'something better'
- * These factors will be disclosed in Part Two of this feature

Table II Open Rules in brief

- A. PRE 1974 Rules (SMAE until 1978) 6 minute maximum, 150 metre line, not percentage, 12.5 metre landing circle, flown in groups for convenience
- B. 1974/1975
6 minute max in 10 minute slot
PERCENTAGE SCORING
- C. 1976 to date
10 minute slot, no maximum
Percentage scoring

Table III
Wind Conditions at 1984 Open contests
(as reported by sample of 37 contest directors)

Calm	6%
Light (5 mph)	19%
Moderate (5 to 10 mph)	47%
Strong (10 to 20mph)	18%
Ridiculous! (20 mph)	10%

Table IV Structural developments

Now	Fully sheeted structures
	"Blue" foam
	Fibreglass shell mouldings (fuselages)
	Glass flying surface skinning
	Carbon fibre
Future?	Kevlar
	High tensile alloy tube spars
	Boron
	Moulded wings
	Metal skinned flying surfaces
	Better plastics for moulded items?
	Commercially assembled carbon/alloy Spar and joiner systems
	Non-metallic joiner systems

Table V Electronic developments

Now	Transmitter mixers for aileron/flap etc
	Multi-position switchable trims
	Rate switches
Future?	Fully pre-programmable trim states?
	Feedback from model avionics to Tx - in-flight telemetry (currently illegal)
	In-flight adjustable CG



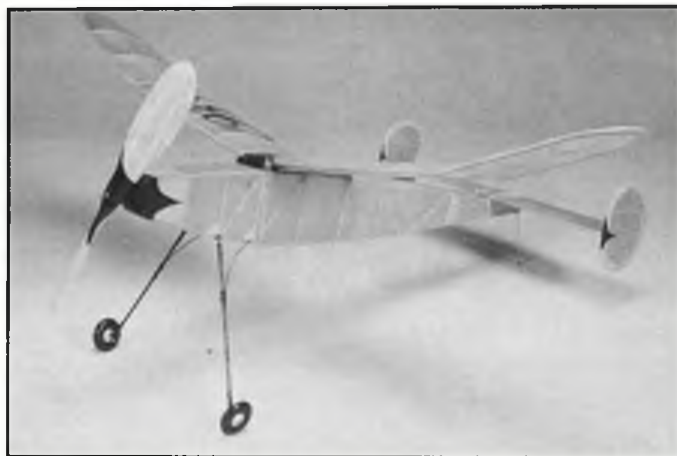
Continued from p475

rest medium), one hard $1/16 \times 1/4$ and one $1/8 \times 3/8$ med. to soft for the trailing edge. The ribs and small amount of $1/8$ in. sheet will probably all come out of the scrap box. Bamboo for the legs can be split from a garden cane or you could use two of the bamboo kebab skewers now sold in kitchen shops. Probably a large plastic prop could be used, but otherwise, a $12 \times 1 \times 1\frac{1}{2}$ in. balsa block is needed and this could be the costliest item. An efficient prop is really the key to rubber model performance.

Construction is as described scores of times for similar models, but individuals vary slightly in their methods. Some 'build one fuselage side over the other' by completing one side and then making the second. My own method (and that of many of my contemporaries) is to match the longerons for weight and flexibility, then pin them down in pairs, keeping the harder ends towards the nose. The spacers are then cut in pairs and cemented in. It becomes automatic to check that nominally square strips are square, and if not, that the slight rectangularity is matched up so that equal bends and flush joints are obtained. When dry and unpinned, a double-edged razor blade slid gently along separates the sides.

Erecting a square fuselage used to be a measure of building skill and we always squinted through the nose aperture of each others' models to see how true a result had been achieved. There are various ways of assembling the sides. Leaving the tail ends stuck together (or cementing them lightly together) and putting in one pair of spacers is one way. When dried - and square - the nose can be drawn in and further spacers added. Some builders cement two pairs of spacers to one side only, leaving them vertical until dry, then place the second side on top. Others cut removable card bulkheads at two points. Our usual method is to cut two pairs of spacers and pin the fuselage sides upright on the plan with the

Three-quarter front view shows not only the attractive lines of Victoria Parker but simple 'period' trim.



bottom spacers between (if assembling upside down because of straighter longerons they'd be the top spacers of course); then to insert the other two spacers and hook a long thin rubber band between two drawing pins previously placed on each side of the building board. The friction of the band and its angles will hold the sides on the spacers, but tension can be biased to angle the structure as necessary. It has to be done before the cement sets off. A set square (triangle) is used to check that the sides are truly vertical, and the assembly is left to set thoroughly before the remaining spacers are added. It pays to be patient.

For the wing I prefer where possible to make the mainspar to finished dihedral complete with braces. With an upper spar this can mean wiggling the ribs in place, but it avoids the awkward step of joining completed panels. One panel is assembled first, then blocked up for the next, etc., so that the leading and trailing edges can be accurately joined before being trimmed to length at the other end. In the case of the trailing edge, once the joint has been matched neatly the rib notches can be marked off the plan. This way of doing it has always seemed easier and more accurate to me: cutting leading and trailing edges and one or more spars all to correct length on a

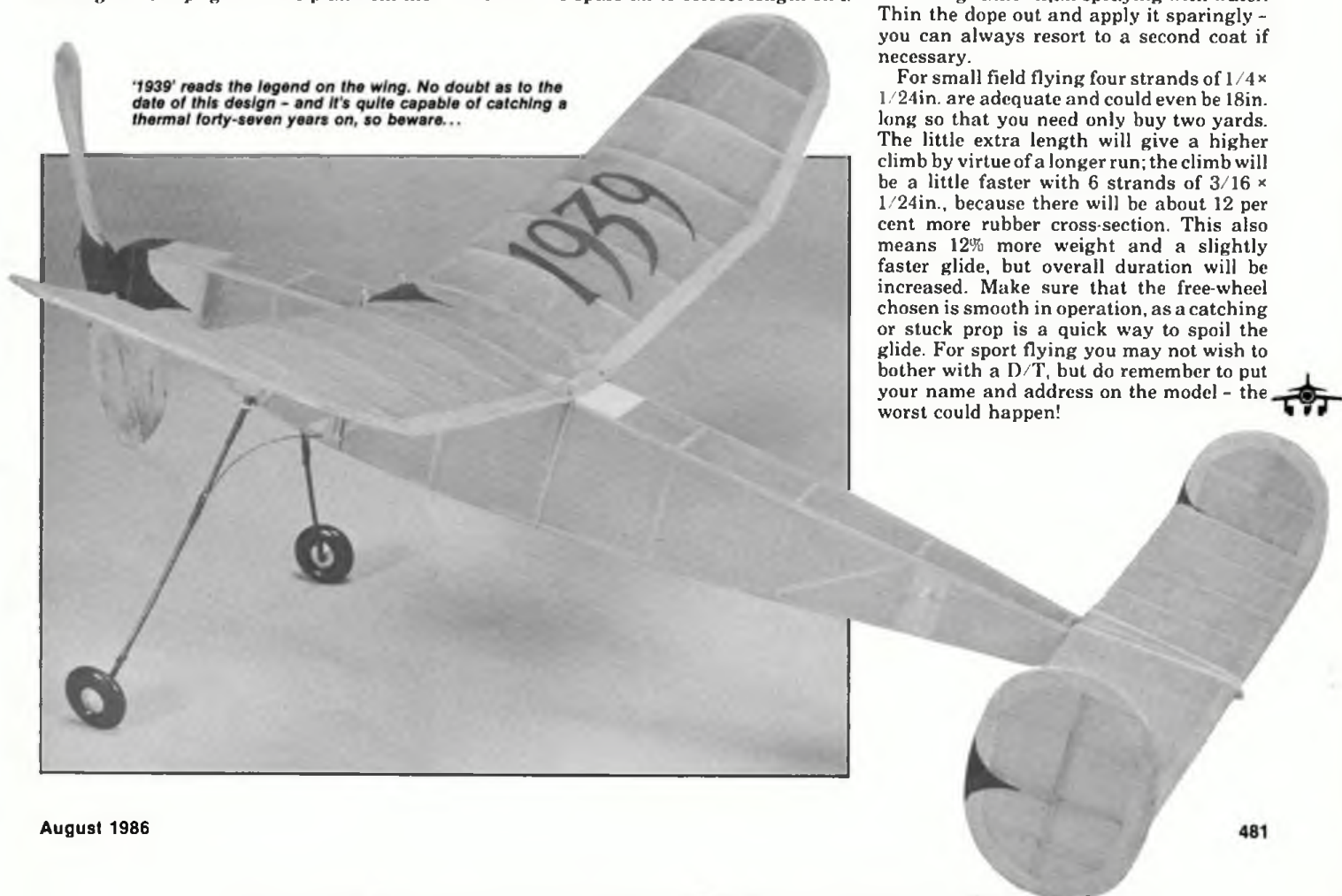
finished panel is a bit like stopping the table rocking by cutting a bit off one of the legs!

Another idiosyncrasy from days of yore was to turn over the ends of the wires being bound to bamboo undercarriage legs. The turn-over is hardly more than wire thickness, but if located in a hole burned in the bamboo with a red-hot needle (or wire) it prevents the wire from turning in use and it gives a nice, positive location when binding the wire in place. Burning is preferable to drilling or forcing the wire in, because it does not risk splitting the bamboo. The wheels on the model photographed are genuine pre-war celluloid balloon type, but laminated balsa wheels can be made quite simply. Modern solid plastic wheels are a shade heavier than necessary; heavy wheels can be an advantage with some models but are not helpful on this design. I remember a clubmate building a kit around 35 years ago (it's still available) and substituting very light wheels for the plastic ones provided. It was quite unstable in flight but became normal when the plastic wheels were fitted.

Use light 'hard' tissue or Jap for covering, though lightweight Modelspan could be used on the fuselage. Try to get it on evenly, especially on the tailplane and try steam shrinking rather than spraying with water. Thin the dope out and apply it sparingly - you can always resort to a second coat if necessary.

For small field flying four strands of $1/4 \times 1/24$ in. are adequate and could even be 18in. long so that you need only buy two yards. The little extra length will give a higher climb by virtue of a longer run; the climb will be a little faster with 6 strands of $3/16 \times 1/24$ in., because there will be about 12 per cent more rubber cross-section. This also means 12% more weight and a slightly faster glide, but overall duration will be increased. Make sure that the free-wheel chosen is smooth in operation, as a catching or stuck prop is a quick way to spoil the glide. For sport flying you may not wish to bother with a D/T, but do remember to put your name and address on the model - the worst could happen!

'1939' reads the legend on the wing. No doubt as to the date of this design - and it's quite capable of catching a thermal forty-seven years on, so beware...



SCALE MATTERS

Free flight with Bill Dennis

Indoor Nationals Revisited

Two things stick in my mind about this event - the perennial difficulty with CO₂, and the absurdity of the Peanut rules.

With regard to the former, the big problem is humidity. Several people remarked that it might be better to run this event early in the day before too many people have been breathing for too long! However, this does not explain why some are more afflicted than others. John Blagg has written to me on this subject and suggests that there could be a link with the widespread use of soda syphon dispenser/chargers. It was noticeable that many models were flying well in the trimming session but that quality of flight had deteriorated by the time of the contest. Is it that the large volume of liquid gas in these chargers gets progressively colder until, at the vital moment, icing up occurs? I have certainly never had trouble with the standard charger, and it may be an idea to switch to one of these, kept warm in the pocket. Another, more radical, solution would be to trim the model before the event - there's nothing against this in the notebook!

The static positions in Peanut were a nonsense with some excellent models placing below others which were inferior by any yardstick (mine included). During the ten years or so that I have been on the Scale Technical Committee, Peanut rules have been discussed many times, but never to much effect. It was also noticeable that none of the competitors could come up with better ideas, either! Nevertheless, at our next meeting we will be having another go at improving matters.

By the time this appears it will soon be time to get your entries in for the August Nats - please come and support the event: power, rubber or CO₂ - or all three!

Modelhob SE5A

You may recall a few issues back I left you in mid-air with a review on this kit, being struck down with flu at the covering stage. I have just finished the model so I shall wind up here.

The kit includes some white tissue, a little coarser and heavier than modelspan. I found covering the fuselage rather fiddly due to the forest of stringers and formers, together with the fact that the lower wing is already glued in place. Two coats of dope were sufficient to shrink, and the flying surfaces stayed flat without recourse to pinning down. This was followed by a coat of my version of PC10, and the decals. The finished weight was 3½ ounces, but another 1½ of lead was needed to bring the CG to a reasonable position. I did not bother with

the kit prop which was far too small - why is this the weak spot of so many kits? Instead I used a K.K. 12in. propeller cut down to give clearance, with 4 strands of 1/4in. rubber.

I must admit that at the outset I had been very doubtful about this kit, fearing that it

would be far too heavy. However, the relatively large wing area of the SE5A results in a wing loading of around 4oz./sq. ft., which is quite good. Flight tests have been restricted due to the windy weather, but the model seems to have no



Top: Smart yellow and blue Telco-powered Grahame-White Bantam, the work of Nick Pepplatt, was seen at the Indoor Scale Nats. An infrequently modelled subject. Left: The late Richard Kohnstam examines Doug McHard's CO₂ Grumman Gullhawk at an Old Warden meeting. Below: Also at Old Warden; Rex Oldridge and his Earl Stahl Magister. A fine flyer. Bottom left: Another by Nick Pepplatt. His well-known Bristol Mallplane was 3rd in Open Rubber at the Indoor Scale Nationals.



vices and is quite a spritely performer. I am still less than happy about the one-piece construction, and the undercarriage and wing struts have already shown themselves to be weak spots in the design.

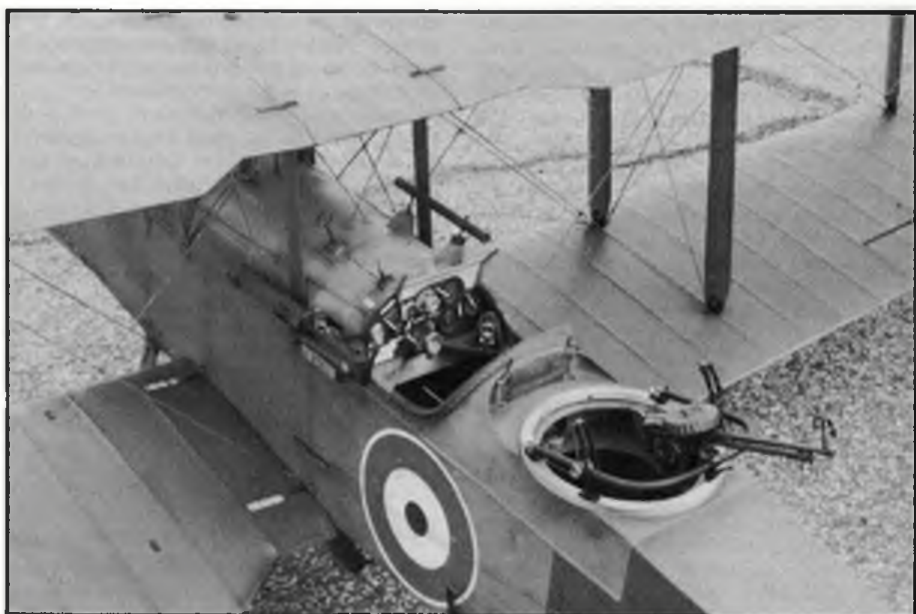
In conclusion: this would be quite a good kit for the youngster wishing to have a first go at scale, provided some parental guidance was at hand. The scale modeller will be disappointed with the totally non-scale and over engineered construction.

Radio Scale

Finally, I make no apologies for including one or two photos of R/C models. The first shows a couple of aircraft built to the new R/C 'light scale' rule, which limits model weight to 3 kg, engine capacity to 4cc. (two strokes) and 6.5cc. (four strokes). The Avro Avian, which seems to have become the subject of the year, is by Eric Coates, and is built right up to the limits, with a span of 60in. The Hummingbird is by Tony Marley, and although it looks smaller than the Avian, I understand it is of similar size. However, it is considerably lighter at 4½ lbs., and is fitted with a smaller engine.

This seems a very attractive R/C class to me, and one which should pull in participants from the F/F scene - I must admit I would have a go if I had some wireless! The models are of a much more manageable size than the usual type, particularly at a time when there is pressure to increase weight and power limits. Although it is early days yet, the models being built are of relatively simple, yet interesting lightplane types which do would stand much of a chance in the FAI schedule.

The other photo is of Peter McDermott's new DH9A, and I include it only because this must be the finest R/C model yet produced - anywhere. The extent and quality of the detailing defies description, so if you get a chance to see it, do.



Top: This attractive R/C Scale pair of lightplanes - Eric Coates' Avro Avian and Tony Marley's DH Humming Bird - are very evocative of the 'Golden Era' of civil aviation. Does anyone know why wings of the original pattern were not fitted to the restored full-size craft? Above and left: Two views of Peter McDermott's R/C DH9A, highly praised by your columnist.

MIND THE LINES

with
Ron Prentice

Thunderbugs and Devil Bats

One of my oldest aeromodelling friends, besides the West Essex Club members, is Laurie Glover. Laurie, who now lives in rural Wales, was a member of the Portsmouth Aeronautical Society when I first met him. Like many others, he had been struggling with E.I.D. and Mills powered control line models, despairing at ever being able to master the stunt schedule. Then one day he attended the 1948 Southern Area Rally at H.M.S. Daedalus and saw the West Sussex 'brigade' flying their Elfin powered stunters. This was a revelation to him and he went home and very soon designed a model on similar lines to those he had seen at Daedalus. This model was completed a week before he managed to buy an Elfin 1.8, and was the first in a long line of his Thunderbug designs. Laurie says, 'I shall never forget the exhilaration of my first Elfin flight. I simply screwed the motor on, clipped on the lines and flew! After a series of lumbering Pete Cock style profiles, it was a revelation. It flew twice as fast, and would do not (just) two consecutive loops, but as many as you liked. BUNTS even! I flew until dusk, hardly slept that night, and in the following glorious days, flew and flew and flew.' Some time later, Laurie was fortunate to obtain one of the very first Mercury Monitor kits from Henry Nicholls, and this, powered by an Amco 3.5, provided some really fine high speed flying. He subsequently went on to design some excellent stunters for larger engines, such as a Yulon 30 powered Utility Yulon with which he won the 1949 Southern Area Rally, and the Devil Bat designed in 1950. This model (see photograph) is a 42" span, 410 sq. in. job,

This is him! Ron Prentice holds two examples of Laurie Glover's Devil Bat stunter at Old Warden. The one on the left is Ron's own (Merco 29 powered); second model, Fox 35 powered, belongs to Peter Michel.



with an asymmetric wing and small full span flaps. The original model, which was powered by an ETA 29, was more than capable of performing the complete stunt schedule. Indeed I've actually flown my Merco 29 powered version in several 'modern' competitions. A frequent visitor to SAM 35 control line events, Laurie flew a 1 1/4 size version of the Devil Bat, powered by a Fox 59, at last years' Vintage Weekend at Old Warden, but unfortunately had fuel tank trouble during his competition flights.

Chop, chop

I see from last month's column that Andy Brough has been busy with his balsa knife during his short sabbatical. I must say that my trusty Swann-Morton knife seems to be in my mind almost permanently at the moment. In the last few months I have built an electric powered R/C glider, a R/C scale Boulton and Paul Defiant, a Mercury Marlin, a Musketeer, and a Magnette; and I have started on a De Bolt Super Bipe. Although the Peacemaker (as built by Andy) is such a well known design, I must confess that I have never built one. I look forward to the possibility of 'having a go' with this model, so don't break it, will you, Andy! I shall also eagerly await Andy's review of my Mercury Marlin kit. In spite of all the preparation and work that goes into the making of a kit of any design, errors sometimes creep in and its nice to have independent confirmation that all the parts go together properly and that there is enough balsa to go round.

The amazing Jim Walker

In my last column I wrote about Victor Stanzel's role in the evolution of control line flying. The Stanzel system, of course, had its limitations and became very little used after 1947. This was due entirely to the superior system which had been invented by Nevilles E (Jim) Walker, who as President of the American Junior Aircraft Company, intro-



Just a reminder of last month's Model of the Month. Inset in the July 1948 Aeromodeller cover is Luis Astrain Ruiz with his version of the Tyro Trainer - he won the Spanish 'B' with it. Compare with photo in the July issue.

duced the first control line kit in 1940/41. He filed a patent for his 'U-Control' system on December 26th 1940; U.S. Patent No. 2,292,416. Few people realise that Jim Walker had experimented with tethered flight back in the 1920s. He invented a simple form of tether for demonstrating rubber powered models in large stores. This was simply a line attached to the model at the correct point to ensure lateral and longitudinal stability; the other end being held by the operator. The model would fly until the rubber ran out. This system was eventually superseded, the line being attached instead to a small metal ring encircling a metal rod about 8 feet high. The model was released, climbed in circles until the ring was at the top of the pole and circled

Tony Hogan assists as Peter Michel flicks the PAW 149 in his Thunderbug at Barkston Heath, 1984. Occasion was the first SAM 35 stunt competition.





Letter from America

The other day I received a letter from Tom Dixon in the U.S.A. Tom is a keen control line flyer and in his spare time markets products aimed to fill a need not served by the usual retail or mail order hobby supplies.

He tells me that while Vintage or Old Time Stunt is popular in the States, the tendency is towards models such as Lou Andrew's Trixter Barnstormer, Sterling Ringmaster, Super Duper Zilch, and other glow .35 size models. The small diesel models have no appeal, as no one has any diesel experience (except perhaps Tom himself - he's flying a 1/2A Thunderbird with a PAW 1.49).

Tom's catalogue is interesting. He offers the Merco 61 and 49 (and will customise them if required), Fox 35s (including such modifications as careful lapping, balancing the crank, fitting high compression head and so on). He also stocks K&B 40s, reworked from the R/C engine. He lists dozens of vintage plans, and modern ones too. It would be well worth dropping him a line - enclosing an International Reply Coupon - to get a copy of this interesting catalogue.

Well, I guess that's all for this month. In my next column I will be writing about another famous U.S. control line flyer and innovator, Harold de Bolt.

Now where did I put that balsa knife?



at this height until the power ran out. After much experimenting the basic U-Control method was arrived at which has remained unchanged since its inception in 1939.

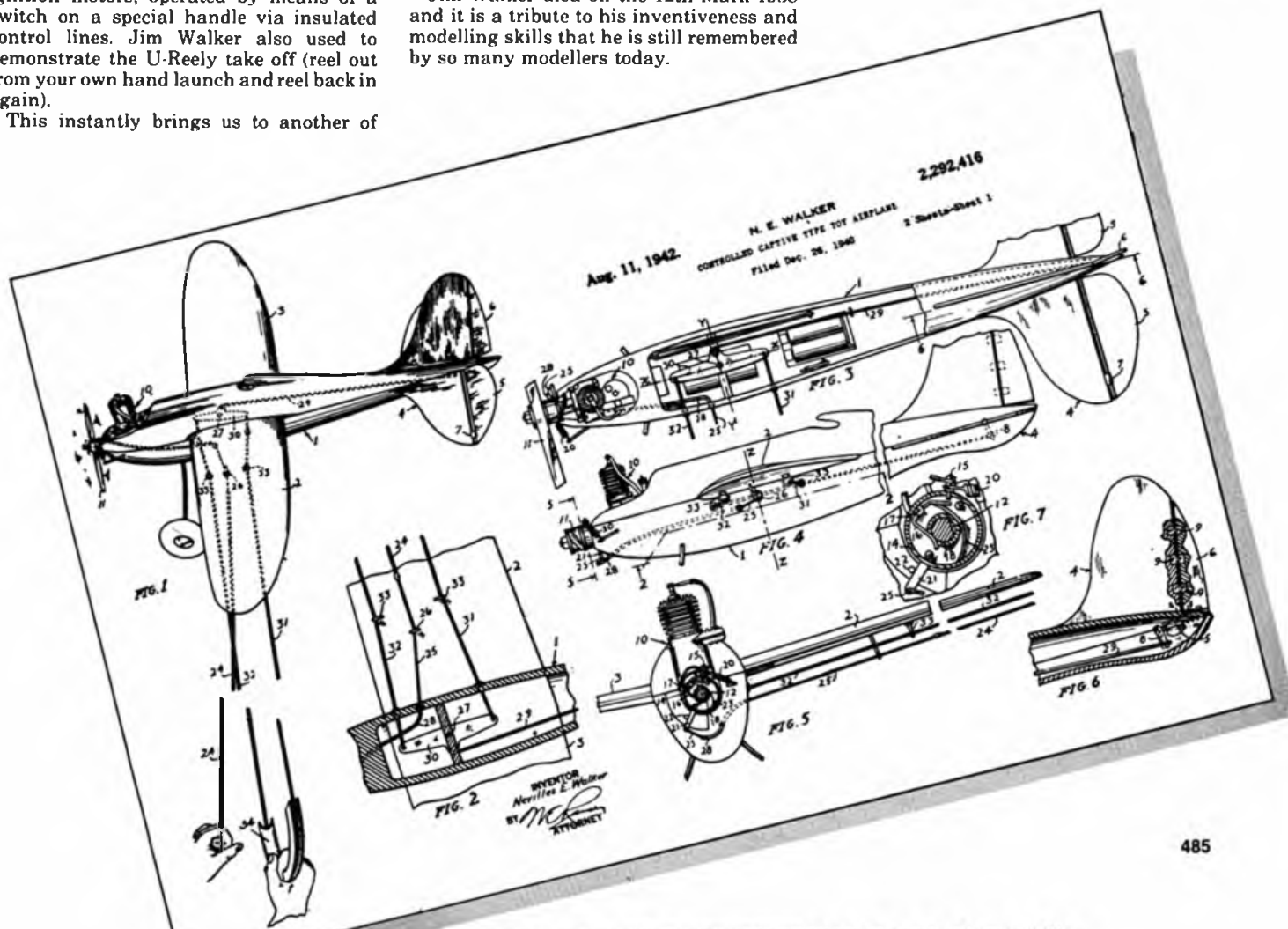
The original U-Control model was the Fireball, which Jim Walker personally demonstrated throughout the USA in 1940/41. In its original form it was a sports model with a flat airfoil section and a hollow log fuselage. Walker eventually developed the design into the first stunt model by using a symmetrical wing section and lightening the fuselage considerably. The Fireball was probably the first model to fly inverted; it was certainly the first control liner to loop. Other amazing feats of flying were demonstrated by Walker during his promotion tours in the 1940s. He used to fly three Fireballs at the same time. This was done by having a handle in each hand and a third fixed to a special helmet. Another speciality was the Sabre Dance. Here the model was made to dance vertically by using a two speed control on the ignition of the spark ignition motors, operated by means of a switch on a special handle via insulated control lines. Jim Walker also used to demonstrate the U-Reely take off (reel out from your own hand launch and reel back in again).

This instantly brings us to another of

Jim's inventions - the U-Reely handle itself. This combines hand and winding spools and at the same time allows the lines to be paid out or wound in during flight. A second version of the U-Reely was available with a built in on/off switch to control spark ignition motors; this is, of course, the one used by Jim to perform the Sabre Dance.

In practice, however, the U-Reely handle could lead to trouble because unless the handle is waved from side to side as the lines are wound in or paid out, each will not lie evenly on the winding drums, so one line will run long or short, thus affecting control. Despite this limitation, which can be overcome by careful operation, the U-Reely handle is an extremely useful accessory, particularly for sport flying; and is still sought after today. I used one back in the early '50s and after much practice was able to reel out from my own hand launch, but although I have now acquired another handle, I haven't plucked up enough courage to try it again.

Jim Walker died on the 12th March 1958 and it is a tribute to his inventiveness and modelling skills that he is still remembered by so many modellers today.



FREE FLIGHT SCENE

with Dave Hipperson

Mike Chilton's Artoo Coupe d'Hiver model...

The Artoo, which was first published in the March 1978 Aeromodeller, formed Mike Chilton's introduction to competition free flight after many years of successfully flying Control Line Team Race. Since then he has made numerous minor modifications to the design. The most distinctive, of course

is the dihedral which is increased over that of the original - not that there was any dihedral marked on the plan, so one can understand why it would be different! He has also lengthened the motor tube slightly, better to accommodate 12" of Pirelli; and has dispensed with the nose taper. Although this means a larger nose block it has the advantage of making for less sensitive thrust adjustments.

He has also simplified the built-up fin by replacing it with one from 1.5mm sheet - which I too have done on my latest models. It's both lighter and quicker to construct and less likely to get knocked off, extending as it does right through the fuselage - a recommended modification.

The rectangular-winged model here is actually an inch or so larger in span than the prototype; it had longer tips so the model is up on area despite a slightly narrower chord. The 'Rectangular' model has 191 sq. ins., and the 'Taper' model is bang on the original area of 189 sq. ins. These variations could be expected when changing from imperial to metric measurements. Mike has also gone towards the longer run idea, using 12" motors that certainly make trimming much easier. Coupling this with the increased dihedral, his versions do seem to fly particularly well in turbulence.

The taper wing is the only one with the original wing section. Mike somehow got the idea that the original Artoo (as published in February 1977) used the 6356b section and started with that, but comparing the two you will see that they are so similar that at these tiny chord sizes and loadings performance and handling differences would be imperceptible.

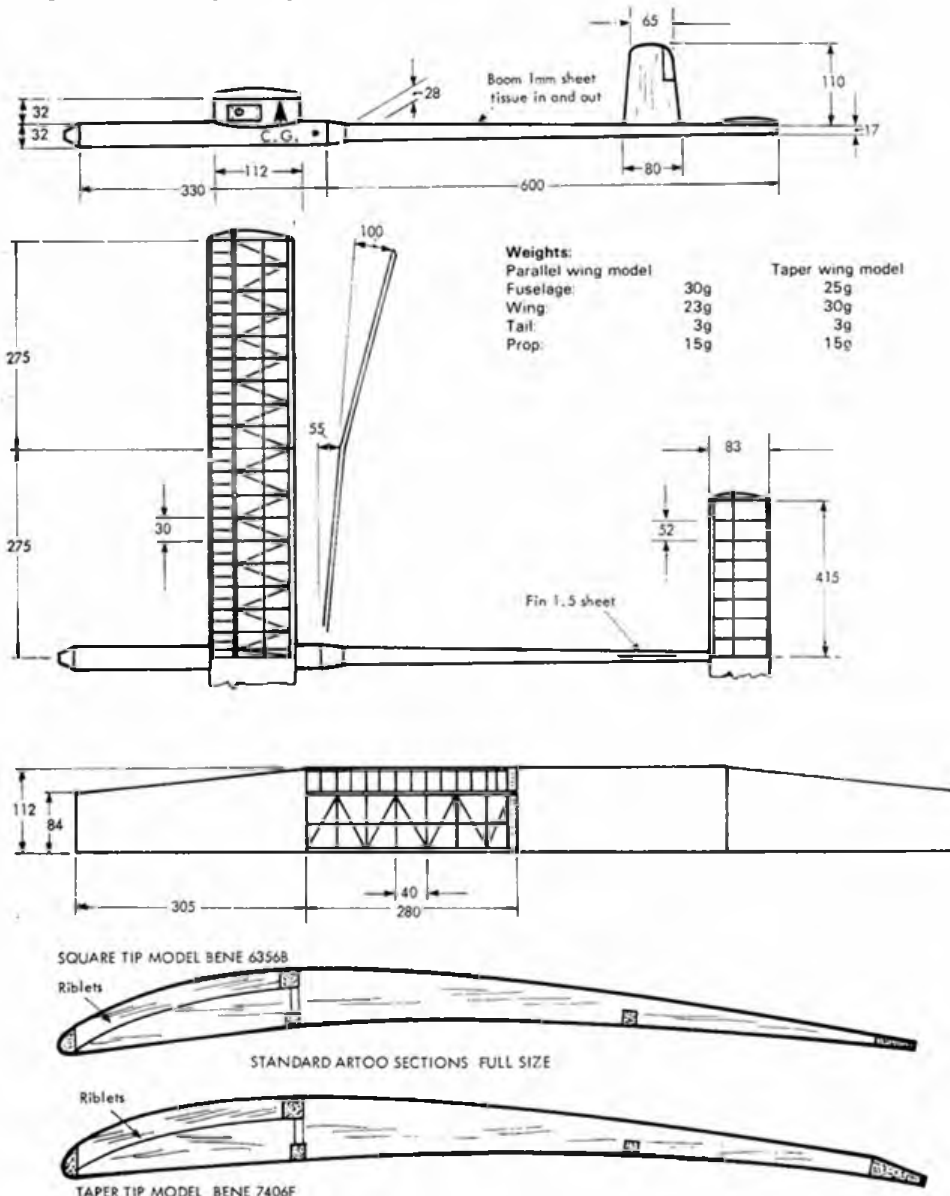
Mike reckons that the tapered version definitely climbs better and will handle higher power but has not decided whether or not it has improved the glide. (These findings reflect precisely what I found when changing from square to taper Wakefield layouts with the 7046f section: better power pattern, same glide).

Wood savings are made by the use of 'fan block' construction for the blades (see fig. 1) but the finished products are identical to the original plan.

Mike was one of the first I saw using Snoopy (Tomy) timers for Cd'H. These are a great advantage both for accuracy and convenience when waiting for lift. His modifications to, and mounting of, the timer are quite novel too (fig. 2). The D/T line is looped at the timer end and this loop is then dropped over a 'scroll' fitted on the main shaft; a system which allows very accurate setting. A Tomy timer set-up like this would weigh in the region of 3½ gms. complete. A detailed article on the various possible modifications of these plastic timers is planned for a future issue.

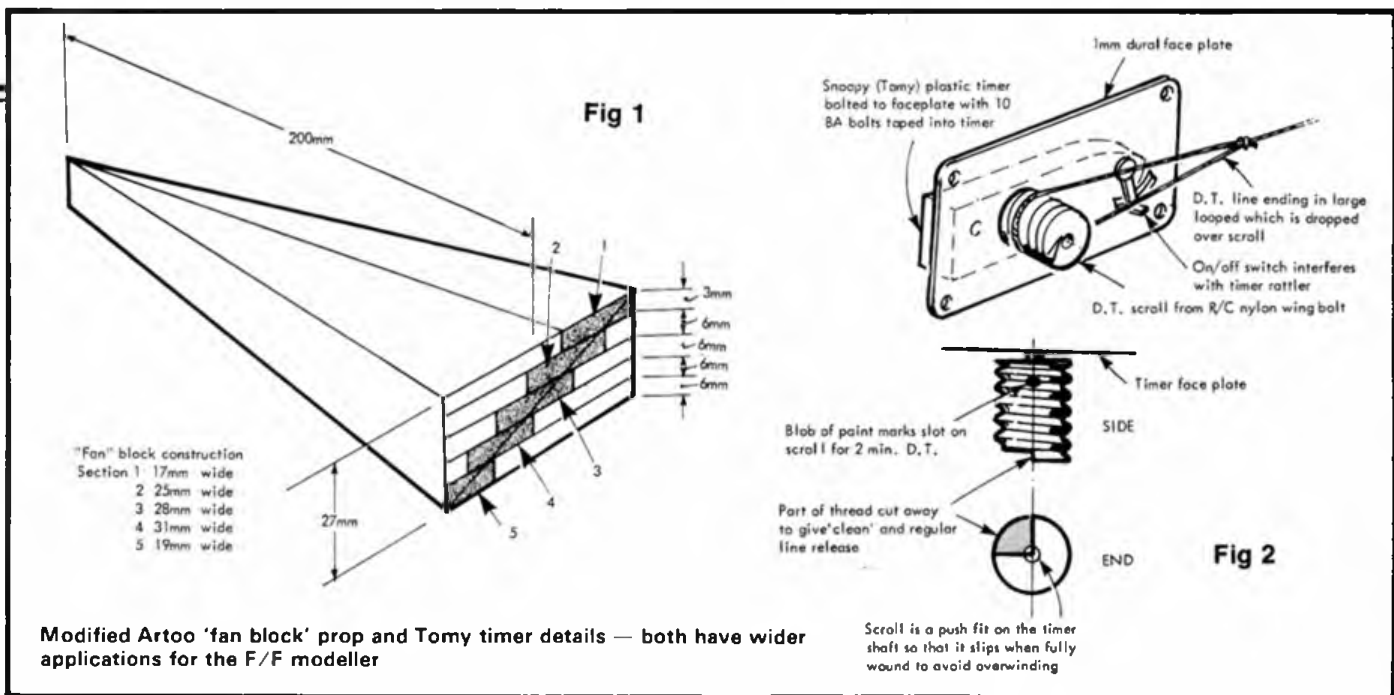
Modified Artoo by Mike Chilton

Prop: Same dimensions as original Artoo. Motors: 12in. long; max turns: 400; prop run 45-50 sec.
CG of both models: approx 75%. 5mm washin on starboard inner panel and 'natural' slight washout on tips (both models).
Right tail tilt used for right-hand glide turn.



SMAE Spring Meeting, Barkston Heath - 27th April

With classes identical to Open day at the Nationals (apart from Tailless) it was not surprising that this meeting would attract the best attendance so far this year. Further encouraged by a favourable forecast of calm weather, most arrived early. They were greeted by a westerly breeze and light drizzle. Instead of clearing this grew heavier



Modified Artoo 'fan block' prop and Tomy timer details — both have wider applications for the F/F modeller

with the cloud clamping down to such an extent that at one time gliders were invisible on the top of the line. Not surprisingly most elected to wait it out and thankfully didn't go home but spent the time either chatting or making short trimming hops. Even these were dicey.

It wasn't until Terry Dilks broke the ice with a brave Vintage max well into the afternoon that contest flying started in earnest. Once again timekeepers were allowed to follow models but as it was vertical visibility that was the problem some flights were still unlucky despite the low drift. No question on Dilks' flight however; his athletic timekeeper followed the model right into, and eventually up, a tree! As the sky cleared slightly cautious glider and rubber flights, and even Slow Open Power, became possible. That was lucky - never since the 60s have I seen so many Dixielanders and the like. Someone was flying a very impressive elliptical Satellite; there was at least one Calypso Major and at one point I swear I saw a Veron Deacon, although people I mentioned this



Terry Dilks launches Challenger for its winning flight in the Vintage fly-off at the SMAE Spring Meeting.

to didn't seem to know what I was talking about!

The rush of activity was a problem to control but by the contest close flyoffs were large, despite the full three minute max which had been retained despite the poor visibility. Greatly improved conditions and an almost total lack of drift combined to make these deciders satisfactory affairs, and no longer was it necessary (or legal) for timekeepers to follow their charges.

Both Brian Lavis and Steve Philpott found gentle lift with their gliders, the latter's four-minute-plus comfortably topping the results (yet again). The other two fared far less well. Both Open and Slow were incorporated into Power. Chas Plant was seen to be very competitive, even against Pete Harris' faster model. The latter needed less than six minutes to win Open this time, as Peers' damp wing went unnoticed - until it twisted on the climb and ruined the pattern of his lightweight 40 job.

The Vintage struggle was between veterans Dilks and O'Donnell who both flew the same design, Bernstein's Challenger. As they launched close together a comparison was possible. It appeared that O'Donnell had the shorter but faster climb and Dilks a similar but slower pattern. Dilks' slightly later launch contacted better air, his glide stretching on and on, then, incredibly, gliding into the same trees that had claimed the first flight. O'Donnell's model was found to have some unnoticed tailplane damage which was thought to have underelevated the flight slightly. This was a case of the good fortune running out for whereas most competitors had spent a fruitless morning. John had been delayed by having to retrieve his Challenger from a particularly difficult tree after a trimming fly-away at home the night before. He arrived at Barkston just as the weather became flyable and somehow managed to qualify for both Open and Vintage flyoffs, his Challenger bouncing off a hangar roof during the contest.

Thirteen made the Open Rubber final which was run off last. There was gentle help about for both the winner and for Mike Chilton, who marked it for him and then suffered the ignominy of severe stalling, caused by a motor bunch, all the way down from the prop fold. Others that launched

early were also in good air - Peers in particular who launched 'on the hooter'. Not everyone flew huge models - a late charge came from Nigel Lee who flew last and climbed to well above average. His 7½ minutes was enough for 3rd place.

Sadly for such a well attended event there could be no prizegiving because the CD had forgotten to order the plaques but most people seemed to be happy spending the remaining daylight hours poking models from that downwind line of trees that had claimed so many during the day.



Neat Tomy timer installation in Russell Peers' Head Beagle F1B (last month's Free Flight Scene drawing).

Woodbury Weekend, 3rd, 4th and 5th May

It says much for the prestige attached to this event that despite appalling conditions for the first night's Champagne fly-offs some two dozen competitors were quite prepared to risk models. Because of a very unusual and awkward wind direction - a gale from the south east - the launch point had to be down-wind of a line of tall trees which were themselves standing on top of a steep escarpment. Turbulence was so severe that at times no wind at all could be felt on the ground, but it could be heard through the nearby trees! Numerous rubber models floundered around hopelessly and were down in seconds. Only O'Donnell's and Wain's got through it, and their flights were still jumping around even three minutes down-wind. First time visitor Phil Ball



Russell Peers collects first place prize for his Open Power win at Woodbury - this made it four times in a row. Note handsome marble block.

managed a very respectable near three with his Challenger to take Vintage. It was rumoured that the host club even had supplies of blood plasma for those who had forgotten their wellingtons for retrieving in the knee high razor-sharp gorse.

The main Open events the following day were rather better supported than last years' despite the atrocious weather - the wind was officially over gale force and often accompanied by sudden heavy showers. Peers topped power; all flights were well over three minutes despite the very conservative two-minute max. Carter couldn't quite make the first one in rubber, hitting similar turbulence to the night before; but two more good flights put him on top. Chris Strachan took Vintage with his Lanzo, but Ball's Challenger, which had survived the Champagne Fly-off, was virtually demolished by an over-enthusiastic member of the public who had picked it up and waved it about in the gale after the first flight. The same person then wondered why Phil didn't thank him for finding it! After considerable re-building back in the comfort of his caravan Phil opted for two quick flights with his Hi-Ho and maxed beautifully on both, including one that landed at 2 minutes dead, inches in front of the woods.

The prize-giving held later that night at the Castle Brake Caravan Park was a memorable affair with Gerry Pink doing his usual high profile presentation job. Classy marble-hewn plaques of paper weight proportions made by Dave Greaves, various bottles and many other items besides, much of which had been donated in advance, were distributed amidst enthusiasm. The Park itself had been fully booked by aeromodellers very quickly after the event was publicised.

The final day was devoted to a five round combined FAI event starting early in the morning. This somewhat limited the amount of imbibing the previous night - at least for those who wanted to compete. With a noticeable lessening in the wind and an improving forecast the CD was encouraged to put the max up to the full three minutes.

However, the wind quickly rose back to 20-25mph and distances covered by maxing models became a problem. Retrieval was helped enormously by radio links set up by those members of the host club that were not flying. Thanks to those efforts few, if any, models were lost.

Combined FAI is rather an old fashioned idea and had not been popular with some people but at least it attracted the healthiest entry of the week-end, with more than 20 starting. It was the FIBs that took the top positions. With sunny, thermally weather A2 would have been the logical choice but for the very difficult towing terrain. The two main FIC competitors, Andrew and Fred Chilton, dominated the early rounds - Andrew actually leading until a crosswind gust wrecked the pattern on his very last flight, the model finishing up inverted and very low. This allowed Hipperson to win with a final FIB max after dropping only the first round. Terry Dilks flying the Peers designed Head Beagle FIB was close in 2nd. This was his first spell of Wakefield flying for many years.

It must be said that the social side of the meeting is one of its great attractions, particularly when coincident with such windy weather. The Bristol and West Team which get it all together seem to become more polished in achievement each year, rather than losing enthusiasm which is more usually the case. An excellent occasion!

3rd Area Meeting, 11th May.

The low entries have to be a reflection of the very windy weather, coinciding with an imminent Nats but Plugge points encouraged entries in FIB and there some very good flying. The top names in this, the Weston Cup, all flew at Barkston, as did more than half the National entry! Mike Chilton won with the same model that he had used earlier in the year to take the Grantham Grand Prix in very similar conditions. His flying was positive with only one patch of extreme turbulence on the glide stalling the model out of lift and robbing him of a perfect store. Those that

usually fly in East Anglia came to Barkston too, for lack of a local drome - they obviously hadn't heard about Hadstock! Anglia's performance as a club was exemplary; they took the next three places and hence jumped ahead in the Plugge listings. Most of their totals comprised two or three maxes and were useful supporting flights considering the wind.

John Carter had maxed out energetically with an A1 in Open Glider. His fly-off, made with an A2, was rather disappointing; but was still enough to win as no one else made a full score. John had also been keen enough to fly his Slow model in Open Power towards the end of the day and after a first flight max he looked well set as the wind began to drop. Sadly this didn't continue through the next flights although his total was still enough to push clubmate Peers down a place!

Dave Hamley was flying in Scotland in similar conditions to take 2nd place in Glider, and Ken Smith's flights were made at Beaulieu. All sites reported a similar 20-30mph wind speed all day, although in some places it did drop; but not soon enough to effect the contest much.

For Julian Hopper, the White Cup winner it was the first outing of the year. He flew at his local Stanstead site of Hadstock along with Pete Chapman, who finished 3rd. Chapman suffered numerous treed flights and a muffed last flight launch. Hopper had more damage caused to his first choice of model when it blew away over the ground before he started than in the three subsequent contest flights. He used his best model for the fly-off. Although it hadn't been flown at all since the Southern Gala last year, where it broke its fuselage, the gamble paid off.

Mike Woodhouse and Martin Pressnell made use of the slight improvement in the last hour at Barkston with some very rapid FIB flying, Mike making at least three consecutive maxes with an eye on Plugge points just as much as individual scoring. However, as visitors to the Midland site they had not realised that the letter of the law there is very closely enforced as far as the return of flight cards between flights is

Left: Experience won the day for Anglia at the Weston Cup. Club members placed 2nd, 3rd and 4th. This is Ray Paveley (3rd) launching for an early max. Right: Weston Cup (FIB) winner Mike Chilton with the same VIT-equipped model that won the Grantham Grand Prix. Model has a charmed life.



concerned. They hadn't been doing this and thus forfeited all their times after their first flights. Be warned!

The SMAE Senior Champs — back to obscurity?

Those that remember the SMAE Senior Championship scoring system of ten or so years ago will recall that it favoured quantity rather than quality flying, and was further hampered - eventually falling into disuse - by way of some very complicated rules which invalidated the entire thing if so much as one of the season's events was cancelled. This led directly to a number of consecutive years having no award at all - 1975 through to 1977 were such. Because it seemed impossible at the time for the SMAE to rescue matters I devised the *Aeromodeller* league table which has been published ever since. It proved itself practical, simple enough to assemble, reasonably fair and, most important, it encouraged more than just the very top contenders as it extended down to the top dozen or so placings.

A few years ago, the Free Flight Technical Committee, to extricate themselves from the over complexity of the SMAE Senior Champs system which again had failed to be presented in '81 or '82 adopted my points scoring system as the criteria for awarding the Championship annually. I was surprised and not a little flattered since I had no part in its adoption and hadn't even suggested it. It did the trick though, and since then both the prestige and the awareness of the event has increased. *Aeromodeller* can feel partly responsible for that too as we added depth to the award by continuing to list and analyse the top twenty or so performances.

This year and for the future, however, I see signs that it might be drifting back into obscurity again. The new, deeper scoring system is not so much to blame - points are now given down to 6th instead of 3rd - although totting up at the end of the year makes for a formidable task. What is really bad is the invalidating of any points scored in an event registering less than six scores. What was thought to be a mere technical hitch, even by me, at the start of the season has proven in practice to have acted as a positive discouragement to flying on a number of occasions this year. Hopefully when the FFTC examine this situation they will lift the invalidity clause or at least award *some* points to people flying in the smaller-entry events. After all, so often low entries are due to bad weather, in which case it would be logical to offer more incentive, not less.

As if this isn't enough I foresee a bigger shadow on the horizon. For as long as I can remember it has been difficult for the majority of contest fliers to distinguish between what is and what is not an official SMAE contest. Heaven knows why because it is all laid out quite clearly in the rule book. However, perhaps they can be forgiven when one discovers that even members of the SMAE Council are often uncertain! Therefore it has never been possible simply to state that the Free Flight Senior Champs would be decided on all the Free Flight SMAE events because too few people would understand what that meant. Hence there is



Athletic launch from Phil Ball in Weston Cup. Note unequal wing flex - maybe a side gust. Despite leading both Falcons and SMAE league tables he was out of luck this time.

a rule that states a list of the events that will count shall be available from the SMAE Competition Sec before the start of each season. This is rule 3.1.11.2. This year those of us who were interested found that we needed this list as the Society, for one reason or another, was unable to publish any official document, like Contest Members News, until after the first contest on 16th February. Despite numerous applications to the Society's Comp Sec no list was forthcoming - at least not in time. (As far as I know the Comp Sec still can't give *complete* details).

A subsequent protest, that as a result of this unavailability of a list Championship points earned at that first event should be void, was rejected at Council after discussion and a vote. All quite proper and democratic. However, in their haste they missed a vital point. An unfortunate precedent has now been set for future years. Because of their rejection of the protest they have nullified the rules in question and hence no longer has the SMAE Council - in the form of the Comp Sec - any need to know what events count and what events don't. This can only alienate Free Flight further from the heart of the SMAE - a tendency I see increasing momentum but not one to be relished. What is more, if the SMAE Council don't have to decide the list or even know it - then who does? The rules as they stand at the moment name no one. How on earth will contestants know in what to fly; and at the end of the season how will they be able to decide a winner?

Thankfully the organisers of the Falcons League seemed to have learned from the SMAE's mistakes, for their table is coming along fine this year. The best rules are simple rules. In essence the Falcons table counts everything and anything that isn't an SMAE event as long as it's advertised in advance. What is more, you score points down to 4th - that applies no matter how few fly. After five days of events the list looks like this:

P. Ball	32 pts
R. Peers	30 pts
J. O'Donnell	20 pts
J. Carter	18 pts
C. Strachan	18 pts
T. Dilks	16 pts

For details of rules and eligible events send an SAE to John Carter at Maple House, 19 Alderton Grove, Meir Heath, Staffs ST3 7SZ or better still see him, or Russell Peers, at a contest. They will be glad to give you a sheet of details and will happily answer queries.

(Any comments from the SMAE will be welcomed. GC).

SMAE Spring Meeting, Barkston Heath 27th April

Results

Open Glider (20 flew)	
1 S. Philpott	9:00 + 4:17
2 B. Lavis	9:00 + 3:42
3 R. Staines	9:00 + 1:54
4 J. Cuthbert	9:00 + 1:37

Open Rubber (14 flew)	
1 D. Hipperson	9:00 + 9:04
2 R. Peers	9:00 + 7:29
3 N. Lee	9:00 + 7:26
4 A. Cliff	9:00 + 6:54
5 P. Ball	9:00 + 6:24
6 J. O'Donnell	9:00 + 5:39

Open Power (5 flew)	
1 P. Harris	9:00 + 5:45
2 J. Bailey	9:00 + 3:55
3 R. Peers	9:00 + 1:59

Vintage (6 flew)	
1 T. Dilks	9:00 + 5:25
2 J. O'Donnell	9:00 + 4:08
3 J. Leith	8.17

Slow Open Power (11 flew)	
1 C. Plant	9:00 + 4:39
2 D. Wayne	9:00 + 2:46
3 C. Hickmott	9:00

Woodbury Weekend

Results

Saturday: Champagne Flyoffs

Glider		
1 J. O'Donnell	0:58	
Rubber (9 flew)		
1 J. O'Donnell	3:22	
2 D. Wain	3:15	
3 C. Chapman	1:54	
Power (3 flew)		
1 A. Chilton	2:12	
2 R. Peers	1:42	
Vintage (7 flew)		
1 P. Ball	2:52	Challenger
2 M. Kemp	2:07	Hereward
3 P. Michel	1:42	

Sunday: Open Events (All 2 minutes maxes)

Open Glider (6 flew)

1 T. Hall	4:35
2 G. Mannion	4:17
3 J. O'Donnell	3:55

Open Rubber (4 flew)

1 J. Carter	5:27
2 C. Chapman	3:48
3 C. Horry	2:00

Open Power (4 flew)

1 A. Peers	6:00
2 A. Chilton	3:41
3 W. Dennis	3:22

Vintage (7 flew)

1 C. Strachan	5:46
2 P. Ball	5:34
3 K. Horry	4:34

Monday: FAI Events 5 flights (3 minute max)

Combined event (21 flew)

1 D. Hipperson	13:43	F1B
2 T. Dilks	13:21	F1B
3 P. Ball	12:27	F1B
4 R. Peers	12:21	F1B
5 A. Chilton	12:20	F1C

3rd Area Centralised Event — 11th May

Results

Open Glider No Trophy (18 flew)

1 J. Carter	Falcons	7:30 + 1:15
2 D. Hambley	Lowlands	7:18
3 K. Smith	Crookham	6:36
4 B. Lavis	Biggles	6:35

F1B Waketfield Weston Cup Plugge Points (22 flew)

1 M. Chilton	Birmingham	11:43
2 A. Wells	Anglia	11:18
3 R. Pavely	Anglia	10:46
4 M. Molton	Anglia	10:45

Open Power White Cup (9 flew)

1 J. Hopper	Stanstead	7:30 + 7:49
2 P. Watson	Birmingham	7:08
3 P. Chapman	Stanstead	7:05

Plugge positions after three events:

Anglia	660
Birmingham	572
B & W	558
Biggles	438
Vikings	326
Morley	243





I built an ENGINE

Got a lathe? Ever thought of trying your hand at a motor? John Whiteside did...



HAVING RECENTLY BECOME interested in vintage via the fully-dimensioned drawing of the Wasp in the July 1981 *Aeromodeller*, I was appalled at the cost of genuine motors. My own collection of motors, started in 1952, contains mostly E.D. diesels. I brought a 'mint' Frog 100 for the Wasp at Sywell; it cost me a 'gold pig!' I quickly became convinced that, sadly perhaps, genuine petrol engines were too expensive to use. The decision to have a go at making one was thus easy to take. A quick measure up of my existing motors and a browse through a book of vintage motor photos gave enough information for exploratory drawings to be made. A three port (or sideport) design was chosen because piston controlled induction seemed easiest to work out. Exhaust: full open at bottom dead centre; inlet: open at top dead centre; timing controlled by the height of the ports; it seemed simple enough.

The plan was for 10cc capacity but due to generous cylinder wall thickness 7.8cc was the result. On later inspection of several spark ignition motors I was impressed by their light weight and thin material section. My engine could easily take the bore to 10cc.

During the period when I was carving the crankcase pattern I did a favour for a neighbour and discovered to my delight that he was a foundry manager. Three crankcases appeared like magic and work began. As with any design project done for pleasure rather than profit the design detail was allowed just to evolve. The projection of the front of the crankcase was for an external transfer port along the lines of my

E.D. Comp Special. The decision to abandon the idea was taken when I examined the ports milled in the Frog cylinder. This was much easier to arrange than fabricating and brazing.

The crankshaft and cylinder came from two large Whitworth H.T. bolts, 1½ in. dia × 3 in. long, costing £2.50 from the local engineers' supplier. My old Myford (1938 vintage) certainly grunted and groaned whilst reducing them to size. The crank web formed from the hexagonal port of the bolt head could not be offset in the 4-jaw chuck to turn a crank pin, so a separate one was pressed in.

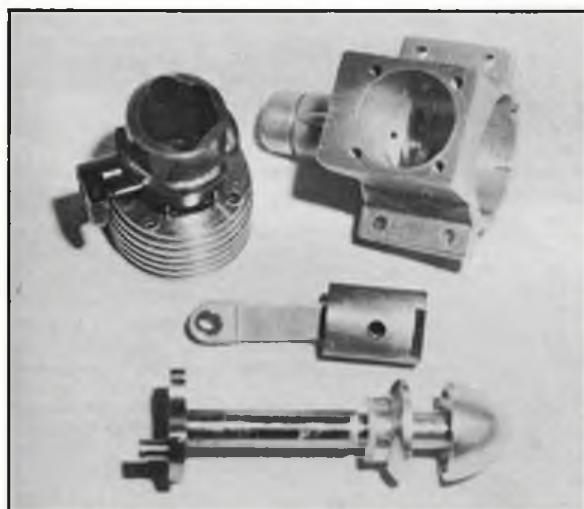
I went a bit mad with the cylinder head with the result that it looks a bit too modern for a vintage-type engine. I couldn't resist having a go at milling fins; and internally it boasts an hemispherical chamber and squish band!

Many of the measurements are simply a result of having a particular size of mill or drill available.

I completed the engine, apart from finishing the bore and making the piston, in about three months of spare time. By this time I was so excited that I took a day off work to lap the cylinder and machine the piston. The process was completed within the day on a brass and aluminium lap using fine valve-grinding paste. I must confess to making three pistons before I was satisfied and at a £1 an inch for cast iron bar it became a very expensive part!

The motor fired up at the first attempt but it would only run for a few seconds. The problem was soon located; my clever hollow





Main pictures: John's homebuilt spark engine is happily installed in a Kell Kraft Scorpion. It all looks just right! Above left: The motor itself. Clean, crisp appearance is a credit to the designer. Above right: Proof that it works! (see also heading photo). Left: The major parts. Plenty of 'meat' on the components makes for an understressed, long life. More news of homebuilt engines would be appreciated, please...

gudgeon pin was leaking crankcase pressure down the carburettor inlet. Aluminium end caps cured that and away it went! It swings a wood 12 x 6 with lots of authority and a deep solid exhaust note, producing plenty of pull.

I always try to make my models as professional looking as possible so the fuel tank presented a problem until I noticed just the correct size of container holding a babies' feeding teat in a chemist's display. The clear material doesn't like glow fuel but it is fine on petrol oil. The cylinder and all steel parts are finished with gun blue, a colourless liquid that works like magic. Small bottles are obtainable from gun shops.

Initial trials were made on glow fuel with a glow plug. Attempts to run the motor with petrol and spark were less successful as the contact breaker spring wouldn't allow more than about 4,000 rpm. A redesign cured that; and it is now installed in a KK Scorpion. The propeller is a 12 x 6 wood and with fuel and ignition set for around 5,500 - 6,000 rpm things are quiet and vintage! In the form as shown there is only an ignition cut-out but I have a Taplin throttle which I intend to fit 'one day'. Sparks are supplied from a Dunham coil powered by nicads. Material for points was a problem until a friend put me in touch with a man who rebuilds motor car magnetos. Points, through, continue to be a pain as the front bearing spews oil all over them; they need de-greasing every two or three runs. The engine is now run-in and it starts well; it has plenty of power on glow plug and a higher compression ratio but sounds and runs just right on petrol and sparks.

The prime feeling was initially one of disbelief at its ability to fly a model, a feeling other engine builders seem to have shared. Nevertheless, I think that on the low compression ratio and petrol the engine will continue to give good service despite the low-brow material and technology.

The project cost less than a tenner and used up a lot of scrap ends. The job needed surprisingly little - besides patience - to complete it. By the way, my old Myford was bought for £70, very secondhand; the lead screw is worn so I avoid screw cutting and stick to plain turning.

I hope my efforts might be of interest and perhaps may encourage someone else to have a go. Of course, I have since found that drawings and castings are available from several sources. Somehow, though, I feel it was more rewarding taking a shot in the dark. Lastly, just a thought: some enthusiasts may not be aware of K.R. Whiston supplies. They supply a super catalogue of engineers' supplies and ex W.D. tackle - a must for all modellers. Their address is: K.R. Whiston Ltd., New Mills, Stockport, SK12 4PT.



FROM THE HANDLE

CONTROL LINE NEWS

Racing with Jim Woodside

Construction Technique

Fuselage Crutch

Last time I wrote under this heading the topic was the engine mounting pan. Time now to screw it to something! The crutch serves two functions:

- To provide an accurate member to which the wing and tail can be mounted;
- to provide a strong base for the pan and engine.

Early versions were often fretsawed from a sheet of $\frac{3}{8}$ in obechi. An alternative was to graft beech bearers onto balsa sheet centre sections. My own present-day approach is a variation on these old techniques - a strong forward end is joined to $\frac{1}{2} \times \frac{1}{8}$ in rails.

Front Section

Search the local radio and electronic shops for glass-epoxy board such as is used as transistor base boards. Don't worry if you can only get it with copper facings because these can be dissolved away with acid. Cut out a rectangle just wider than the pan and about an inch longer. The epoxy p.c. board is used as a hard top surface which will resist crushing and will absorb some of the vibration. The adjoining layer(s) can be obechi, for $\frac{1}{2}$ A models, or light ply for F.A.I. models. Shops which sell materials for boat modelling often keep sheets of $\frac{3}{16}$ in thick obechi ply. Two laminations of this is ideal. Using epoxy glue, face the upper surface of the laminate with the p.c. board. Hold the pan in position and drill through the hold down points. Remove the pan and counterbore the holes to take the pan hold-down studs. 8 BA cap head bolts are strong enough for this job, which means that $\frac{11}{64}$ in o.d. studs will be more than adequate.

Mark out an area to be removed, sufficient to allow the engine to seat down happily into the front end. A Dremel or similar tool is ideal for the surgery needed. A $\frac{1}{32}$ in ply plate cut to just clear the cylinder head can now be glued to the underside, while the engine is in position. This plate will be a useful guide when gluing the lower cowling blocks in place.

The one-inch overhang can be recessed to accept the $\frac{1}{2} \times \frac{1}{8}$ in balsa rails. Drawing these together at the rear completes the crutch.

Later I will cover the rather complex subject of fuselages, cooling systems and fitting in the hardware...

1st S.M.A.E. Centralised C.L. meeting: Three Sisters 6th April

It is a long time since I have had to put tape over the cooling slot intake in order to keep the engine warm. Such was the

temperature; an unseasonable nine degrees under the norm, chilled even further by a sharp easterly wind.

During the drive home I couldn't help but reflect on progress over the last decade. In our first race the integral-lined AAC motor cooled so much that it lost 20+ m.p.h. and needed three pit stops - result, a diabolical time of 4:06. Back in 1975 or thereabouts my Daly converted K & B 15, running flat out for two stops, returned a reasonable 4:27. Application of the aforementioned tape resulted in a 3:40 - somewhat nearer the present day average.

Nine 'FAI' teams mustered for the jury of Alan Hill, Stuart Metcalfe and Bob Horwood. The first round showed just how much preparation most teams had done - just about none. Plenty of pitstops were observed and performances were generally ragged. Most teams were glad to get back into the shelter of their cars. Fry/Thorpe (Feltham) turned in a 3:48 with three-stops.

Round Two had Smith/Brown on the top with a 3:35, and Sladdin/Gardner (Novos) improved to 3:44. These two, plus Heaton/Woodside were the finalists. At the whistle all were away together and in the early stages Sladdin/Gardner had the best speed. Colin Brown creaked off a little compression, while the Heaton/Woodside motor finally warmed up to an operating temperature, though it was a little lean. The jury eventually considered Martin Sladdin's flying rather too 'enthusiastic' and gave him a red light.

Goodyear T.R. had about nine entrants, three of which exited before even flicking a prop as their models exceeded the new 600 grm maximum weight rule. Understandably there were some long faces as a result, including those of Pegg/Thorpe, who, having changed their fuel system to meet

the new ruling, now found their model unraceable. It is an ill wind that blows no good. Relative novices Ogden/Martindale made the Open G.Y. final and ended in first place, even if it was by process of attrition.

Results

FAI Team Race

1. Heaton/Woodside	Three Sisters	3:40
2. Smith/Brown	Fletham	3:35
3. Sladdin/Gardner	Novos	3:44

Open Goodyear

1. Ogden/Martindale	Widnes	RTD
2. Clarkson/Needham	Stockport	DNQ
3. Andrews/Horwood	Sth. Bristol	DNF

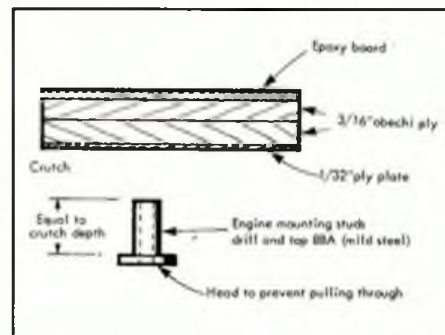
Class II Goodyear

1. Andrews/Horwood	Sth. Bristol	8:58
2. Clarkson/Needham	Stockport	9:01
3. Taylor/Worgan	Sth. Bristol	9:50

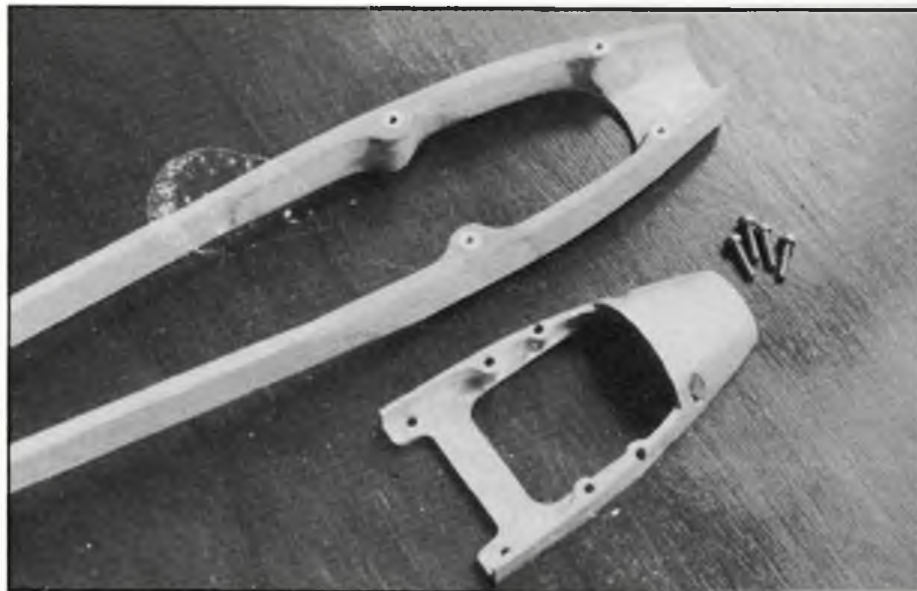
Matters Vintage

In truth I am actually re-writing this piece, as it was originally to have been an appeal for a copy of Gordeon Yeldham's Voodoo Class 'A' teamracer plan. On Sunday 4th May, I went to Barkston Heath to pit Dave Campbell's models in the first vintage T/R event. As the wind was attempting to rip the windsock from its pole,

Fuselage crutch techniques: this diagram shows the epoxy/ply sandwich and mounting stud arrangement.



Below: Lightweight crutch for a $\frac{1}{2}$ A model. Front end is $\frac{1}{2}$ \"/>



most of the 'flying' was done down at the pub. However, a good crop of models were proudly placed on display. Dave Campbell's were far the best finished. Powered by an AM 25 was an original KK Ranger, and a Mercury Texan was complete with a green head ED Racer, clack valve version.

Dave Clarkson had a neatly made APS Footprint which was equipped with an Oliver MkIII. However, Ed Needham earned a black mark for actually timing the speed of the model! Really not in the spirit of the day...

At this point it is perhaps worth putting forward a plea lest vintage T/R degenerates into just another racing class, with all that involves in terms of performance-seeking. One suggestion is that prizes should be awarded only for the quality of construction and finish. A second possibility is to run meetings consisting only of heats. In this

way the only real competition would be a personal one in which the aim would be to beat a previous best rather than the opposition.

Oh yes - the Voodoo. Copies of the plan are already on sale at £1.00 from Dave Smith, who is now swinging the handle for the designer.

All in all, the decision to promote the old SMAE classes does seem to have promoted a good measure of interest, especially amongst those who have retired from contemporary classes. Thus encouraged, the Grantham club have decided to introduce 1958 style 1/2A T/R with only slight amendment to the line length and wheel diameter clauses. Model specification is as follows:

- a) Max. engine capacity: 1.5cc
- b) Min. wing area inc. that within fuselage: 55sq.ins

- c) Max fuel capacity: 10cc
- d) Min. fuselage width at pilot: 1 1/4 in
- e) Min. fuselage depth at pilot: 2 1/2 in
- f) Min. landing wheels diameter: 1 1/2 in
- g) Line length 42ft. 0in. This gives 100 laps = 5 miles.
- h) Min. line diameter: 0.010in
- i) Scale pilot *must* be carried.

Eligible engines

Only plain bearing, non-schnuerle port diesels produced in commercial quantities for retail sale. These engines may be of any year of manufacture. Examples include PAW 1.49, AM15, Frog 150R, DC Sabre, ED Hornet, ED Hawk, ME Snipe, etc.

Eligible models

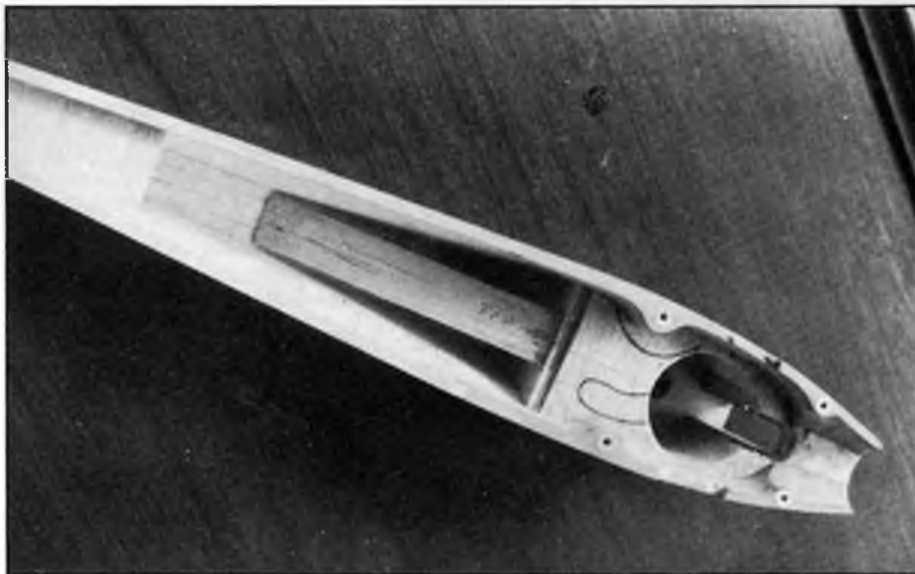
Only models constructed to published designs or commercially produced kits which were published or available for sale prior to 31 December 1960* and which comply with the rules. List includes:

- Cupid: APS CL 708 (August '58)
- Weaver: Full size plan, Model Aircraft, May '57
- Nurk: MA 256 (April '57)
- Little Warrior: 3-view in Feb '60 Aeromodeller
- Mercury 1/2A T/R kit (September '58)
- Frog Hornet kit (August '59)

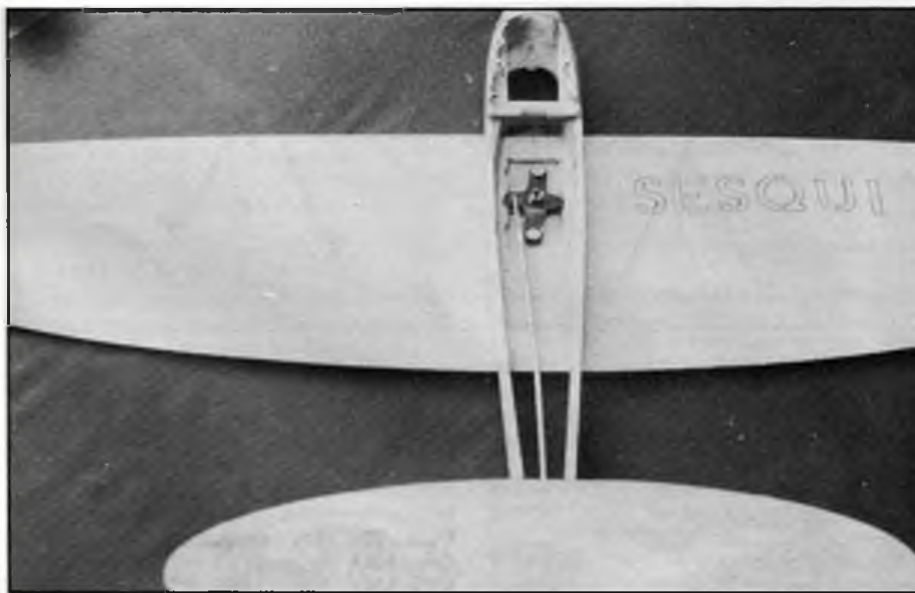
- * Veron Pinto kit (December '61) and
- * K.K. New Ranger Kit (March '62) are both allowed.

N.B. Any class A model which conforms to the Grantham & D.M.A.S. rules is eligible if fitted with a 10cc tank and eligible 1.5cc engine.

Construction progresses - the base plate is now in place, as is the lower fuselage. Note neat cut-out for engine cylinder head - walls close to fins force cooling air through, rather than allowing it to spill round the sides.



By relieving the crutch and taking accurate measurements the wing and tail can be glued into place. For ease of construction it is best to build the upper and lower fuselages onto the crutch and then remove them to allow the fitting of the wing.



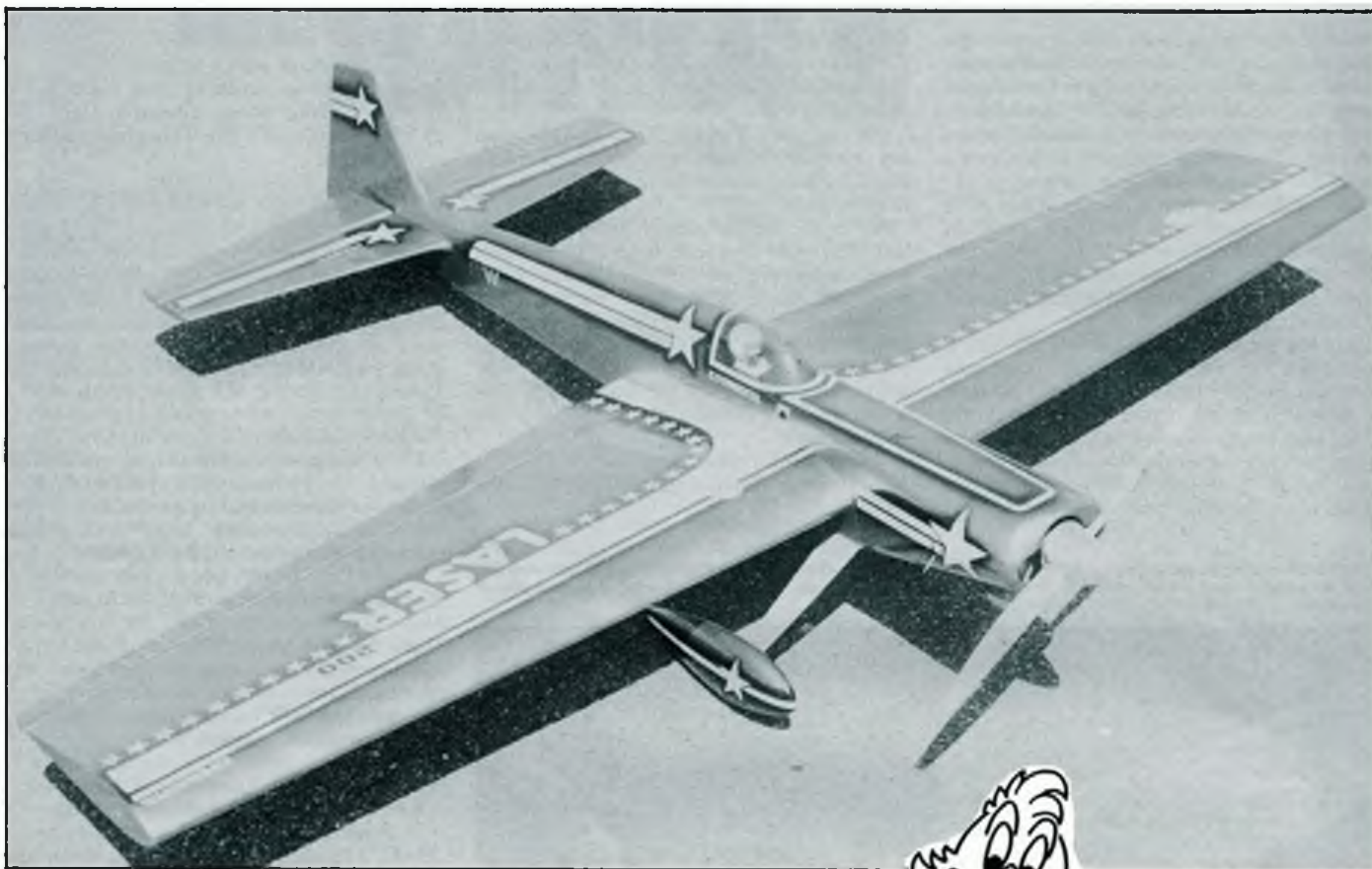
Stunt with Claus Maikis

Trigonometry

It's like real life - if you're happy, you have no reason to think about it. If you're not satisfied with your situation, you start thinking what your problems are and where they come from. In the end unhappy people may understand more about life than happy ones (must be the reason I know a lot about crashed airplanes).

My Laser models feature a swept forward trailing edge to retain at least a slight similarity to the original wing. Now there's nothing wrong with this type of installation. I don't see any aerodynamic drawbacks here. After all, Bill Werwage has proved with his Juno design that a top aerobatic machine is possible with this layout. When flying one of my Lasers, I had severe problems with the flap trim. No matter how (and by how much) I was bending and twisting, I couldn't get this model to behave well, particularly in the overhead eight where an ugly wiggle appeared at the intersection point. Since this model has a removable wing, changes to flap deflection can easily be carried out, observed and controlled. One day, sitting bent low over the wing and, in sheer despair, playing with the controls, it dawned on me.

I use separate horns for the flaps, and they are controlled by a fork. Now if the bellcrank



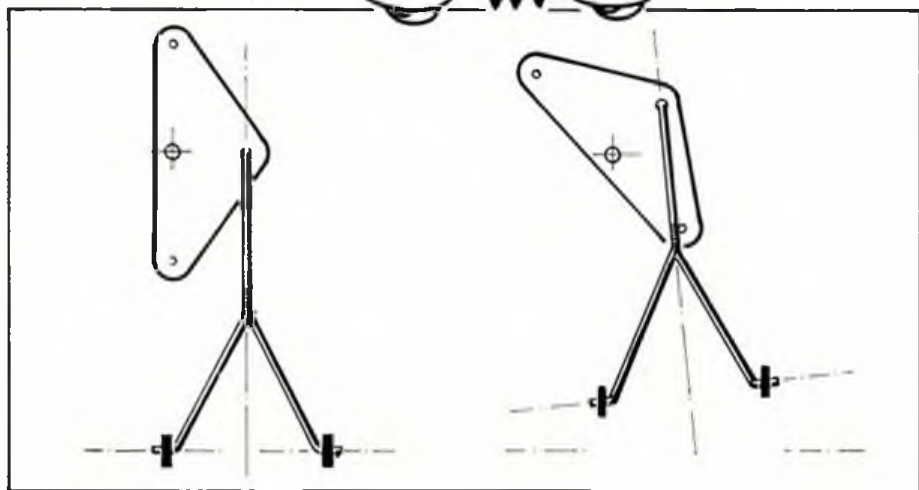
Above: Soon to appear in our Plans Service is the sharp-looking Laser, latest stunter from Claus Maikis' building board. Can you wait? Right: Would that it was so simple... Below: Aeronautical trigonometry - how differential flap movement may arise is clearly illustrated. Explanation in text.



is in neutral position, everything looks nice and well. When the bellcrank is moved, the attachment point of the pushrod runs on a circular line, of course. The pushrod doesn't only move forward or backward - it moves sideways, too. This movement brings the pushrod to a different angle than in neutral position. The fork end moves the same way. The axis through the two horns (which is perpendicular to the pushrod centre line) is tilted the same way, since the pushrod fork is a fixed unit (or it should be!). Now it can be seen that the flap horns get a different input and they have different deflection. With the bellcrank rotated, the outboard fork is always shorter and the inboard part is longer. All this is made clear from the sketch.

You cannot cure this by adjusting the flaps with equal deflection in the end positions. That way, you'll have unequal setting at neutral (the inboard flap is higher). By coincidence, my installation was like this, and I wondered why I couldn't get the airplane to fly level.

The size of the problem depends on the distance of the bellcrank to the flap horns, and the distance between the horns themselves. The shorter and wider the fork, the bigger the problem. The triangle which is formed by the three attachment points of the fork should be long and narrow. Now in my case, the bellcrank is located more rearward than usual, and the horns are installed as far from each other as the fuselage permits. The worst possible



situation! When discussing this problem with Henk de Jong (he uses separate horns in his Juno), he said that he had not noticed any bad habits with his model. Looking at his controls, we discovered that his pushrod fork is long and narrow. I don't know whether Bill Werwage is aware of his problem; anyway, his installation features a single horn. Since this wouldn't work with the swept trailing edge (there's a different

turning axis between horn wire and trailing edge) Bill's horn outriggers run in slots in the flaps to compensate.

While the distance between the horns can be changed by bending the horns together, nothing can be done about the pushrod length. It's no longer necessary to worry about that, anyway, for the airplane has since been crashed! What did I say at the beginning...?

Interstate L-6 (from p.466)

Wings

Using either a stiff card or plywood template, cut out the required number of wing rib blanks. The correct profile for all the wing ribs can then be formed by sandwiching the blanks between the templates and sanding them to shape. The spar slots can then be cut into the sandwich. The wing tips can be made up either by laminating strips to 1/32in thick balsa together, using the same method as for the fin and tailplane, or building up from pieces of 1/16in thick sheet.

Begin the wing by pinning down the leading and trailing edge strips, and the two wing spars. The wing-tip pieces can now be glued in place, trimming them to suit. To obtain the correct wing-tip contour make sure that they sit on top of the two wing spars. The wing ribs can now be glued in place, cutting them to length as required. Set the wing root in place, and position it to the correct dihedral angle, using the template. Remove the completed wing from your board after it has set and sand to shape.

The wing strut platform and tubes can now be added. The tubes should be epoxied or cyanoed into place. The same goes for the small wing retaining hooks.

With both wings completed a check on the dihedral should be made as follows. Cut the four 1/8in dia. wooden dowels to length and push them into the tubes in the fuselage to the correct depth. Push one of the wings onto the dowels, making sure that the dowels stay in place (i.e. that they don't disappear into the tubes). Now add the other wing, and retain them by a small elastic band between both wing hooks. If all has gone well you should have both wings at the same dihedral when viewed from the front. If not, you can either sand off or add on a small amount of balsa to the dihedral root rib.

When the wings have been set up correctly the dowels can be glued in place. Do this while the wings are still on the fuselage.

The wing struts can now be made up and checked for fit. First cut strips from 1/16in medium hard sheet balsa and sand them to a streamlined section. Glue the ends of the strips together and pin them down over the plan to form the 'V'. The struts should be left slightly longer than shown to allow for fitting. When set, remove from your board and epoxy a small length of 22swg wire, bent to the correct angle into the joined end of the struts. Now position the strut into the fuselage and check the fit where the strut ends meet the underside of the wings. Mark and cut the ends of each strut so that they just end on the small tubes. A small piece of 22swg wire should now be epoxied into the ends of each strut, again bent to the right shape. The struts fit well when they have to be slightly sprung to fit into the wing tubes, but not so much that they distort the wings.

Covering and Finishing

Although the only reference I could find for this particular aircraft shows it in the colours of the United States Army, it was also used as a trainer. The choice is yours. Probably someone knows exactly what colours they should have been even in the 'Cadet' version. I must admit I found this one a hard model to research.

The Army colours for this period were drab dark green all over. I opted for somewhat brighter training colours, i.e. a blue body and trim with yellow wings and tail.



Above: The L-6 is an attractive subject. John chose to finish his prototype in pre-war U.S. trainer colours, i.e. blue fuselage and fin, with red and white rudder stripes, and yellow wings and tail. Right: The basic fuselage structure. Cowling is easily fashioned from block or laminations of sheet.



The whole model was covered with coloured lightweight tissue, and clear doped. A mixture of about 40% dope, 60% thinners should be used. Apply dope sparingly, especially to the tail surfaces, which should be pinned down flat while the dope is drying.

Any markings or colour trim should be applied either with coloured tissue (or better still, sprayed on). Coloured felt nib pens are very good if used with care. 'Staedtler' pens, or similar, are ideal; and they come in many colours. Choose the 'waterproof' type, and apply sparingly. Good results can be obtained - experiment.

Flying and Trimming

The model turned out to be well within my design weight, and without rubber; it weighed 36gms. I used an 8 1/2in Peck Polymer plastic propeller and, for the trial motor, a 24in loop or 1/8in rubber.

The model should be balanced out at the position shown on the plan. Add ballast as required to either the nose or tail. Test gliding and first flights are (as always) best carried out over long grass and in reasonably calm conditions. Note that gliding the model from shoulder height does not always give a true picture of the model's glide characteristics. To some extent this is because of the drag of the propeller, even though it is freewheeling.

Adding a few turns to the motor - just enough to take up any motor slack - will give

a powered glide, and will show up the model's gliding ability better by raising the model to its flying speed. Any out of the ordinary tendencies will also show up better!

If the model stalls, carefully bend the elevator down; bend it up to overcome a diving tendency. If you do not wish to fix the tail and fin to the fuselage the fin can be glued onto the tailplane and whole unit may be held onto the fuselage by elastic bands. In this case, trimming out may be done by packing shims under the leading or trailing edge of the tailplane. All shims should be glued in place when you are satisfied.

With the motor well lubricated increase the number of turns with each flight, and watch the model's flight pattern. It is usually best to get rubber models to turn to the right under power. To begin with use a very small amount of right rudder offset; no more than 1/16in at most. As you increase the number of turns, there may be a tendency for the model to stall on the power run. The cure is to add pieces of packing at the top of the nose block. As power is increased, the model may tend to turn to the left; if this looks like getting out of hand, add some packing to the left hand side of the nose block to produce opposite sidethrust. Add only small amounts of packing at a time, 1/64in or 1/32in, preferably cut from ply or hard balsa.

The model's final performance rests with you, but if trimmed out carefully (and if it is warp free) you will enjoy many realistic flights.



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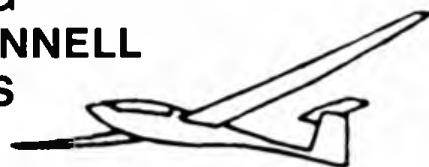
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The original issue comes with two free plans (Interstate L6, Victoria Parker) printed front/back on a pull out banner of four sheets. The banner is not included in this document.

Ziz Is It by Peter Fisher

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No available free plan found.

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Interstate L-6 by John Watters

FF Rubber Scale

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Victoria Parker by Vic Smeed

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